CR-001

Omadacycline for Skin and Soft Tissue Infections: A Multicenter Retrospective Analysis of Efficacy and Safety in Real-world Clinical Practice

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Introduction: Skin and soft tissue infections (SSTIs) present significant challenges in clinical practice, especially due to the growing issue of antibiotic resistance. Omadacycline a first-in-class aminomethylcycline, provides broad-spectrum activity and is available in both oral and intravenous formulations. This study aims to assess the real-world effectiveness and safety of omadacycline in treating SSTIs.

Methods: This study was a multicenter, retrospective, observational, descriptive analysis of patients treated with omadacycline between July 2019 and December 2023. Patients aged 18 years and older were included if they received omadacycline for at least 48 hours to treat a SSTI. The primary outcome measured was clinical cure, defined as the absence of any signs or symptoms of infection during treatment or within 14 days after discontinuation of omadacycline. The secondary outcome assessed was the incidence of adverse effects.

Results: A total of 24 cases from 7 medical centers in the U.S. met the inclusion criteria. The median age of patients was 63 years (IQR: 48.0 – 70.3), with half the cases being female (50.0%) and predominantly Caucasian (72.7%). The most common comorbidities included diabetes mellitus (45.8%), peripheral vascular disease (33.3%), and connective tissue disease (33.3%), with a median Charlson Comorbidity Index of 6.5 (IQR: 2.0 – 9.3). Surgical or wound infections were the most common type of SSTIs, accounting for 62.5% of cases, followed by purulent cellulitis at 16.7%. The primary targeted pathogens included Enterobacterales (70.8%), Enterococcus species (37.5%), and Methicillin-resistant Staphylococcus aureus (25.0%). The main reasons for utilizing omadacycline were its oral availability (50.0%), ease of administration (41.7%), resistance to other agents (41.7%), and oral step-down therapy (33.3%). Clinical cure was achieved in 87.5% of the cases. Three patients experienced side effects: gastrointestinal intolerance (n=2) and electrolyte disturbances (n=1).

Discussion: Omadacycline demonstrated promising efficacy and tolerability in treating SSTIs, with a high clinical cure rate of 87.5% and minimal adverse effects. These results are encouraging and in line with the results of the registrational trials. Larger real-world studies are warranted.

CR-002

Not Every Patient Is the Same: Comparing Energy Needs for Wound Healing Using Predictive Equations vs. Measured Using Indirect Calorimetry

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Introduction: The purpose of this study was to validate the use of an Indirect Calorimetry (IC) reading to determine a more accurate picture of the caloric need per individual patient with a goal of wound healing. We hypothesized that the "one-size-fits-all" predictive equation of 30-35 kcal/kg would not match the patient's measured resting and total energy expenditures (REE/TEE).

Methods: Participants needed to have a chronic wound. After a 5 hour fast, they completed an IC reading monthly for a minimum of 2 measurements and up to healing. The machine would analyze the carbon dioxide and oxygen exchange rate to determine the resting energy expenditure. The reading would take 10-20 minutes. REE was then multiplied by an activity factor based on individual lifestyle (0.1 for normal daily activities - 0.2 for moderate exercise) to provide a measured TEE.

Results: The resulting data showed that there was a significant difference in the measured TEE vs. the predictive equation. The predictive equation in every case either over- or under-estimated the patient's calorie needs; in most cases it grossly over-estimated the patient's need. The predictive equation of 30 kcal/kg was the closest to the measured TEE, however it was still more than the patient actually needed.

Discussion: We concluded from our study that the IC should be a tool utilized in the outpatient setting to give our patients a more individualized plan of care. Additionally, through the process we discovered that most patients had no understanding of how nutrition played a role in healing. This ultimately lead our Wound Clinic to to hiring a dietitian as part of the staff who is now part of every patient's plan of care with us.

CR-005

Prescription Patterns Among Outpatients with Antibiotic Failure/intolerance in the Treatment of Acute Bacterial Skin and Skin Structure Infections (ABSSSI): A 2020 to 2022 Retrospective Cohort Study

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Introduction: Recurrent acute bacterial skin and skin structure infections (ABSSSI) is diagnosed in 16% to 53% of all ABSSSI cases. Study aim was to describe antibiotic prescription patterns among outpatients diagnosed with ABSSSI who experienced antibiotic failure/intolerance.

Methods: Study was a retrospective (2020–2022) electronic health record-based study of outpatients (age ≥18), who received care within Hartford Healthcare outpatient clinics including wound clinics across Connecticut. Patients had ICD-10 codes for ABSSSI, and were identified as experiencing antibiotic failure/intolerance defined as receipt of both an initial antibiotic prescription and a subsequent oral antibiotic within 90 days of initial visit with 1 in 4 patients undergoing manual chart review for etiology confirmation. Appropriateness of antibiotic therapy i.e., receipt of MRSA-coverage (tetracycline class, sulfamethoxazole-trimethoprim (TMP-SMX), clindamycin) for abscess-related infections was assessed in concordance with IDSA and antibiotic stewardship guidance.

Results: A total of 390 patients were included with initial and subsequent antibiotic prescriptions. Mean age was 63.3 years, and 55.9% were female. Majority of patients had commercial insurance (61.5%) compared to Medicaid/Medicare (37.4%). Patients presented with cellulitis (74.1%) and abscess (20.3%) at index visit.The most commonly prescribed antibiotics by pharmacy class were β-lactam (47.2%), tetracycline (24.6%) and sulfonamide-combination (21.3%) at index visit. The proportion of index and subsequent prescriptions for the most commonly prescribed antibiotic medications were: cephalexin (34.4 vs 28.2%), doxycycline (23.8 vs 27.7%), TMP-SMX (21.3 vs 22.6%), and amoxicillin-clavulanate (6.9 vs 6.2%). A decrease in β-lactam prescriptions, primarily driven by fewer cephalexin orders, and concurrent increase in antibiotics with MRSA coverage was observed between initial and subsequent prescriptions. Antibiotic appropriateness among patients with abscess (64.6 vs 64.8%) was similar with index and subsequent antibiotic.

Discussion: There was an escalation from β-lactam oral antibiotics to MRSA-active antibiotics in patients experiencing antibiotic failure/intolerance. Further research is needed to understand patient comorbidities that predict failure and the financial burden of treatment failure/intolerance among outpatients with ABSSSI. In addition, these data will be instrumental in our current efforts to initiate an outpatient antibiotic stewardship program and deploy interventions to improve care across the healthcare continuum.

CR-009

Clinical Efficacy of Ovine Forestomach Matrix and Collagen/oxidized Regenerated Cellulose for the Treatment of Venous Leg Ulcers: An Interim Analysis of Retrospective Comparative Real-world Evidence

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Introduction: Venous leg ulcers (VLUs) are traditionally managed with standard of care dressings, compression, and appropriate adjunctive venous interventions for pathologic venous reflux. Due to pathophysiological complexity and underlying patient co-morbidities, conducting randomized controlled trials to evaluate comparative efficacy of advanced treatment modalities is difficult as many patients would likely be excluded. This retrospective, pragmatic, real-world evidence (RWE) study compared the healing outcomes of VLUs treated with either ovine forestomach matrix (OFM) (n=312) or collagen/oxidized regenerated cellulose (ORC) (n=239) in outpatient wound care centers. Unlike restrictive randomized controlled trials, minimal inclusion and exclusion criteria were applied to create two treatment cohorts that reflected the general VLU population. The purpose of this retrospective, pragmatic real-world evidence (RWE) study was to compare the healing outcomes of venous leg ulcers (VLU) treated with ovine forestomach matrix (OFM^) or collagen/oxidized regenerated cellulose (collagen/ORC*).

Methods: Cohorts consisted of VLUs treated with OFM or collagen/ORC. Data was extracted from a wound database from 2014 to 2020, representing 449 wound care centers across the United States. The median time to wound closure and the percentage of wounds closed at various timepoints were estimated using Kaplan-Meier survival analysis. The percentage of VLUs closed were statistically compared between treatment groups using Greenwood's standard error estimates.

Results: The 511 patients included in the study represented 830 total VLU, of which 470 were treated with OFM and 360 were treated with collagen/ORC. OFM demonstrated a significantly faster median time to closure (11.1±0.6 weeks) compared to the collagen/ORC group (12.3±1.0 weeks) (p=0.045). Cox proportional hazards analysis demonstrated that OFM-treated VLUs had significantly greater probability of healing (up to ~40%). The incidence of closure at 12-, 24- and 36-weeks was increased in OFM-treated VLUs relative to the collagen/ORC cohort.

CR-010

oleogel-s10 Reduces Dressing Changes Burden and Associated Costs in Patients with Epidermolysis Bullosa

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Introduction: Epidermolysis bullosa (EB) is a severe genetic disorder affecting epithelial integrity, primarily managed through frequent wound dressing changes. The EASE study demonstrated accelerated wound healing for Oleogel-S10 (birch triterpenes)* in EB (NCT03068780). This analysis evaluated the impact of Oleogel-S10 on dressing change frequency, time spent and associated costs in patients requiring daily dressing changes at baseline.

Methods: EASE enrolled 223 patients with dystrophic or junctional EB randomized to receive Oleogel-S10 (n=109) or control gel (n=114) with standard dressings. Here, a post hoc analysis focused on patients with daily dressing changes at baseline and, using historical data, time spent and saved on dressing changes was calculated.

Results: Among the subset of patients with daily dressing changes at baseline (Oleogel-S10 n=47, control gel n=53), 35.6% receiving Oleogel-S10 experienced reduced requirements by Day 90, compared to 10.6% receiving control gel. Oleogel-S10 resulted in a mean reduction of 1.36±0.24 weekly dressing changes, significantly more than control gel (0.41±0.23 fewer; difference –0.95±0.33; p=0.005). This translated to almost three fewer dressing changes every two weeks for Oleogel-S10 versus nearly one change for the control gel. Estimated time saved on dressing changes per week for the daily change cohort was 10.9h for Oleogel-S10 (6.6h for patients and 4.4h for caregivers) versus 4.0h for the control gel (2.4h for patients and 1.6h for caregivers), with a trend to cost savings in favor of Oleogel-S10.

Discussion: Oleogel-S10 significantly reduced dressing change frequency compared with control gel, potentially alleviating the burden of dressing changes and associated costs.

CR-011 (RPT-006)

Systemic Immune-inflammation Index (SII) as a Marker of Inflammation in Pyoderma Gangrenosum

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Introduction: The systemic immune-inflammation index (SII) is a novel inflammation biomarker, increasingly applied in clinical practice. SII is calculated based on three parameters (platelet count, lymphocyte count, and neutrophil count in peripheral blood) and serves as an indicator of both inflammatory status and immune response. Pyoderma gangrenosum (PG) is a neutrophilic dermatosis characterized by a high inflammatory burden, with its etiology involving complex interactions among genetic, immune, and environmental factors. This study aims to investigate the SII levels in PG patients.

Methods: A retrospective analysis was conducted on 16 patients diagnosed with PG. Blood samples were collected from all patients. Lymphocyte, neutrophil, monocyte, and platelet counts were measured as x10^3 cells/μL, and the SII was calculated using the formula: (platelet count x neutrophil count) / lymphocyte count.

Results: The population includes 16 patients: 11 females (68.75%) and 5 males (31.25%), the average age is 59,68 with a standard deviation of 9. SII medium value is 6.689 with a standard deviation of 500.555.

Discussion: SII values in patients with PG were higher than those typically observed in other chronic inflammatory skin diseases. The consistently elevated SII levels in PG highlight the potential for establishing a clinical cut-off value, which could aid in monitoring disease progression and tailoring treatment strategies. Further studies with larger cohorts are warranted to validate these results and determine a precise SII threshold for clinical application.

CR-012

Behavior of a Multicomponent Bandage in a Hot Environment results in Hospital Staff Volunteers with a Pitting Edema

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Introduction: There is a very scarce literature about the consequences of using multicomponent bandages in a very hot environment. The materials used in these multi-components are theoretically designed to withstand higher temperatures without losing their compression properties. Our objective was to evaluate the effects of the Dual Compression System (DCS) bandage that includes both a short and a long stretch bandage* a compression therapy system, after 4 hours of wear and a treadmill test on leg volume, interface pressures, static stiffness index, comfort and slippage in a hot environment.

Methods: Twenty volunteers presenting pitting oedema, from hospital staff working standing in the Diabetic Foot Center, Cairo, participated in this study. At baseline, the leg volume was assessed using a handheld volume measuring device** and the bandage was applied with an interface pressure of 45 ± 3mmHg.

Results: After only 4 hours of wearing the compression system, a significant reduction of the mean volume of 81 ml (2.9% of the total leg volume) was documented by the investigators. The Static Stiffness Index (SSI) calculated at baseline after bandage application (13+/-4.8 mmHg) increased significantly at T+ 4h (15.9 +/- 4.9 mmHg) in addition to a decrease in resting pressure to 30 mmHg, without any slippage. Despite this hot environment, comfort at the end of the study remained very high.

Discussion: This clinical trial shows that the DCS bandage helps in reducing edema in a very hot environment after four hours of wearing. SSI, which increased over the course of the trial, is an essential factor in reinforcing venous hemodynamics of the calf muscle pump.

CR-013

Wound Healing and Tissue Perfusion Assessed by Photoacoustic Imaging

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Introduction: Tissue perfusion plays a major role in wound healing. Existing techniques fail to provide detailed visualization of perfusion. In this study, we developed a photoacoustic imaging (PAI) system capable of mapping vascular structures in the foot. The system was validated in healthy subjects and patients to identify vascular features of tissue perfusion.

Methods: The system was developed based on the photoacoustic principle, where hemoglobin molecules in tissue and blood vessels absorb short pulsed light and generate acoustic signals that can be detected by ultrasound transducers. By scanning the transducer across the foot, we acquired high-resolution, three-dimensional images of the foot vasculature. After validating the system's performance in healthy volunteers, we further tested it in patients recruited from the vascular surgery clinic. Statistical and machine learning processes were performed to identify key features of tissue perfusion and wound healing.

Results: We quantified the system's performance through phantom and in vivo tests. The spatial resolution ranged from 0.8 to 1.2 mm along the three dimensions, and the imaging depth was around 15 mm. We then analyzed data from 20 patients and 10 healthy volunteers and extracted 39 PAI features. By ranking these features with clinical observation, we found that vessel sharpness, occupancy, intensity, density, SNR, and signal homogeneity have a high correlation with tissue perfusion and wound severity. Statistical analysis of the data further validated these features as robust indicators.

Discussion: This study highlights the clinical potential of photoacoustic imaging for assessing foot ulcer and wound healing. Its non-invasive nature ensures easy integration into clinical workflows. While current findings are limited by the patient dataset size, future studies with larger populations will further validate the results and pave the way for clinical translation. Advancements in machine learning will further enhance PAI's clinical utility, making it a promising tool for wound care.

CR-014

The Analysis of a Widely Accepted Skin Type Classification System Within a Real-world Inner-city Patient Population

Windy E. Cole, DPM; Nina Kovolyan, CRC – Kent State University

Introduction: The Fitzpatrick Scale, widely used to evaluate skin pigmentation, is a tool developed to assist clinicians in assessing skin infection, inflammation and tissue repair. However, oversimplification and limited representation of diverse skin tones can contribute to healthcare disparities through inaccuracies in diagnosis and delayed treatment leading to poor patient outcomes. Given the diversity and unique demographic characteristics of inner-city populations, it is essential to evaluate how well such classification systems apply in practice.

Methods: This single-center, prospective study compared Fitzpatrick scores with Cortex Colori Probe measurements among patients at the Cleveland Foot and Ankle Center, an inner-city clinic. Cortex Colori Probe readings were taken from four body areas: inner forearm, outer forearm, anterior shin, and dorsum of the foot, and were compared to patient-reported and investigator-assessed Fitzpatrick scores. Inclusion criteria included established patients 18 years or older, willing to provide informed consent.

Results: An interim analysis of enrolled participants, which included individuals of varying races and ethnicities revealed that only 25.57% of Fitzpatrick scores aligned with the measurements from the Colori Probe. These initial findings highlight the Fitzpatrick scale's limitations and illustrate the Colori Prob's enhanced sensitivity to variations in skin tone.

Discussion: While skin type classification systems, such as the Fitzpatrick scale, are useful for assessing risk factors for skin conditions and determining appropriate treatments, their relevance in a real-world setting may be limited. Additionally, the underrepresentation of diverse skin tones in medical education, coupled with implicit racial biases among providers, contributes significantly to inequities in medical care, leading to disproportionately poor outcomes for patients of color. A more nuanced approach that recognizes the complexities of skin health in diverse communities may improve treatment outcomes and better enhance the understanding of dermatological needs.

CR-015

Real World Data on the Use of Topical Oxygen Therapy for the Management of Hard-to-heal Wounds: A Retrospective Review of a Colombian Patient Population

Windy E. Cole, DPM; Stacey Martin, PhD

Introduction: Hard-to-heal wounds pose a significant challenge in healthcare, affecting the quality of life in an estimated 40 million patients worldwide. The management of these wounds places a strain on limited medical resources. In 2019, the global expenditure on wound care was estimated at approximately 299.4819 billion USD, with South America alone contributing 11.1619 billion USD. Developing regions like South America have a higher number of cases due to limited healthcare access and financial barriers.

Methods: This was a multi-center, retrospective analysis of the real-world use of continuous topical oxygen therapy (cTOT) to treat a variety of hard-to-heal wound etiologies in Colombia, South America over a 6-month period. To better reflect real-world use, the study employed few inclusion and exclusion criteria. Patients were eligible if they were 18 years or older, diagnosed with chronic wounds regardless of their other underlying conditions such as diabetes, hypertension, or venous insufficiency, and had received cTOT. 69 patients receiving both uninterrupted cTOT and interrupted (discontinuous) cTOT were included in this study.

Results: Comparative analyses were performed using t-tests (two-sample unequal variance) to assess differences in treatment outcomes between uninterrupted cTOT and interrupted cTOT therapy cohorts. Complete healing was achieved in 64% of the uninterrupted cTOT-treated group and 36% in the interrupted cTOT-treated group, with most patients of both groups becoming pain-free after the start of treatment.

Discussion: These findings suggest that the use of cTOT as an adjunct to good standard of care can promote accelerated wound healing and reduce treatment duration and pain levels even if the therapy is interrupted. Thus, cTOT is effective in reducing the burden of chronic wounds in resource limited areas of the world such as Colombia, South America.

CR-016

A Prospective Single-site Case-controlled Study Examining the Differences in Microcirculatory Stress Responses Between Diabetic and Non-diabetic Feet Using an Advanced Near-infrared Imaging System

Windy E. Cole, DPM; Nina Kovolyan, CRC – Wound Care Research – Kent State University

Introduction: Conducting a comprehensive diabetic foot assessment is essential, particularly when it comes to screening for limb perfusion to detect early-stage peripheral artery disease (PAD). While no single method for non-invasive vascular studies (NIVS) stands out as the gold standard, several clinical options are available. However, in diabetic patients, these tests often yield inaccurate results, potentially leading clinicians to mistakenly conclude that adequate perfusion exists in the diabetic foot. This study aimed to compare the microcirculatory responses of individuals without diabetes against those suffering from diabetic neuropathy when subjected to a series of controlled stressors. The key objective was to clearly demonstrate that the microcirculatory stress response is significantly compromised in diabetic neuropathic feet, and to establish that Near-infrared spectroscopy (NIRS) serves as an effective tool for identifying these crucial changes.

Methods: This groundbreaking study is a prospective single-site case-controlled investigation that examined the crucial differences in microcirculatory stress responses between diabetic and non-diabetic

feet using Near-Infrared Spectroscopy (NIRS). Involving 20 subjects, we meticulously conducted the study after thorough screening and obtaining informed consent. Each participant underwent a series of NIRS imaging sessions, exposed to five minutes of targeted stresses, such as heat (via heating pads), cold (using ice packs), elevation, and dependency of the right foot, all within a carefully controlled clinic environment.

Results: This study compellingly highlights a significant discrepancy in the microcirculatory response to various stresses between individuals with and without diabetic neuropathy. Moreover, these findings reinforce the critical insight that the microcirculatory stress response is significantly impaired in the diabetic neuropathic foot, underscoring the need for targeted interventions in affected patients.

Discussion: Endothelial dysfunction and autonomic neuropathy are critical factors contributing to microcirculation issues in the diabetic neuropathic foot. These factors can lead to functional ischemia, even when blood flow seems adequate under normal circumstances. Near-Infrared Spectroscopy (NIRS) has emerged as a validated technology, effectively measuring functional tissue oxygen saturation in diabetic foot ulcer management. The promising results from this pilot study further support the idea that NIRS is not only instrumental in monitoring oxygen levels but also serves as a powerful tool for identifying changes in the microcirculatory system of the diabetic foot.

CR-017

Beta-adrenergic Antagonist for the Healing of Chronic Diabetic Foot

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Introduction: Diabetic foot ulcers (DFUs) are a significant and growing public health issue, affecting millions of individuals with diabetes. Chronic DFUs often fail to heal with standard care, leading to prolonged disability, increased healthcare costs, and the risk of amputation. Current therapies focus mainly on infection control and offloading, with limited effectiveness in promoting healing. Topical timolol, a nonselective beta-blocker, has shown potential in improving circulation and reducing inflammation, two critical factors for wound healing. However, its efficacy in DFU treatment remains underexplored. This study aimed to evaluate the effectiveness and safety of topical timolol as an adjunct to standard care in chronic DFU healing.

Methods: This randomized, double-blind, controlled trial enrolled 108 patients with chronic DFUs from the VA Northern California Health Care System between 2018 and 2023. Forty-eight patients met inclusion criteria and were randomized to either the standard of care (SOC) group (n=27) or the SOC + timolol group (n=21). The primary endpoint was complete wound healing by week 14. Secondary outcomes included healing by week 31, time to closure, wound size reduction, and adverse events. Safety was monitored by serum timolol levels. Statistical analysis was conducted using Fisher's exact test, Kaplan-Meier survival analysis, and Cox proportional hazards modeling.

Results: At week 15, 38% (n=8/21) of patients in the SOC + timolol group had healed, compared to 33% (n=7/27) in the SOC group (p=0.77). By week 30, 71% (n=15) in the timolol group had healed, compared to 48% (n=13) in the SOC group (log-rank test, p=0.081). Cox modeling indicated that patients receiving timolol had a significantly higher likelihood of healing by week 30 (hazard ratio [HR] = 2.88, p=0.027). Timolol also significantly reduced the mean time to healing at week 15 (5.8 vs. 9.2 weeks, p=0.015) and led to greater wound size reduction at weeks 14 and 31 ($p< 0.05$). Adverse events were similar between groups, with no cardiac events reported in the timolol cohort.

Discussion: Topical timolol was associated with improved healing rates, faster wound closure, and greater wound size reduction compared to standard care. These findings suggest that timolol may be an effective adjunct for the treatment of chronic DFUs with minimal adverse effects, supporting its potential in diabetic wound care.

CR-019

Reducing Bioburden and Disrupting Hard to Remove Microbial Colonies with the Use of Pure Hypochlorous Acid (pHA)* to Reduce Bioburden in All Plastic Surgical Reconstruction

Michael N. Desvigne, MD, FACS, CWS, FACCWS

Introduction: The presence of bacterial colonies that are adherent to the tissue surface are recognized as deterrents to wound healing. The success of surgical reconstruction often relies on the ability to reduce the risk of postoperative infection. Evidence shows that pure Hypochlorous Acid (pHA) based cleanser*, is able to remove bacteria, associated slime like materials, and necrotic tissue that are all usually associated with problem wounds. Hypochlorous acid is also commonly known by its simple chemical formula, HOCl.

Methods: We present a retrospective review of a series of 95 patients undergoing surgical reconstructive procedures over a 20 month period. All but 2 patients received pure Hypochlorous Acid (pHA) based cleanser that has a pH of 3.5 to 5.5, to help reduce the bacterial burden prior to closure. The two patients who did not were being treated for localized skin cancers that underwent resection and local flap closure as an outpatient procedure. The remaining 93 patients included 60 patients with pressure injury, 6 lower extremity wounds, 6 cancer resections, 6 abdominal wall reconstructions, 6 Hidradenitis and or pilonidal disease and 5 miscellaneous procedures (autoimmune disease, TMA neuroma, and 1 Morel-Lavallee lesion).

Results: All patients receive pHA soak and or irrigation intraoperatively. The HOCl was placed in a sterile container on the operative table. Following excisional debridement and pulse vac irrigation in those cases with significant debris, pHA was poured onto a lap sponge, with the pHA soak intraoperatively for 10 min. We report no postoperative infections in all cases presented here.

Discussion: Pure pHA or HOCl is a useful adjunct to address bioburden in reconstructive surgery. Wounds which are chronic and contaminated and or those with evidence of acute infection certainly benefit from this cleansing step. Additionally, the use of pHA/HOCL in general may be useful to any reconstructive procedure to reduce the risk of postoperative infection. Specifically, pHA/HOCL soak prior to closure, graft or flap may add an additional benefit with minimal additional operative time and or cost. Additionally, pHA/HOCl appears to be compatible with the biological matrices (CAMPS) used to promote surgical healing or as an adjunct to flap reconstruction.

CR-020

Aseptically Processed Dehydrated Placental Allograft for Pressure Ulcer Reconstruction: a Retrospective Review

Michael N. Desvigne, MD, FACS, CWS, FACCWS

Introduction: Pressure injury with secondary ulceration is a challenge for surgical healing following reconstruction. Previously, we reported the use of placental allografts for incisional management following surgical closure of chronic wounds. The challenges of pressure injury are twofold: the chronicity of the wound and the associated bioburden. Placental allografts provide matrix proteins and support wound progression. While incisional management following closure of chronic wounds may benefit from the addition of aseptically processed dehydrated allograft placental mini membrane to assist in optimizing the tissue for surgical healing, the value of optimization of the wound bed may also be beneficial for partial surgical healing with secondary healing as an alternative.

Methods: We present a retrospective review of a series of surgical reconstructive procedures for pressure ulceration over a 2-year period using Aseptically Processed Dehydrated Placental Allograft for Pressure Ulcer Reconstruction. Over the 2- year period 46 patients presented with 62 pressure ulcers, with some patients presenting with multiple ulcers. Forty-four patients underwent surgical reconstruction with closure. One patient who presented on two occasions underwent debridement

without closure because of poor nutritional status. All of the patients who underwent surgical closure except one underwent placement of placental allograft intraoperatively.

Results: Forty-one (93%) of the patients left the hospital with no complications to include infection and or dehiscence. Three patients experienced incisional dehiscence with no evidence of infection and underwent operative closure and/or allowed to heal secondarily.

Discussion: The addition of dehydrated placental allograft placental may improve surgical outcomes in patients undergoing pressure ulcer surgery. The aseptically processed placental tissue without terminal sterilization is known to maintain native matrix proteins, which support wound closure and healing. We found that surgical outcomes were encouraging in the face of chronic inflammation and bioburden as is the case for pressure injury. While some patients experienced dehiscence, these patients were treated successfully with reoperation and or secondary healing.

CR-021

Aseptically Processed Meshed Human Reticular Acellular Dermal Matrix Combined with Dehydrated Placental Allograft in Pressure Ulcer Reconstruction: A Retrospective Review

Michael N. Desvigne, MD, FACS, CWS, FACCWS

Introduction: Flap mobilization is the mainstay of treatment in pressure injury to replace soft tissue loss. Successful outcomes are achieved when there is adequate tissue for transfer. When there is tissue deficiency, procedures may become more challenging, and outcomes may be compromised. Aseptically processed meshed human reticular acellular dermal matrix (HR-ADM) is unique in that it comes from the reticular dermal layer that provides an open network structure to support tissue ingrowth. While these tissue forms are known to assist with secondary healing, this dermal matrix may also be used to support flap transfer.

Methods: We present a retrospective review of a series of surgical procedures for pressure ulceration over a 2-year period using Aseptically Processed Meshed Human Reticular Acellular Dermal Matrix (HR-ADM) combined with Aseptically Processed Dehydrated Placental Allograft for Pressure Reconstruction. Over the 2- year period, 46 patients presented with 62 pressure ulcers, with some patients presenting with multiple ulcers. Forty-four patients underwent surgical closure. Eight patients underwent combination therapy of placental allograft with HR-ADM to serve as a scaffolding for soft tissue support.

Results: Five of the eight patients healed without complications. 1 patient underwent 2 procedures with recurrent pressure injury which we elected to treat with local wound care. The remaining patient also had recurrent pressure injury and was treated non operatively. Both patients experienced wound progression to allow for secondary healing.

Discussion: Meshed HR-ADM has properties that allow tissue integration and incorporation. Patients with soft tissue deficits common in pressure injury requiring flap reconstruction may benefit from meshed HR-ADM combined with placental allograft for additional support to help create additional soft tissue ingrowth to help replace the soft tissue loss in pressure injury.

CR-022

A Backup Plan for Plastic Surgical Reconstruction When Plan a Fails: Use of Aseptically Processed Meshed Reticular Acellular Dermal Matrix in Soft Tissue Reconstruction

Michael N. Desvigne, MD, FACS, CWS, FACCWS

Introduction: Flap mobilization and closure is the mainstay of treatment in soft tissue reconstruction. Successful outcomes are only achieved when there is adequate tissue for transfer. When there is a relative tissue deficiency, needed procedures may become more challenging and complex such as free tissue transfer, and outcomes may be compromised, resulting in flap failure. Aseptically processed meshed human reticular acellular dermal matrix (HR-ADM) is unique in that it comes from the reticular dermal layer that provides an open network structure to support tissue ingrowth and serve as a scaffolding. While these tissue forms are known to assist with soft tissue support for secondary healing or split thickness grafting, this dermal matrix may also be used as an adjunct to flap transfer which may then allow for coverage of vital structures if flap failure occurs, perhaps reducing the need for additional surgery and or more complex procedures.

Methods: We present 5 cases of soft tissue reconstruction where there was a paucity of tissue and or concern for flap failure resulting in exposure of vital structures such as bone, tendon or vascular graft. Wound etiologies included Pressure ulcerations n=3, Full thickness necrosis of the groin n=1, and a Diabetic foot ulcer (DFU) in a poorly perfused lower extremity n=1). Aseptically processed meshed HR-ADM was placed prior to flap inset to serve as a scaffolding to support tissue ingrowth following flap transfer.

Results: Postoperative complications occurred including dehiscence n=4 and flap failure. Despite the complications, incorporation of the meshed HR-ADM allowed delayed primary closure n=2, secondary healing n=3. The DFU case was noteworthy as a failed tarsometatarsal amputation (TMA) that occurred in a poorly perfused lower extremity after the meshed HR-ADM had been placed prior to the TMA. Following flap failure, secondary healing was successful without need for more proximal amputation.

Discussion: Meshed HR-ADM has properties that allow tissue integration and incorporation. Patients with soft tissue deficits requiring flap reconstruction may benefit from meshed HR-ADM for additional support and may serve as a backup to allow for coverage of vital structures. While distant flaps are still considered the standard of care, these procedures may carry a higher risk of complications. The use of meshed HR-ADM in these patients may help create a scaffolding for tissue incorporation to allow for coverage of vital structures, reducing the need for more complex surgical intervention.

CR-024

Experience Using an Autologous Skin Cell Suspension for Healing Lower Leg Wounds

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Introduction: An autologous skin cell suspension(ASCS*) offers a unique alternative to traditional split thickness skin grafting(STSG) by allowing for point-of-care application of an autologous graft in the form of a spray. ASCS* provides uniform and maximal coverage to a wound, reducing donor site size and decreasing the well-known donor site morbidity associated with STSG. This is an initial report of a prospective, triple-arm, study using ASCS* compared to STSG; here we report on the first 10 of 24 patients with lower leg wounds to assess ASCS efficacy in donor site reduction and wound healing as both a singular therapy and in concert with STSG.

Methods: All patients were brought to the operating room for hydrosurgical debridement. In wound beds ready for skin grafting, either ASCS*(RECELL Autologous Cell Harvesting Device, AVITA Medical Inc., Valencia, CA), STSG(meshed 1.5:1), or STSG(meshed 20:1)+ASCS* were applied based on prior stratified randomization into 3 groups based on size: wounds < 40cm2, wounds 40-100cm2, and wounds >100cm2. For all wounds deemed inappropriate for immediate grafting, either a skin substitute or negative pressure wound therapy(NPWT) was applied for 7 days followed by a second grafting procedure when the wound bed was ready. Clinical outcomes, including wound and donor site size, graft take, percent re-epithelialization, scarring, and subjective pain were evaluated weekly over 12 weeks.

Results: 10 patients have been enrolled and were randomized as follows: ASCS*(n=3), STSG(n=6), or ASCS*+STSG(n=1). Initial wound size ranged from 9.2cm2–230cm2. In the STSG arm, 50% of wounds closed by 12 weeks(n=3), with an average time to closure of 4.7 weeks. Of those not achieving closure in the STSG group(n=3), average wound area reduction

was 60.4%. Average WAR in the ASCS* arm by 12 weeks was 51.9%. For the one wound treated with the combination of ASCS*+STSG, wound area reduction was 58% by 4 weeks. All donor sites reepithelialized in an average of 3.8 weeks.

Discussion: ASCS* decreases donor site morbidity and reduces the required donor site size. ASCS* appears to be more effective when used with STSG, although epithelialization has been seen when used alone in the smallest wound size cohort. More experience using this treatment modality is needed for definitive conclusions to be made.

CR-026

Trends in Deep Tissue Injury Prevalence and Incidence Leveraging Digital Wound Care Solutions Data in Skilled Nursing Facilities (2019-2023): A Retrospective Study

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Introduction: The increasing prevalence of deep tissue injuries (DTIs) has put a significant strain on healthcare systems, especially in long-term care settings where vulnerable populations are at a higher risk.1 DTIs are different from other pressure injuries (PIs) by developing internally, often originating in muscle tissue beneath intact skin, which makes early detection challenging and can lead to severe complications such as infection, immobility, and increased mortality.1 In response, healthcare providers have prioritized DTI prevention, and skilled nursing facilities (SNFs) now consider effective DTI prevention a crucial quality measure.2 Digital Wound Care Solutions (DWCS) offer advanced capabilities for early detection, and documentation of wounds, providing opportunities to enhance wound outcomes.3 This study examined trends in DTI prevalence and incidence in SNFs that implemented DWCS from 2019 to 2023.

Methods: A retrospective analysis was conducted leveraging the DWCS dataset from 4,053 SNFs. Data were extracted using Structured Query Language (SQL) and categorized by patient demographics such as age and sex. Admission data was also collected. Chi-squared tests with pairwise comparisons and post-hoc Bonferroni correction assessed associations between patient characteristics and DTI distribution. The dataset comprised 204,706 unique DTI evaluations from 120,689 patients, all documented through DWCS.

Results: Annual DTI prevalence ranged from 5.17% in 2019 to 7.16% in 2021, stabilizing at 6.2% in 2022 and 2023. Older patients (aged 81-90 years) and females exhibited higher DTI rates. Cumulative incidence increased from 4.94 per 100,000 in 2019 to 6.76 in 2021, then decreased in 2022, with a slight rebound to 6.11 in 2023.

Discussion: The surge in DTI incidence during 2020-2021 likely reflects healthcare strain during COVID-19, while stabilization in 2022-2023 suggests improved prevention efforts. These results highlight the importance of digital tools in monitoring DTIs, underscoring the necessity for further research to optimize the technology.

CR-027

Retrospective Analysis of Understudied Real-world Complicated and Persistent Diabetic Foot Ulcers: Use of Retention-processed Placental Membranes vs SOC

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Introduction: Diabetic foot ulcers are a severe complication for diabetic patients, significantly impacting patient quality of life and healthcare systems efficiency. These ulcers often lead to hospitalization and amputation. Traditional Standard of Care treatments are inadequate for many patients, necessitating the use of advanced wound care products, such as human placental membranes. This study conducts a retrospective analysis with real world data to compare the effectiveness of a human placental amnion/chorion membrane product using retention-based processing (RE-AC) versus Standard of Care (SOC) in treatment of chronic diabetic foot ulcers (DFUs). These wounds were complicated and exhibited very hard-to-heal properties. Most studies eliminate these wounds, as they present challenges that are extremely difficult to overcome, leading to non-healing under most circumstances. Fortunately, the retrospective nature of our data and the use of Bayesian statistics allowed us to look at the effect of RE-AC on these very difficult wounds.

Methods: The study collected retrospective observational data from electronic health records (EHRs) of patients treated with retention based processed Amnion/Chorion* (RE-AC) as a wound covering at three outpatient wound care centers. Additionally, synthetic control SOC patients were matched from a wound registry using Coarsened Exact Matching (CEM). Patients were categorized into two cohorts based on whether they received RE-AC or SOC. Key metrics included wound size progression and wound closure. The analysis employed Bayesian regression and Hurdle Gamma Analysis of Variance (ANCOVA) models. Wounds measured on average 13.8 cm2, with the largest at 20.8 cm2. Of the 21 wounds in the study, 7 had osteomyelitis, 4 had other infections, and 1 had undermining. These wounds were present for over 385 days prior to beginning of treatment.

Results: Results indicated that RE-AC achieved approximately 10% higher expected wound closure rate compared to SOC at 12 weeks. Further, for wounds that did not close, RE-AC resulted in approximately 60% expected Percent Area Reduction (xPAR), whereas SOC wounds stalled or grew larger.

Discussion: The findings suggest that RE-AC is superior to SOC when used as a covering for wound treatment This benefit likely leads to reduced treatment costs, optimized resource utilization and improved outcomes in the DFU patient population; ultimately resulting in improved patient care.

CR-028

Successful Treatment of Moderately Ischemic Dfu's Using Intermittent Topical Oxygen (TWO2)

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Introduction: This study evaluated intermittent topical oxygen therapy (TWO2) in the treatment of moderately ischemic DFU's.

Methods: Patients included in this study were part of a post hoc analysis of a randomized prospective double-blind study that evaluated TWO2 in treating DFU. Inclusion criteria were as follows: diabetic patients with nonhealing, full-thickness DFUs measuring between 1cm2 < UT grade 1 or 2 DFU < 20 cm2 post debridement. The duration of the DFU was between 4 weeks and 1 year and all had received standard care for at least 4 weeks. Patients received the same foam dressings, a below knee offloading device, equivalent to TCC and optimal standard care. Patients who then failed a 2-week run-in period received either a TWO2 or sham device, both devices looked and operated identically. Moderate ischemia, according to IWGDF criteria, as defined as anyone or combination of the following ABI ≥ 0.7, TBI < 0.75, monophasic biphasic Doppler waves below the knee, TCPO2 < 60, great toe pressure < 60 or skin perfusion pressure < 60.

Results: 18 patients each were included in the study group and sham group. At 12 weeks, 7 of 18 patients (39%) in the TWO2 healed completely compared to 0 of 18 patients (0%) in the sham group ($p < 0.0076$).

Discussion: This randomized study demonstrated that moderately ischemic diabetic foot ulcers had significantly higher healing rates using TWO2 than the sham treatment. TWO2 provides a multimodal approach to achieve higher healing rates by increasing oxygenation, providing non-contact compression and humidification.This randomized study demonstrated that moderately ischemic diabetic foot ulcers had significantly higher healing rates using TWO2 than the sham treatment. TWO2 provides a multimodal approach to achieve higher healing rates by increasing oxygenation, providing non-contact compression and humidification.

CR-029

Impact of Digital Wound Care: A Pilot Study at Giishkaandago'ikwe Health Services

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Introduction: Chronic wounds impose high physical, psychosocial burden on patients and costs on healthcare systems. 1 Artificial intelligence (AI)-based systems have been developed with capabilities including measuring wound dimensions to provide objective wound tracking and support wound care decision-making.2 However, their real-world impact on clinical outcomes and operational efficiency remains unexplored. 3 This study aims to evaluate the impact of an AI-driven digital wound care solution (DWCS) on clinical and operational outcomes for the indigenous First Nation community served by Giishkaandago'Ikwe Health Services.

Methods: This retrospective benefits evaluation study analyzed clinical and operational outcomes of the DWCS in Giishkaandago'Ikwe Health Services from February 2022 to December 2023. Leveraging the comprehensive and clinically validated DWCS database, the study compared performance metrics immediately following the implementation of a digital wound care solution (Year 1, February – December 2022) to outcomes one year later (Year 2, February – December 2023). Clinical outcome metrics included median days to heal and number of newly acquired wounds during management. Operational outcome metrics included visits per wound, evaluations completed within 24 hours and nursing staff optimization.

Results: A total of 202 patients (59% male, 41% female) comprising 380 wounds and 3,194 wound evaluations were analyzed. The most common wound types included pressure injuries (18.9%, 72/380), surgical wounds (18.7%, 71/380) and diabetic ulcers (17.6%, 67/380). Clinical outcomes included a 20% reduction in median days to heal and a 2.9% reduction in newly acquired wounds while under management. Operationally, there was a 12.8% reduction in the number of visits per wound, translating into ~$91,529 in cost savings. There was also a 9.7% increase in the proportion of wound evaluations documented, reviewed and completed within 24 hours. Additionally, there was a 9% increase in the utilization of registered practical nurses (RPNs) for wound assessments, allowing registered nurses (RNs) to dedicate more time to high-risk patients.

Discussion: The AI-based digital wound care system substantially improved clinical and operational outcomes for Giishkaandago'Ikwe Health Services and the communities it serves, potentially by improving wound tracking, monitoring and workflow efficiency.

CR-031

Nursing Staff Perceptions of a Pressure Injury Prevention Protocol Incorporating a Silicon Border Super-absorbent Polymer Dressing in Long-term Acute Care Setting

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Introduction: Approaches to preventing sacral pressure injuries in Long-Term Acute Care (LTAC) hospitals may include complementary interventions such as manual rotation, pressure reducing devices, topical agents, and, more recently, dressings. This abstract describes nursing staff perspectives of a pressure injury prevention protocol including a sacrum-shaped, multi-layer, silicone super-absorbent polymer dressing.

Methods: A prospective, non-comparative clinical investigation was conducted to assess the tolerability and convenience of super absorbent polymer dressings for pressure injury prevention, using surveys completed by both patients and nursing staff. This abstract focuses on the results from the surveys of nursing staff who applied the dressings to patients at high risk of developing pressure ulcer, according to the Braden scale. Dressing replacement was performed at the discretion of the clinical staff but no less than once every 7 days. Nursing staff completed surveys evaluating their perceptions of dressing characteristics including comfort, application and removal ease, coverage of the dressing, ability of the dressing to stay in place, and their overall impression of the dressing. All questions were assessed on a 5-point Likert scale ranging from 1 (very poor) to 5 (excellent).

Results: From 1/2024 to 8/2024, 22 nursing staff involved in the dressing protocol were surveyed. During this time, 28 patients participated in the dressing protocol. Nursing staff unanimously reported that the ease of the dressing application and removal was good-excellent. The ability of the dressing to stay in place was rated highly, with a median response of 4 (very good) and 75% of nursing staff reporting values between 3 and 5 (good-excellent). For overall satisfaction, over 95% of nursing staff reported that the dressings were good to excellent.

Discussion: In this interim analysis of our ongoing study, sacral dressings were successfully integrated into a pressure injury prevention protocol in a high-risk population of patients admitted to a LTAC. Nursing staff successfully integrated the dressings into their protocol and reported positive experiences and perceptions.

CR-032

Interim Results from a Non-comparative Clinical Investigation Evaluating Tolerability of a Pressure Injury Prevention Protocol Incorporating a Silicon Border Super-absorbent Polymer Dressing in Long-term Acute Care Setting

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Introduction: Among patients in Long Term Acute Care (LTAC) hospitals, prevention of sacral pressure injuries requires clinical diligence due to prolonged immobility and higher prevalence of urinary and bowel incontinence. Approaches to preventing sacral pressure injuries may include complementary interventions such as manual rotation, pressure reducing devices, topical agents, and, more recently, dressings. The purpose of this study was to describe tolerability and effectiveness of a sacrum-shaped, multi-layer, silicone super-absorbent polymer dressing.

Methods: We conducted a prospective, non-comparative clinical investigation with qualitative endpoints. Patients receiving the dressing were evaluated and designated as high risk of developing sacral pressure injuries according to the Braden Scale or any other tool routinely used in the site. Dressing replacement was performed at the discretion of the clinical staff but no less than once every 7 days. Surveys of patients were conducted at baseline, at each dressing change, and upon exit from the study.

Results: From 1/2024 to 8/2024, 28 patients consented to participate in the dressing protocol. The median age of the participants was 60 (min 22, max 86) and the most common primary diagnoses included post-transplant (n=8), respiratory failure (n=7), and malignancies (n=6). The median Braden Score at baseline was 15 (interquartile range: 14-17). The average duration of use was 18 days consisting of 6 dressing changes. No pressure injuries were observed. Reasons for discontinuation included discharge (n=20), request due to study burden (n=2), and request due to discomfort (n=3). One patient discontinued due to an emerging serous-filled blister. Among patients completing an exit assessment, 87% reported that their overall experience with the dressing was good to excellent.

Discussion: In this interim analysis of our ongoing study, sacral dressings were successfully integrated into a pressure injury prevention protocol in a high-risk population of patients admitted to a LTAC. No precure injuries occurred in our intervention group and the intervention was reported to be tolerable by most participants. Patient accrual and follow-up will continue to further evaluate the tolerability and effectiveness of sacrum-shaped, multi-layer, silicone super-absorbent polymer dressing in the LTAC setting.

CR-033

Speed and Efficiency: Advancing Mobile PAD Assessment with Digital Volume Plethysmography

Dr. Daniel Hallman, DPM, MS, CWS; Hugh Richardson, DPM; Ashley Meusa, DPM; Bill Releford, DPM; Lacey Bauer, MS – Research Assistant in Clinical Services, Clinical Services, The Wound Pros; Tanyikka Tinnon, MAOM; Terry Dupre, BS; Robert Frykberg, DPM, MPH

Introduction:

Peripheral Artery Disease (PAD) impairs limb perfusion and complicates wound healing, particularly in elderly populations. Early detection of PAD is crucial for guiding therapy and improving outcomes. Traditional tools like the Ankle-Brachial Index (ABI) and Toe Systolic Pressure (TSP) have significant limitations, including poor sensitivity in calcified vessels, operator variability, and extended test durations. Digital Volume Plethysmography (DVP*) offers a faster, non-invasive alternative. This study evaluates the effectiveness, speed, and feasibility of DVP compared to ABI and TSP in mobile wound care settings for point-of-care decisions.

Methods: Mobile wound care clinicians performed DVP, ABI, and TSP during the same patient visit. Tests were timed independently to assess efficiency. Data underwent Box-Cox transformation to achieve near-normality. Statistical analyses included Shapiro-Wilk and D'Agostino tests, Pearson's and Spearman's correlations, ANOVA, Kruskal-Wallis, and Mann-Whitney U tests. Non-inferiority testing utilized Two One-Sided Tests (TOST) with p-values, effect sizes, and confidence intervals. Regression analysis was performed to examine the relationship between test results, ensuring validity through residual plots and multicollinearity checks.

Results: N=51 participants (95 extremities) with an average age of 72. DVP consistently demonstrated faster completion times (mean: 3.79 minutes) compared to ABI (mean: 8.96 minutes) and TSP (mean: 6.00 minutes). DVP was non-inferior to ABI, with a mean difference of -0.021 ($p < 0.05$ for the lower bound TOST). The DVP method had fewer limitations, required less specialized equipment, and avoided issues such as painful cuffs, poor sensitivity for mild PAD, operator variability, and severe PAD challenges.

Discussion: DVP offers a practical, reliable, and time-efficient solution for PAD detection in mobile wound care settings. Unlike ABI and TSP, DVP minimizes patient discomfort and operational challenges, facilitating rapid point-of-care decisions. Its ease of use allows clinicians to promptly evaluate limb perfusion, initiate appropriate treatments—such as debridement and biologics—and make timely referrals for vascular evaluation. Further research is planned to evaluate DVP's broader application across diverse chronic wound types and its long-term impact on patient outcomes. This study underscores the potential of DVP as a transformative tool in mobile wound care, enabling improved accessibility to vascular assessments and reducing complications associated with delayed PAD detection.

CR-034

Predicting Discharge Walking Ability in Diabetic Foot Ulcer Patients Using Machine Learning

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Introduction: Diabetic foot ulcer (DFU) are a common complication of diabetes, significantly impacting mobility and quality of life. Assessing walking ability at discharge provides a critical measure for rehabilitation success. This study leverages machine learning techniques, decision trees to identify factors influencing discharge walking ability and improve predictive accuracy.

Methods: A retrospective investigation examined 303 patients admitted for DFU treatment from April 2021 to March 2023. The study collected data on various factors, including demographic characteristics (such as age and gender), clinical parameters (such as albumin and HbA1c levels), comorbidities (including neuropathy and ischemia), wound characteristics (such as location and infection severity), and rehabilitation interventions (encompassing gait training and activities of daily living exercises). Walking ability at discharge, the primary outcome, was categorized into three classes consistent with the **results:** Class 1: Unable to walk, Class 2: Able to walk with assistive devices, Class 3: Independent walking. A decision tree model was developed using an 80-20% train-test split. Missing values were imputed, and continuous variables were normalized. Model performance was evaluated using accuracy, F1-score, and area under the curve (AUC). Feature importance was analyzed to identify key predictors.

Results: "Walking training content" was identified as the most influential factor, followed by "walking ability FIM score at discharge," "ADL_BI score at discharge," and "baseline walking ability." Intensive walking training and higher FIM scores were associated with independent walking. Shorter hospital stays benefited patients with higher initial walking capacity. The model achieved an accuracy of 80.3%, an F1-score of 79.5%, and a macro-average AUC of 0.894. Class-specific AUCs were 0.916 for Class 1 (unable to walk), 0.852 for Class 2 (walking with assistive devices), and 0.916 for Class 3 (independent walking).

Discussion: Focused rehabilitation strategies, including walking training and functional independence improvements, are crucial for enhancing discharge walking ability. Nutritional status, reflected by albumin levels, further influences outcomes. A multidisciplinary approach integrating physical therapy, nutritional support, and individualized discharge planning is essential. Machine learning provides a reliable framework for predicting walking ability, supporting data-driven, personalized rehabilitation strategies. Future studies should validate these findings in larger cohorts to refine clinical applications.

CR-035

Retrospective Analysis of Wound Management and Pressure Injury Prevention Performance Outcomes from Using a Non-adhesive Foam Dressing as Part of an Integrated Care Bundle

Theresa A. Hurd, PhD RN MScN ACNP; Sophie Berry, BSc (Hons); Julie Murdoch, PhD

Introduction: Medical adhesive-related skin injuries are defined as to skin damage caused by the use of products containing a medical adhesive1. Patients with fragile and/or sensitive skin, may require use of low or non-adherent dressings to help reduce the risk of damage. Integrated care bundles (ICBs) are interventions that used together synergistically improve wound care outcomes. This study assessed wound management outcomes and impact on pressure injury (PI) prevention protocols using a non-adhesive foam dressing as part of an ICB.

Methods: A comprehensive wound care program using ICBs was implemented at two large healthcare organizations in Ontario, Canada in December 2015, and its progress was tracked until March 2018. Anonymized patient data were analyzed retrospectively.

Results: 4,421 patients with chronic wounds received an ICB including a non-adhesive foam dressing; 2,242 patients did not receive an ICB. With use of the ICB including a non-adhesive foam dressing versus no ICB: mean time to healing was shorter (12.7 vs 25.5 weeks), mean time between dressing changes was longer (3.1 vs 1.9 days), and mean Bates-Jensen Wound Assessment Tool (BWAT) Score was lower (27.4 vs 33.2) at end of treatment. Mean labour costs were lower with use of the ICB including a non-adhesive foam dressing (CAD 1,766 vs 6,488; $p< 0.05$). 466 patients received the ICB including a non-adhesive foam dressing for PI prevention and 98.4% achieved treatment goal at discharge. No adverse events related to the non-adhesive foam dressing were reported.

Discussion: Use of an ICB incorporating this non-adhesive foam dressing improved wound management outcomes and reduced mean labour costs compared with not using an ICB.

CR-036

A Retrospective Cohort Analysis of Patients Treated with a Three-layer Acrylic Adhesive Foam Dressing as Part of an Integrated Care Bundle for the Management of Wound Exudate in Chronic Wounds

Theresa A. Hurd, PhD RN MScN ACNP; Catherine McCarthy, BSC (Hons), PGDip, DN, RGN; Julie Murdoch, PhD

Introduction: Chronic wounds present a significant challenge to patient quality of life and to the financial management of healthcare organizations1 . The aim of this retrospective, real world, cohort analysis is to report the clinical and economic outcomes of an Integrated Care Bundle (ICB) that utilized a 3-layer acrylic adhesive foam dressing for exudate management across multiple chronic wound types within a community setting in Canada.

Methods: Analysis of the safety and effectiveness of an introduction of wound centered ICB's which were adopted to improve the management of chronic wounds, from March 2015 to December 2018. Outcomes were compared from patients who received a 3-layer acrylic adhesive foam dressing alongside an ICB against those that did not, as part of their care.

Results: Patients who received care with an ICB and the 3-layer acrylic adhesive foam dressing (n=3678) experienced improved clinical outcomes, compared with those who did not (n=2242). Including faster time to healing (11.8 vs 25.4 weeks, respectively). There were reduced number of nursing visits in the ICB cohort which led directly to reduced resource costs, compared to the patients in the non-ICB cohort (CAD$1722 vs $6488, respectively).

Discussion: This real-world cohort analysis demonstrated the adoption of an ICB that included treatment with a 3-layer acrylic adhesive foam dressing, improved clinical outcomes, reducing chronic wound healing times and the frequency of wound dressing changes.

CR-037

Case Series Leads to Randomized Controlled Trial (RCT): Building Evidence-based Medicine in Contemporary Tissue Scaffold Research

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Introduction: Managing increasingly complex tissue defect wounds optimally remains challenging. Feasibilities utilizing flaps can be limited, nor are all able to make commitments for them. Failure rates for traditional paradigms can range from 5 – 10%. Meanwhile increasing Cellular & Acellular Matrix Product (CAMPs) technologies continue to improve in their effectiveness and can preserve options. Our on-going case series suggest incorporating CAMPs, such as this acellular porcine liver scaffold* have positive outcomes. We have learned that such better CAMP's alternatives are welcomed by both patients and staff. However, these techniques need existing data converted into more rigorous, validating RCT's. We report herein our conversion from case series work to a prospective RCT development to better study how existing conventional treatments can be properly augmented with an acellular porcine liver scaffold.*

Methods: We developed an IRB approved, prospective observational data collection project to examine the utility of incorporating acellular porcine liver* as a tissue scaffold placed for clinical care. We consented and used both conventional encounters and enhanced digital photography to capture the additional benefits for patients receiving these tissue scaffolds and their optimal placement and performances across a wide variety of complex, hard-to-heal wounds.

Results: Accumulating data continue to demonstrate this acellular porcine liver scaffold* has multi-levelled merit for patients with difficult to manage, complex and hard-to-heal wounds. Developmental support was needed to properly develop an IRB approved prospective RCT with adequate equipoise that could generate data sufficient to move into evidence-based practices in our academic multi-specialty surgical practices, if not more widely applicable to other wound care practices.

Discussion: An RCT is needed to better study the value of this acellular porcine liver scaffold* in the treatment of hard-to-heal wounds of the pelvis and lower extremity. We selected both more acute wounds from fasciotomies as well as previously infected wounds of the pelvis and lower extremities to better organize relevant variables and yet accommodate common subset populations such as DFU patients. Rates of closure remain highly variable and suggest the need for further clinical and basic science cellular analyses.

CR-039

Antimicrobial PHMB Dressings: A Solution for Pain Reduction During Healing

Alex Lawton – Advanced Medical Solutions

Introduction: Wound management is often accompanied by significant pain, which can impede healing and affect patient quality of life. Traditional dressings may address infection but fail to prioritize pain reduction. This study evaluates a novel wound dressing containing polyhexamethylene biguanide (PHMB), which is designed to reduce microbial load, promote healing, and minimize pain. Its innovative design aims to provide a gentler healing experience, reinforcing the principle that healing shouldn't hurt.

Methods: A multi-center observational study was conducted involving 184 patients with acute and chronic wounds. Pain levels were assessed using a validated 10-point visual analog scale (VAS) at dressing application, removal, and throughout the treatment period. Wound progression and symptoms of infection were monitored through weekly visits and photographic documentation over a four-week period.

Results: Patients treated with the PHMB dressing reported significantly lower pain scores throughout healing (Start mean VAS: 4.6) compared to (exit mean VAS: 0.6; $p < 0.0001$). The results demonstrate that the PHMB dressing enables wound progression and providing a systematic approach to removing the barriers to healing. The mean total wound area (cm2) changed from 48.2cm2 at baseline to 11.7cm2, it was a change of -36.5 (95% CI of the mean [33.5,62.9] at baseline, [7.9, 15.6] at endpoint). The tissue types and wounds aetiologies showed improvement with a reduction in the percentages of necrotic and sloughy tissue in the wound bed and an increase in epithelial tissue. A reduction in the signs and symptoms of infection was also found.

Discussion: The PHMB dressing demonstrated dual benefits: effective antimicrobial action and significant pain reduction throughout healing. These findings suggest that incorporating PHMB into wound care may address two critical patient concerns—pain and infection—without compromising healing outcomes. This dressing represents a promising alternative for pain-conscious wound management, reinforcing patient trust and adherence in care pathways.

CR-041

Effect of Closed Incision Negative Pressure Therapy in the Management of Complications and Costs Following Caesarean Section in South Africa

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Introduction: Caeserean section (CS) rates are growing globally. Current rates of 21.5% are expected to increase to 28.5% by 2030. The global incidence of surgical site infections (SSI) following a CS is 5.6% with the African region highest with a rate of 11.91%. This study aimed to examine the effect of closed incision negative pressure therapy (ciNPT*) in reducing surgical site complications and healthcare utilization in South Africa following CS.

Methods: This retrospective study was conducted utilizing a large, South African, private health insurance claims database. A propensity matched cohort of 44 patients receiving ciNPT or standard of care (SOC) for CS from

2018-2022 was created. Differences in multiple clinical and health economic outcomes were compared between ciNPT and SOC using t tests.

Results: The overall surgical site complication (SSC) rate in the ciNPT group was lower at 0 cases (0.0%) compared to 4 cases (9.1%) in the SOC group (p=0.041). The average length of hospital stay was lower in the ciNPT group vs. SOC (4.1 vs. 5.5 days, p=0.008) resulting in significantly lower average admission cost ciNPT vs. SOC (R85,392 vs. R119,747, p=0.017). The percentage of total admissions with an intensive care unit (ICU) stay was lower in the ciNPT group vs. SOC (2.3% vs. 18.2%, p=0.014) resulting in a reduction in average ICU admission cost for the ciNPT group vs. SOC (R7,346 vs. R51,584, p=0.02).

Discussion: The data suggests ciNPT may reduce wound-related healthcare utilization and costs in the management of caesarean sections in South Africa.

CR-042 (RPT-004)

Post-moh's Wound Healing in a Pilot Study of a Novel Axolotl Regenerative Tissue

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Introduction: This pilot study of 10 patients with non-healing post-Moh's surgical excisions consisting of 7 squamous cell carcinomas and 3 basal cell carcinomas. The use of a novel Axolotl tissue, from the skin of salamanders, was utilized in the process of healing these non-healing surgical wounds. The axolotl has innate attributes for scar free healing of skin wounds, can regenerate limbs and organs (including heart, spinal cord, and brain), and is one of only a few vertebrate animals capable of regeneration throughout its life1,2. The axolotl is the oldest, self-sustaining laboratory animal having been bred in captivity and studied for over 150 years.3 This animal has regenerative capabilities that remodel, regrow, and restore damaged tissue with results superior than those seen in human tissue repair. This pilot study hypothesizes the use of a new Axolotl tissue graft for use in post-Moh's non-healing surgical sites with accelerated healing reponse.

Methods: Each patient identified and qualified for the pilot study had successively failed 4 weeks of conservative therapy. All patients underwent ABI screening and nutritional assessment. Weekly applications to the target wounds were identified and measured via CarePICS®. Vascular assessment post-ABI and prior to applications were perfomed via Near-infrared spectrograhic imaging via the Kent SnapShot IR® device. Wounds were then debrided via sharp surgical technique with removal of non-viable necrotic tissue. NeoMatrix® Tissue Matrix was then applied to the target wound site and anchored with 1/2" steri-strips. Top dressing applied and patients seen weekly.

Results: The results of this trial were sensitive to the relative initial wound sizes and healing outcomes. The median age of the data set was 81.2 years old. There were 8 Caucasian and 2 Hispanic patients. 7 of the patients were female, 3 male. Overall, the average number of applications for the 10 patient population was 2.8 with a starting mean wound size of 2.98 cm2. Average ABI for all 10 patients was 1.08. Average wound size at 4 weeks was 0.66cm2. 4 wounds were closed by week 4, 4 wounds at week 5, 1 wound at week 6 and 1 wound at week 8.

Discussion: The use of a new novel Axolotl tissue matrix while new to the wound healing community, has advantages of regenerative capabilities that are only minorly demonstrated in this early pilot trial.

CR-043

Impact of a Nitric Oxide-generating Treatment in Diabetic Foot Ulcers Segmented by Infection Status and Wound Age: A Post-hoc Analysis

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Introduction: Diabetic foot ulcers (DFUs) are a frequent and serious complication for patients with diabetes, which significantly impact patient quality of life and pose a substantial burden on healthcare systems. Nitric oxide (NO) represents a promising therapeutic agent for the management of DFUs, due to its antimicrobial properties and ability to target mechanisms integral to biofilm survival. The aim of this post-hoc analysis was to evaluate the effectiveness of a novel NO-generating wound dressing*, on the healing rates of infected DFUs segmented by infection status and wound age.

Methods: A post-hoc analysis of the ProNox1 randomised controlled trial1. The study involved treatment with either the NO-generating wound dressing* or Standard of Care (SoC), for 12 weeks or until the DFU had healed, and a further 12-week follow-up period. The impact of local infection status and wound age on the number of DFUs healed in the intention to treat (ITT) cohort were assessed.

Results: Of the 149 DFUs in the ITT cohort, 38/74 (51%) in the NO-generating dressing arm and 39/75 (52%) in the SoC arm were complicated by signs of infection at baseline. At week 12, healing rates in the infected DFUs were 36% vs 21% (NO-generating dressing arm vs SoC) and 35% vs 30% in those without infection. The healing trajectory continued in the NO-generating dressing arm, with 43.6% of DFUs healed by week 14, but no further improvement was seen in the SoC arm beyond week 12. In wounds ≤12 weeks in age, the healing rate in the treatment period was 52% for the NO-generating dressing arm and 22% for SoC. The healing rates increased in the follow-up period in both groups with 57% (NO-generating dressing arm) and 30% (SoC arm) of DFUs healed. In DFUs >12 weeks of age, the healing rates were the same for both arms: 25% in the study period and 30% at final follow-up. When segmented by the presence of local infection, the healing rate for the NO-generating dressing arm was 35% at final follow-up compared with 18% for SoC.

Discussion: This sub-analysis of the ProNox1 study data demonstrated the ability of the NO-generating wound dressing to improve the DFU healing rate in wounds of < 12 weeks of age and of infected wounds, compared with SoC.

CR-046

Results of a Clinical Study Utilizing a Novell Contemporary Designed Medical Device for the Prevention and Treatment of Hospital Acquired Pressure Injuries

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Introduction: Hospital acquired pressure injuries affect approximately 2.5 million individuals every year , in United States acute care facilities. These wounds represent an enormous burden on global healthcare from both a patient care and a budgetary perspective. Currently, there is a gap in the landscape of devices available for prevention and treatment of these lesions. There exist many shortcomings that range from inefficient offloading to cumbersome design. The HeelSphere is a newly patented medical device that is cost effective and efficiently provides offloading of the foot and ankle to prevent and treat these injuries.

Methods: An IRB approved user study was implemented at our community hospital setting. It involved 28 patients. Two different density devices were utilized and randomized assigned within the protocol. Patients were monitored for 72 hours to assess the effectiveness of the device. Our investigator collected various datas points, including but not limited to the offloading distance of the heel to the bed surface, as well as the position of the device with relationship to the distance from the malleoli. Observation for any skin change or reaction

secondary to the use of the device was documented as well.

Results: Based on the data collected and evaluated by our statistician, the device proved suitable for use for offloading of the foot and ankle. The HeelSphere statistically provided effective heel offloading. In 93% of the patients the device proved to be comfortable. Throughout the study, there were no reported skin conditions or medical device related tissue injuries as a direct result of the utilization of this device. Data collected from HCP indicated that the device was easy to use and provided effective offloading.Slight variation was seen between the two densities with reference to surface cracking. (BMI relationship).

Discussion: This newly patented device provides efficient offloading

and can be effectively used in the treatment and prevention of HAPIs. Based on its global design it allows for motion of the leg. It is strapless , orange in color, easy to apply, compatible with compressors, facilitates easy observation, lightweight, allows for air flow, and has sensor capabilities. Allowing for easier healthcare access to the wounds and allowing patients to turn in their beds without compromising offloading.The device is also vacuum packaged allowing for easier accessibility .

CR-047

Impact of a Nitric Oxide-generating Wound Dressing in Diabetic Foot Ulcers in Patients Receiving Antibiotics: Post-hoc Analysis

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Introduction: Diabetic foot ulcers (DFUs) are a prevalent and serious complication of diabetes, which result in poor patient quality of life and substantial economic burden. Nitric oxide (NO) within a wound dressing represents a promising treatment for the management of DFUs, due to NO's inherent antimicrobial properties. The purpose of this study was to evaluate the impact of a novel prototype NO-generating wound dressing*, compared with standard of care (SoC), on DFU wound healing in patients that were receiving antibiotics.

Methods: A post-hoc analysis of the ProNox 1 randomized controlled trial of a NO-generating wound dressing* compared to SoC was performed to determine the impact of NO-generating wound dressing* on DFU healing outcomes in patients receiving antibiotics at commencement and/or during the study. The study was conducted in 10 UK wound care centres, and primary endpoint analysis has been reported (Edmonds et al, 2018)1. The primary efficacy measure of this post-hoc analysis was DFU percent area reduction (PAR) at 12 weeks. A secondary efficacy measure was number of DFUs completely healed at 12 weeks.

Results: Of the 135 patients in the study, 71 (53%; 34 in SoC group; 37 in NO-generating wound dressing* group) were treated with 29 different antibiotics. At final assessment, the mean PAR was 48.7% in NO-generating wound dressing*-treated wounds, compared to 19.8% in the SoC group; a 59% greater PAR in NO-generating wound dressing* group. The number of healed (100% PAR) DFUs in the NO-generating wound dressing* was 14/37 (38%) and in the SoC group was 9/34 (26%).

Discussion: This sub-analysis demonstrates the ability of a NO-generating wound dressing* to improve DFU healing outcomes in patients that we being treated with antibiotics, compared with SoC.

CR-048

Moisture-associated Skin Damage in Hidradenitis Suppurativa: Prevalence, Risk Factors, and Management Strategies

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Introduction: Hidradenitis suppurativa (HS) is a chronic inflammatory skin condition characterized by painful nodules, abscesses and scarring, primarily affecting apocrine gland-bearing areas. The risk of Moisture-Associated Skin Damage (MASD) in patients with HS is significant due to persistent moisture from sweat, exudate from lesions, and chronic inflammation. This study aims to explore a novel type of MASD, specifically associated with HS, focusing on the underlying mechanisms, clinical implications and management strategies.

Methods: We evaluated 100 patients with HS, followed by the Department of Dermatology of Pisa, Italy, from June 2024 to November 2024. For each patient, we assessed the current or past presence of MASD, clinical Hidradenitis Suppurativa Severity Score System (IHS4), anamnestic characteristics (sex, age, BMI) and the presence of active HS lesions at the MASD site. Univariate and multivariate analysis were performed in order to understand which anamnestic and clinical features were associated with the presence of MASD.

Results: We enrolled 100 patients, 33 were males and 67 were females. The mean age was of 35,63 years (sd:14), mean BMI of 27.18 kg/m2 (sd: 6,2). According to IHS4, 37 patients, 29 patients and 34 patients were affected by a mild, moderate and severe form of HS, respectively. Univariate and multivariate analysis of risk factors for MASD development revealed an increased incidence of MASD in patients with higher BMI (OR: 1.09, p value: 0.03) and patients with higher disease severity according to IHS4 (OR: 2.05 p value: 0.016). Additionally, we observed that active HS lesions are more frequently detected in subjects with current presence of MASD compared to subjects without MASD of the skin folds. The calculated Chi-square value was 10.296, with a p-value of 0.0013, indicating a highly significant correlation between the presence of MASD and active HS lesions.

Discussion: The constant moisture environment, caused by HS draining lesions, leads to maceration, erosion, and secondary infections, exacerbating skin damage. Early recognition and targeted management of MASD are crucial in the comprehensive care of HS patients. Strategies include maintaining a dry skin environment through the use of absorbent dressings, optimizing wound care protocols, and employing barrier-protecting agents in perilesional skin. Addressing the underlying inflammatory component of HS with systemic and topical therapies is crucial in reducing moisture and preventing recurrent lesions. In conclusion we advocate for the inclusion of MASD associated with HS into the classification of MASD, highlighting the importance for targeted and specific prevention and management plan.

CR-049

Epidemiology of Pyoderma Gangrenosum in Italy: Temporal Trends and Impact of the COVID-19 Pandemic

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Introduction: Pyoderma gangrenosum (PG) is a rare, ulcerative neutrophilic dermatosis that has shown fluctuating incidence over time. This study analyzes the epidemiology of PG in Italy from 2009 to 2024, with particular attention to trends in new diagnoses and the potential impact of the COVID-19 pandemic.

Methods: Data were collected from four Italian centers (Pisa, Milan, Bologna, and Turin) and included total annual diagnoses, gender distribution, and patient age. The analysis highlights temporal trends, comparing pre-pandemic (2009-2019), pandemic (2020-2022), and post-pandemic (2023-2024) periods.

Results: Between 2009 and 2024, PG cases exhibited an overall increasing trend, particularly after 2013. In 2020, there was a noticeable decrease in PG diagnoses across all centers, reflecting the challenges posed by the COVID-19 pandemic. However, diagnoses were still reported (Pisa: 0 cases; Milan: 2 cases; Bologna: 2 cases; Turin: 1 case), indicating some

level of continued healthcare access. Diagnoses increased further in 2021 (Pisa: 5 cases; Milan: 9 cases; Bologna: 5 cases; Turin: 4 cases), with a sharp rise observed in 2022 (total: 29 cases), surpassing pre-pandemic levels. Gender distribution remained consistent, with a predominance of female patients. The mean age of diagnosis varied slightly among centers but showed no significant shift across the study period.

Discussion: PG diagnoses have increased significantly since 2021, possibly due to resumed post-pandemic activities or an actual rise in disease occurrence. The testing of vilobelimab (IFX-1), a complement C5a inhibitor, for both COVID-19 and PG suggests shared immunological pathways involving neutrophilic activity and complement system activation. Connections between COVID-19 and PG exacerbation underscore the need to monitor individuals with neutrophilic dermatoses during and after COVID-19 infection or vaccination.

FIRST-TO-PODIUM RESEARCH

CR-050

Evaluation of Topical Pravibismane in Moderately Infected Diabetic Foot Ulcers: Safety, Tolerability, and Efficacy Outcomes in an Exploratory Phase 2 Study

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Introduction: Diabetic foot infections (DFIs) are a major cause of diabetes-related hospitalizations and lower limb amputations. Pravibismane, the first drug in a new class, offers broad-spectrum anti-infective, anti-biofilm, and anti-inflammatory effects, potentially enhancing wound healing compared to standard of care (SoC) alone. This study aimed to assess the safety and tolerability of a 12-week course of topical pravibismane in subjects with moderate DFI, while selected secondary efficacy endpoints included complete wound closure and wound size reduction.

Methods: This Phase 2, randomized, open-label, controlled study involved adult subjects with a moderately infected DFU ≥4 weeks old. Forty-seven subjects were randomized 2:1 to receive topical pravibismane (formerly MBN-101) plus SoC or SoC alone. The pravibismane group received topical pravibismane three times per week for up to 12 weeks.

Results: Median age of subjects was 55.5 years and were mostly male. The DFI median wound size was 3.4 cm^2 with a median duration of 96.5 days. More subjects in the pravibismane group had a history of ≥2 prior amputations (30.0% vs. 6.3%) and higher stages of CKD (26.7% vs. 12.6%). No safety concerns were identified for pravibismane when applied topically for 12 weeks. All treatment-emergent adverse events and serious adverse events were unrelated to the study drug. Pharmacokinetic data showed no absorption or accumulation of pravibismane or its metabolites. At end of treatment, an unadjusted analysis of subjects showed that 46.7% in the pravibismane arm achieved complete wound healing versus 31.3% in the SoC arm, a 15.4% difference favoring the pravibismane group (p=NS). The treatment difference was lower when adjusted for wound area. Conversely, an unadjusted ad-hoc analysis of subjects who did not receive systemic antibiotics as part of SoC showed a 32.6% treatment difference favoring the pravibismane arm (p=NS). At EOT, the median percent reduction from baseline in wound area was greater in the pravibismane arm (-98.5%) compared to SoC alone (-65.7%) (p=NS).

Discussion: Topical pravibismane was safe and well-tolerated over 12 weeks of treatment. While the study was not powered for statistical efficacy, pravibismane showed a numerical advantage over SoC in complete wound closure and other efficacy endpoints. These results will guide future studies.

CR-051

A Prospective, Multi-centre, Post-market Clinical Follow-up Study to Evaluate the Safety and Effectiveness of a Three-layer Silicone Adhesive Foam Dressing

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Introduction: Both chronic and acute wounds require suitable management with an appropriate dressing to ensure the healing process occurs effectively1. The primary objective of this (post market clinical follow up (PMCF) study is to demonstrate the clinical performance of a three layer silicone adhesive foam dressing as measured by reduction in the size of the wound area (cm2) over a 4-week treatment period, in subjects with chronic and acute wounds. In addition to the reported primary and secondary endpoints, the overall benefits observed for patients, with specific focus on 7 patient case studies reported.

Methods: Between March 2019 and November 2021, forty eligible patients across 6 sites with either a chronic or acute wound, were enrolled in a prospective, single-arm, clinical study. Patients received treatment with a foam dressing for up to 4 weeks. Outcomes reported included: the change in wound size, dressing wear time, and patient reported outcomes.

Results: Wounds treated in the modified Intention to Treat (mITT) study population demonstrated a significant median area reduction of 2.2 cm2 from baseline to 28 days (p=0.002) and a significant percentage median area reduction of 47.0% (p< 0.001). Exudate levels were managed effectively, with a reported mean wear time of 4.5 days. Patients experienced a positive impact on their overall quality of life and wellbeing from baseline study visits to end of treatment. This PMCF study supports the use of a three-layer silicone adhesive foam dressing and has demonstrated its safe and effective use in the management of chronic and acute wounds.

Discussion: The use efficacy and safety of a three-layer silicone adhesive foam dressing for the management of both acute and chronic exuding wounds has been demonstrated by the PMCF clinical study.

CR-053

Improving Wound Tissue Evaluation Accuracy: Comparing Clinician Assessments and Ai-driven Technology Across Diverse Skin Tones

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Introduction: Chronic wounds have a significant impact on healthcare worldwide.1 Accurate assessment of wound tissue types such as granulation, slough, eschar, and epithelialization is crucial for effective management.2 However, human evaluations can be inconsistent due to knowledge gaps, visual perception limitations, and variations in skin tone.2 AI-driven wound care technologies (AI-WCT) provide potential solutions to these limitations by offering more objective and reliable assessments.3 This study aimed to compare clinicians' subjective evaluations of wound tissue types with those generated by AI-WCT.

Methods: An observational comparative study was conducted with 20 wound care clinicians recruited at the Nurses Specialized in Wound, Ostomy, and Continence (NSWOC) conference. Participants assessed wound images from patients with diverse skin tones and wound complexities. Clinicians identified and estimated tissue types, which were then compared to AI-WCT assessments. Wounds were classified as complex or non-complex, and skin tones were categorized using the Fitzpatrick scale (Type I/II for light skin, Type V/VI for dark skin). The Chi-square test was used for comparison of categorical variables.

Results: The study revealed significant discrepancies between clinician and AI assessments. In darker-skinned patients (Fitzpatrick Type V/VI), clinicians overestimated granulation tissue by 10.05%-37% and slough by 7.4%-11.58% (*P*< 0.001). Epithelialization was underreported by an average of 36.98% compared to the AI-WCT assessments. In contrast, for lighter-skinned patients (Fitzpatrick Type I/II), clinicians overestimated epithelialization by 15.52%. Additionally, clinicians tended to identify and quantify eschar despite their absence, as indicated by AI. In dark-skinned patients, clinicians overestimated eschar by an average of 10.7%, while in light-skinned patients, clinicians overestimated it by 5.2%. Inconsistencies were less pronounced in the light-skinned patients than in dark-

er-skinned patients.

Discussion: The findings highlight the challenges clinicians face in evaluating wounds, particularly in darker-skinned patients. AI-based tools offer more consistent, objective measurements and may reduce subjectivity, improving diagnostic accuracy and equity.

CR-054

Impact of Sustained Use of Digital Wound Care Technology on Time to Heal Diabetic Ulcers in Home Health: A Retrospective Study

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Introduction: Diabetic ulcers (DUs) are among the most prevalent and challenging chronic wounds, often resulting in prolonged healing times, increased healthcare costs, and reduced patient quality of life.1 Effective management of DUs is critical to prevent complications such as infections and amputations.2 However, traditional assessment methods are often subjective and inconsistent.3 Digital wound care solutions (DWCS) provide standardized and objective wound assessments, offering the potential to enhance healing efficiency and improve patient outcomes.3 This study evaluated the impact of DWCS on DU healing times and improvements in non-healed but improved wounds in home healthcare (HH) settings.

Methods: This retrospective descriptive study analyzed 11,021 DU wounds from 59 HH agencies using DWCS between 2022 and 2023. DU healing times were compared across years, with sub-analyses of wounds healing within three months versus those requiring longer. Non-healed but improving DUs were further assessed for changes in wound area reduction and time to improvement, stratified by initial wound size (≤2 cm^2 and >2 cm^2). Statistical tests, including t-tests and ANOVA, were employed to compare differences in healing times and area reduction

Results: The average healing time for DUs significantly decreased from 98.9 days in 2022 to 68.1 days in 2023, a reduction of 30.8 days (31%, $p< 0.001$). The proportion of DUs healing within three months increased by 5.3% in 2023 compared to 2022. Among non-healed but improving DUs, the average wound area reduction rose from 4.4 cm^2 in 2022 to 7.9 cm^2 in 2023, a 79.5% improvement. Additionally, the time to observable improvement decreased by 22 days (26%), from 84.8 days in 2022 to 62.8 days in 2023 ($p< 0.001$). Larger wounds (>2 cm^2) showed a greater decrease in time to improvement, with a reduction of 34.9 days (35.6% improvement, $p< 0.001$).

Discussion: The implementation of DWCS significantly reduced DU healing times and improved wound area reduction for non-healed cases, especially larger wounds. These results highlight the potential of DWCS to optimize DU management, improve clinical outcomes, and reduce the economic burden of prolonged wound care in HH settings.

CR-055

Enhancing Home Health Performance: Clinical and Operational Impacts of Digital Wound Care Technology at Home Health

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Introduction: Wounds significantly increase the risk of hospitalization in home health (HH) settings by up to 52%.[1] They also consume a notable portion of HH budgets with the frequent nursing visits for wound assessment and care.[2] To address these challenges, a U.S.-based HH enterprise adopted a Digital Wound Care Solution (DWCS) to enhance wound management and operational efficiency. This benefits evaluation study examines the impact of integrating the DWCS into practice, focusing on clinical and operational indicators and associated cost savings.

Methods: Data were gathered from the DWCS and EMR databases, encompassing pre- and post-adoption phases of DWCS in 2022 and 2023. The analysis included wound data from 16,276 patients in 2023 and 19,252 patients in 2022, covering an 8-month period (March–October) across 11 branches. The key performance indicators (KPIs) included skilled nursing (SN) visits per episode (VPE), time to complete SN visits, wound healing duration, hospitalization rates, adherence to best practices, and staff optimization.

Results: The adoption of the DWCS led to notable clinical and operational improvements. SN VPE decreased by 7.5%, resulting in an estimated annual savings of $1.3 million. Wound healing time improved by 22.7%, with an average reduction of 9.7 days in healing time across wound types. Hospitalization rates attributable to wound complications decreased by 2.8%, preventing 200 hospitalizations with a projected annual cost savings of $3.4 million to the health system. A 1.9% shift in staff roles increased the utilization of Licensed Practical Nurses without compromising care quality, saving $112,748 annually. Adherence to best practices improved by 7%, with increased wound imaging frequency during assessments. Additionally, staff efficiency improved by 2.1%, saving 114 staff days annually and yielding potential savings of $200,000.

Discussion: The implementation of the DWCS significantly enhances clinical outcomes and operational efficiencies, resulting in substantial cost savings, aligning with value-based care objectives, which offers scalable benefits for HH enterprises.

CR-056

Standardizing Wound Measurement and Tissue Type Assessment: Evaluating Intra-rater Reliability of an Ai-based System Among Clinicians with Different Experience Levels: A Cross-sectional Study

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Introduction: Wound care management relies on accurate assessment and measurement of wound characteristics, including tissue types such as granulation, slough, eschar, and epithelialization, as well as surface area.[1] Variability in clinician assessments, particularly for complex wounds, can impact treatment decisions and healing outcomes.[2] AI-driven wound care technologies (AI-WCT) have emerged as promising tools to standardize assessments, improve measurement precision, and enhance reliability across clinicians with varying experience levels.3 This study evaluates the intra-rater reliability of an AI-WCT among clinicians with different experience levels for both tissue types and wound measurement.

Methods: This cross-sectional reliability study included 17 wounds from 16 patients evaluated during a single clinic visit. Three clinicians—a wound care physician, a medical resident, and a nurse—used the AI-WCT to independently assess and record wound tissue types (granulation, slough, eschar, epithelialization) and measure wound dimensions (length, width, and surface area). The AI tool provided automated tracing for wound edges, with clinicians able to adjust the tracing as needed. No communication occurred between raters. Intraclass Correlation Coefficient (ICC) tests assessed the consistency of measurements and tissue type evaluations.

Results: The mean patient age was 67.3 years (±18.1), and 64.7% were male. The ICC for granulation tissue was 0.896 (95% CI: 0.785–0.958, $P< 0.001$), for eschar 0.889 (95% CI: 0.761–0.958, $P< 0.001$), and for slough 0.952 (95% CI: 0.894–0.981, $P< 0.001$), all indicating excellent reliability. No epithelialization was detected, with consistent agreement of its absence among raters. For surface area measurements, the mean values recorded by the physician, resident, and nurse were 10.35 ± 15.58 cm^2, 10.40 ± 14.74 cm^2, and 11.17 ± 16.68 cm^2, respectively, with an ICC of 0.970 (95% CI: 0.936–0.988, $P< 0.001$), demonstrating excellent reliability.

Discussion: AI-WCT can standardize wound assessments by providing consistent, precise measurements and tissue evaluations, regardless of clinician experience. These results suggest that AI-WCT has the potential to reduce variability, which will ultimately enhance clinical decision-mak-

ing, and improve patient outcomes.

FIRST-TO-PODIUM RESEARCH

CR-057

Optimizing Patient Care in Advanced Venous Disease with Mechanical Thrombectomy: A Retrospective Analysis of 91 Cases Including 31 Wounds

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Introduction: Post-thrombotic syndrome (PTS) is one of the most common complications of deep vein thrombosis, affecting up to 50% of patients[1]. The severity of PTS is assessed by the Villalta score, a widely adopted scoring system that evaluates various clinical signs and symptoms, along with the presence of a venous ulcer or wound[2]. Case reports have demonstrated the successful use of mechanical thrombectomy (MT) in patients with PTS to remove advanced venous occlusions[3,4]. Here, we evaluate the safety and efficacy of MT devices* to remove venous occlusions and/or in-stent thrombosis and assess the subsequent impact on wound healing and recurrence.

Methods: This multicenter, retrospective analysis included patients treated with MT between August 2021 and August 2024. Baseline, procedural, and follow-up data were collected, including patency, safety events, and ulcer characteristics. Freedom from wounds and wound recurrence were reported.

Results: This analysis included 91 patients (107 limbs) with 31 wounds. The mean patient age was 56.7 ± 14.9 years, 52.7% were male, and 35.2% (32/91) of patients presented with severe PTS. All patients underwent MT with 43.5% receiving adjuvant stenting resulting in patent segments and a device-related adverse event rate of 0%. Median thrombus removal was 85% [IQR 50-90] based on imaging and physician assessment. At the latest follow-up (n=48; mean 2.6 ± 1.4 months), the adverse event rate was 0% and reintervention rate was 10.4% (5/48). The mean Villalta score decreased by 45.9% from 9.8 ± 5.1 at baseline to 5.3 ± 3.3 at follow-up. For wounds with available data (n=23), freedom from wounds was 78.3% (18/23), and the area of the 5 healing wounds reduced by 73.4%. Freedom from wound recurrence was 100%. Further data will be available for the presentation, as follow-up is ongoing.

Discussion: The removal of advanced venous occlusions through MT restored patency and resulted in complete wound healing in nearly 80% of cases, with no reported wound recurrence. These findings indicate that MT is a safe and effective treatment for patients with PTS accompanied by wounds. Thereby adopting MT, along with site-specific wound care algorithms, might be crucial for managing wounds associated with advanced venous occlusions.

CR-058

The Plantar-palmar Index with near Infrared Spectroscopy Replaces the Ankle-brachial Index for Noninvasive Evaluation of Vascular Perfusion and Peripheral Arterial Disease

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Introduction: The Ankle Brachial Index is a widely used diagnostic technique for peripheral artery disease. The ABI procedure can be time-consuming, labor intensive, and uncomfortable for patients. As a screening technique the ABI has poor sensitivity and can be unreliable in diabetic patients[1,2].

Methods: Study subjects included normal-healthy, patients with DFU, patients with known PAD and complications of PAD. The ABIs and pulse volume recordings were accomplished and recorded in all subjects (MESI mTABLET). Near infrared spectroscopy (NIRS) (SnapshotNIR) is an imaging device that measures oxygenated and de-oxygenated hemoglobin in tissues to create an image of tissue oxygen saturation[3]. NIRS is non-invasive and has demonstrated efficacy assessing tissue perfusion in patients with PAD[4]. NIRS images were obtained of the palm-hand and the plantar-foot with all subjects lying in the supine position and an average STO2 was obtained. The Plantar-Palmar Index is similar to the ABI ratio (Plantar STO2 / Palmar STO2).

Results: A series of 90 limbs were studied. The cohort included healthy subjects and those with various degrees of PAD. ABIs and PVRs were obtained, and NIRS imaging PPI ratios were calculated for all limbs. PVRs were interpreted and classified as Normal (n=48), Mild (n=32), Moderate (n=7) and Severe (n=3). The Estimated Margin Means of the PPI in reference to the PVR were calculated; Normal 1.041, Mild 1.148, Moderate 1.457, Severe 1.570 with 95% CI's Normal (0.998, 1.084), Mild (1.095, 1.201), Moderate (1.345, 1.589) and Severe (1.399, 1.741). ANOVA results across all 4 groups yielded p< 0.001. Pairwise comparison showed significance of Normal-Mild p< 0.005, Normal-Moderate p< 0.001 and Normal-Severe p< 0.001.

Discussion: While the ABI remains deeply entrenched in clinical assessment of PAD, the challenges and limitations associated with this test have been well recognized. As evidence, a recent proposed LCD (L35041) originally stated "An ankle-brachial index (ABI) should be taken for patients with a questionable pulse deficit..." Based on clinician input his language was modified to read "An objective, non-invasive measure of perfusion/oxygenation to determine if there is adequate flow for wound healing is helpful."[5] The positive correlation of NIRS PPI with ABI has been previously reported.[6] This study suggests that NIRS-PPI also correlates well with PVR evaluations and could replace the ABI/PVR as the method for assessing both the presence and severity of PAD. Further research and clinical trials are essential to validate these results and establish standardized clinical protocols for implementation.

CR-062

Standardizing Medical Photo Acquisition to Improve Image Quality

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Introduction: Wound images can have errors in color, which may impede diagnosis and distort measurements.[1,2,3] Color errors are caused by technical variability in smartphone camera algorithms and settings, as well as inconsistent photographer technique during image acquisition.[2,3] Color calibration improves technical variability and reduces color errors by more than half,[3] however it does not correct for errors related to photographer technique. Source capture optimization and alignment guides (SCOAG), as used for remote banking deposits, help reduce photographer technique inconsistency and standardize the image acquisition process.[4] To assess the effectiveness of SCOAG, Delta E values of uncalibrated photos taken with SCOAG and then compared to the National Institute of Standards and Technology (NIST) values for smartphone photographs.

Methods: A database of 9,070 clinical photos taken between May 12, 2023 – October 13, 2023, by over 100 photographers from 12 Wound Care facilities using a variety of (Apple) smartphones were compared. A color chart (TRUE-See Systems) with target colors and QR code activated SCOAG was physically placed next to the wound during each image acquisition. The photos were assessed using The International Commission on Illumination standard Delta E 2000 measurement of color difference and compared to the National Institute of Standards and Technology (NIST) reported values for smartphone.

Results: The use of SCOAG improved image color 58.8% (12.7) over the NIST Baseline. Post calibration the SCOAG image color improved 73.1% (15.8) over the NIST baseline and 43.1% (4.4) over NIST calibration baseline

Discussion: This data clearly illustrates that implementing SCOAG can effectively standardize wound image acquisition and significantly enhance color quality. By operationalizing and harmonizing photo acquisition alongside color calibration, we can greatly boost the clinical relevance and reliability of images, streamline regulatory review process-

es, and drive innovation forward

CR-063

Efficacy of Minimally Invasive Vascular Interventions Assessed with Mobile Multispectral Near-infrared Spectroscopy

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Introduction: The adoption of minimally invasive techniques, such as foam sclerotherapy and radiofrequency ablation (RFA), for treating chronic venous insufficiency has increased significantly over the past decade.[1] While duplex ultrasonography (DUS) remains the gold standard for diagnosing venous insufficiency and evaluating treatment efficacy,[2] it is time-consuming and resource-intensive. Near-infrared spectroscopy (NIRS) imaging, a non-invasive modality, offers spatial information on tissue oxygenation (StO_2) and has the potential to streamline evaluations. This study aims to explore the utility of NIRS imaging in assessing the efficacy of minimally invasive treatments.

Methods: A quasi-experimental pre-posttest study was conducted on 14 patients treated for chronic venous insufficiency and venous leg ulcers with either foam sclerotherapy or RFA between November 2022 and February 2024. Tissue oxygenation and skin surface temperature were measured using an FDA-cleared handheld multispectral NIRS and infrared (IR) temperature imaging device (MIMOSA Pro, MIMOSA Diagnostics Inc., Toronto, Canada).[3,4] NIRS images were taken pre- and post-treatment from the treatment side and the contralateral (control) side, including various anatomical locations: the dorsum and plantar aspects of the foot, medial and lateral leg, and wound area (if present). Statistical analyses, including paired t-tests, were used to evaluate pre- and post-treatment differences.

Results: Successful vein closure after RFA and sclerotherapy was confirmed in all 14 cases (100%) using postoperative DUS, with no reopening observed during the follow-up period. Post-treatment NIRS data showed an average 20% increase in mean StO_2 on the plantar surface for 13 cases (93%), while one case (7%) showed no clinically significant change. Before treatment, the mean StO_2 on the treatment side was 53%, compared to 60% on the control side (Figure 1). After treatment, the mean StO_2 on the treatment side increased to 73%, representing a statistically significant improvement ($p < 0.05$).

Discussion: Near-infrared spectroscopy imaging provides a reliable, non-invasive method for real-time monitoring of tissue oxygenation. By visualizing microcirculation changes, NIRS enables clinicians to detect treatment success or failure earlier, facilitating timely interventions. While the small sample size limits generalizability, these findings highlight the potential of NIRS imaging as a valuable clinical tool for optimizing vascular treatment outcomes. Future research with larger cohorts is recommended to validate these results.

CR-064

Smart Insoles: Preventing Diabetic Foot Ulcers and Reducing Carbon Footprints

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Introduction: 5.6 million people are estimated to have diabetes in the UK. 25% of individuals with diabetes go on to develop diabetic foot ulcers (DFUs) in their lifetimes1. DFUs take significant time to heal and often lead to amputations. Current DFU prevention methods are inadequate, resulting in 40% of DFUs recurring within a year2. DFU treatment and amputations also have significant environmental costs due to the single-use consumables used in assessment and treatment which must be incinerated following use.

Methods: To tackle this, we hypothesize that using smart temperature- and pressure-sensing insoles to predict DFUs before they form and acting early can prevent DFUs and reduce the carbon footprint of DFU care. To this end, user testing and carbon footprint analysis were carried out on smart, DFU-predicting insoles*.

Results: The smart insoles had 8-16-fold smaller carbon footprint than any scenario where a patient develops a DFU. All users stated that they would act to prevent a DFU if DFU-predicting insoles* alerted them to do so. Most were comfortable with using phone apps and having their data collected and shared with their healthcare providers.

Discussion: We have shown that smart insoles can reduce the carbon footprint of DFUs and potential users are ready to adopt such devices into their care. Thus, smart DFU-predicting insoles present a promising device in DFU prevention.

CR-065

Taking the Pressure off the Clinician: Pressure Injury Prevention Clinical Decision Support Tool

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Introduction: Hospital-acquired pressure injuries (HAPI) cost in the US exceeds $26.8 billion and affects more than 2.5 people annually. The complexity of healthcare structures and processes, the increasing acuity of patients, and the lack of standardization across electronic health records add to the challenge for nurses to quickly identify patients at risk for pressure injuries (PI) and to implement prevention strategies. The purpose of this study is to develop an effective, efficient, and feasible PI prevention clinical decision support (PIP CDS) tool.

Methods: This study utilizes a mixed-method, multi-phase approach. Initially, an interprofessional and patient/caregiver council of key stakeholders (Council) was used to create and develop a PIP CDS algorithm and prototype. Continued study phases will focus on evaluating specific tasks performed using the prototype using a Subjective Mental Effort Questionnaire (SMEQ) to identify potential problem areas with the design and usability of the tool and craft effective solutions. The final tool will be evaluated by the Council and researchers using the Computer System Usability Questionnaire (CSUQ) to determine the prototype's usefulness, information quality, interface quality, and overall satisfaction.

Results: A diverse key stakeholder council of 15 setting-specific national and local content experts (nurses/clinicians), patients, and caregivers was developed. Preliminary development of the PIP CDS tool was accomplished using feedback and perspective from the Council during monthly ZOOM meetings using multiple breakout groups, whiteboards, and card sorting exercises, promoting a rich and varied discussion and written feedback. PIP CDS tool development activities, Council feedback, and survey results will be presented at the conference.

Discussion: Reducing HAPIs in healthcare settings is a priority yet often nurses are overwhelmed with care priorities and patient complexities to quickly identify and implement evidence-based prevention strategies. An evidence-based PIP CDS tool, informed by a council of key stakeholders, will assist the nurse in implementing rapid and effective prevention strategies.

BREAKTHROUGH RESEARCH

CR-067

Functional and Quality of Life Outcomes in Ray Amputations vs. Transmetatarsal Amputation: A Comparative Study

Ali Qadri, DPM; Christopher Attinger, DPM; Jayson Atves, DPM; Karen Evans, MD; John Steinberg, DPM; Craig Verdin, DPM

Introduction: The loss of pedal rays through amputation negatively impacts gait, quality of life (QOL), and increases morbidity. Ray amputations, often performed for forefoot ulcerations or osteomyelitis, can result in significant functional impairment, and the choice between ray amputation and transmetatarsal amputation (TMA) remains a critical clinical decision. TMA is typically preferred for its predictable outcomes, but the function-

al impact of ray amputations, particularly of the lesser rays, is less well understood. This study compares the functional and QOL outcomes of ray amputations with TMA to guide surgical decision-making.

Methods: A retrospective cohort study was conducted on patients who underwent ray or TMA (CPT codes 28119 and 28805) at Georgetown University Hospital between June 2021 and June 2023. Inclusion criteria included ambulatory patients aged ≥18 who completed functional and QOL questionnaires. Exclusion criteria included bilateral or proximal amputations. The primary outcomes included complications (major and minor), limb salvage, and mortality. Functional outcomes were assessed using the Lower Extremity Functional Scale (LEFS), and QOL was assessed with the SF-12 Health Survey.

Results: We reviewed 95 patients (50 TMA, 45 ray amputations), with an average follow-up of 818.6 days. Limb salvage rates were high (97.9%), and complication rates were substantial (68.4%), with 38% of TMA and 35.6% of ray amputation patients requiring return to the operating room (ROR) for revision. Functional outcomes, as measured by LEFS and SF-12, showed no significant differences between the two groups (LEFS: 45.3 vs. 42.9; SF-12: 30.1 vs. 29.4). Minor complications were more frequent in the ray amputation group, but major complications requiring re-operation were similar between the two groups. Subgroup analysis revealed no significant differences in functional or QOL outcomes among different ray amputation types.

Discussion: This study challenges the traditional preference for TMA by showing that ray amputations—whether of the 1st, 5th, central, or multiple rays—offer comparable functional outcomes with minimal differences in QOL. Ray amputations preserve more of the foot's length, supporting normal gait mechanics and reducing functional loss compared to TMA. Although gait disturbances following ray amputation are common, particularly with the 1st ray, these disruptions have a minimal impact on daily activities. Our findings suggest that ray amputations can be a viable alternative to TMA, with similar functional outcomes and QOL with similar wound related issues. This study encourages reconsideration of traditional amputation strategies, especially for isolated ray amputations.

CR-068

Bioabsorbable Borate-based Glass Fiber Matrix Usage in Diabetic Foot Wound Closure Post Surgical Intervention

Carmina Quiroga, DPM; Rahul Pedagandham, DPM/Msc

Introduction: 47-year-old male presented to the ED, and our service was consulted to see the patient for a diabetic foot infection. He is Diabetic with peripheral neuropathy so he states he never noticed the wound or causing any pain. He stated he went to the ER when he noticed the wound became malodorous with increased drainage and increased swelling to the right foot and had presented with some chills. He had presented with a plantar aspect right forefoot full thickness ulceration measuring 3.5 cm x 4 cm x 4.5 cm which tunneled plantar to proximal with crepitus and gas gangrene was noted in the foot.

Methods: Patient was taken to the OR for an emergent washout for primary control of osteomyelitis infection and gas gangrene. X-rays were taken post-operatively and still there was some signs of crepitance noted and gas on film and MRI confirmed 4th and 5th rays consisting of osteomyelitis ,so he was taken again to the OR for debridement of all non-viable bone and soft tissue in which the second time 4th and 5th ray resections were performed. Then started NWPT post-operatively to optimize the physiology involved in wound healing by applying sub- atmospheric pressure to help reduce inflammatory exudate and promote granulation tissue. Patient has been on NWPT for about 7-8 weeks consisting of 3x weekly changes which were done with in house with our Podiatry service and wound care team.

Results: Skin substitutes were then discussed with patient to help achieve wound healing. Started to apply glass graft for our patient and patient agreed to proceed with the application of the graft. Each office visit, wound debridement was done and five applications of the graft were applied to the wound

Discussion: Mirragen® Advanced Wound Matrix is intended for the management of acute and chronic wounds, including: partial- and full-thickness wounds, pressure ulcers, venous ulcers, diabetic ulcers, chronic vascular ulcers, tunneled/undermined wounds, surgical wounds (donor sites/grafts, post-Mohs surgery), post laser surgery, podiatric wounds, wound dehiscence, trauma wounds (abrasions, lacerations, first- and second-degree burns, skin tears), and draining wounds. With continued discussion of using this specific type of glass graft in healing complex diabetic lower extremity wounds in wound care and podiatry could lead to increased awareness and aid in potentially healing chronic non-healing wounds and surgical wounds the future.

CR-069 (RPT-001)

Pediatric Chronic Wounds: A Novel Analysis from a Tertiary Care Center

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Introduction: 10.5 million Americans suffer from chronic wounds annually. While extensively studied in adults, pediatric chronic wounds receive limited attention, relying on adult-centric approaches and anecdotal evidence. Our study is among the first to describe the prevalence and demographics of pediatric chronic wounds, evaluate wound presentations including etiologies, comorbidities, anatomical locations, and encounter types; and examine the socioeconomic disparities influencing their development.

Methods: We conducted a retrospective analysis of visits for wounds at a tertiary pediatric hospital in 2023, based on a coding schema including 9,326 pre-determined ICD-10 codes. Patients under age 26 with >2 visits and diagnosed chronic wounds lasting >90 days were included. Socioeconomic disparities were evaluated using the Childhood Opportunity Index (COI). Linear mixed-effects logistic regression models examined the relationships between COI scores, race and wound characteristics.

Results: We identified 1,368 unique visits among 367 chronic wound patients. Median age at first visit was 12(IQR:6–15.5), 55.6% were male, 71.4% White, and 45.0% had public insurance. Most prevalent wounds included open lacerations (20.3%), osteomyelitis (20.0%), burns (14.2%), traumatic (7.3%), pilonidal (5.0%), and pressure injuries (4.9%). Comorbidities were notable for osteomyelitis (27.8%), cerebral palsy/paralytic syndromes (8.0%), myelomeningocele (6.6%), vitamin deficiencies (6.1%), and immunodeficiencies (6.0%). Anatomical locations were primarily upper (30.5%) and lower extremities (30.2%). Encounters were primarily through office visit (71.3%), occupational therapy (10.1%) and physical therapy (7.2%). COI quintile distribution was very low (13.9%), low (17.1%), moderate (24.7%), high (20.6%), and very high (23.7%). Regression demonstrated COI scores were not associated with wound development and race was not associated with wound severity. Of those who had pressure injuries, stage III (25.0%) and IV (21.9%) were most common. 60% of stage III cases had a low or very low COI, suggesting potential disparities which may affect timely interventions.

Discussion: Building on our prior national analysis, this study highlights a high prevalence of pediatric chronic wounds with distinct etiologies and comorbidities. Many of these patients face socioeconomic challenges and present at late stages. Our ongoing research thus includes a prospective trial investigating multidisciplinary wound presentations and healthcare barriers to develop best practice guidelines for this vulnerable group.

CR-072

From Wound to Wellness: The Journey to 100% Healing with Cellular, Acellular and Matrix-like Products (CAMPs)

Hugh L. Richardson, DPM; Daniel Hallman, DPM, MS, CWS; Ashley Meu-

sa, DPM; Bill Releford, DPM; Lacey Bauer, MS; Tanyikka Tinnon, MAOM; Terry Dupre, BS; Robert Frykberg, DPM, MPH

Introduction: Wound care services in home health, hospice, and skilled nursing facilities are crucial to patient recovery. Chronic wounds are challenging due to factors like biofilm, ischemia, and delayed healing, which increase the risk of complications. Effective mobile wound care in post-acute settings reduces these risks and prevents hospital readmissions. Vulnerable populations—such as older adults with chronic conditions and limited mobility—depend on accessible, high-quality care. This study evaluates 110 patients with chronic wounds treated through mobile care, utilizing Cellular and Acellular Matrix Products (CAMPs) to achieve full wound closure.

Methods: A mobile wound care service managed 110 patients with chronic wounds across 11 states using a structured protocol. Standard of Care (SOC): Weekly care included debridement and conventional treatments, tracking wound characteristics and dimensions. CAMPs Therapy: Initiated for wounds ≥1.0 cm^2, free of necrotic debris, with adequate circulation. For diabetic foot ulcers, Type 1 or 2 Diabetes was documented and managed. CAMPs were applied weekly by a provider until wounds reduced to < 1 cm^2 or healed.

Results: Patient Demographics and Outcomes: All 110 patients with multiple comorbidities achieved 100% wound closure. Healing Rates and Duration: SOC: Healing Rate: 16.37% over 6.3 weeks. CAMPs: Healing Rate: 77.41% over 10.24 weeks (Range: 1–41 weeks). Average CAMPs healing rate at 4 weeks: 52.09%. These findings suggest that CAMPs therapy improves healing rates, potentially reducing healthcare costs and improving mobility and quality of life.

Discussion: CAMPs therapy significantly improved healing outcomes compared to SOC, achieving full closure in all cases, even for wounds unresponsive to SOC. These findings suggest CAMPs can be integrated into diverse care settings, enhancing accessibility to effective wound care for vulnerable populations. Future research will include cost analysis and comparisons of DFUs, VLUs, and PUs treated with SOC vs. CAMPs. CAMPs enhance chronic wound healing in post-acute settings, reducing complications and improving quality of life. These findings support the broader adoption of CAMPs in clinical practice and highlight their scalability across chronic wound types and healthcare settings, making them effective for expanding post-acute care models.

CR-073

Novel Combinatorial Approach Utilizing Immunohistochemical Evaluation of Ultra-high Frequency Ultrasound Guided Biopsies of Hidradenitis Suppurativa Lesions

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Introduction: Hidradenitis suppurativa (HS) is a chronic inflammatory disease of the hair follicle with systemic manifestations and a significant impact on quality of life. Immunohistochemistry of HS biopsies showed that tunnels are a source of inflammation, with an increased expression of interleukin (IL) 17A/C/F and IL36a. Ultra-high frequency ultrasound (UHFUS) has been demonstrated to highlight the presence of hair follicles within the fluid collections and is useful to precisely identify small lesions, thanks to the greater axial and lateral resolution. This study evaluates the effectiveness of UHFUS-guided biopsies in characterizing HS lesions and investigates inflammatory cytokine expression profiles across lesion types.

Methods: Eleven biopsies from HS lesions (tunnels, nodules, cysts, and tombstones) were obtained from patients (n=3) using UHFUS-guided mapping. Immunohistochemical staining was performed to analyze expression and localization of cytokines previously suggested to be associated with HS (IL-17A, IL-17F, IL-23, IL-36, TNF-α), followed by quantification of obtained signal via bioimage analysis software (QuPath). Statistical significance was assessed through two-way ANOVA, followed by Tukey's multiple comparisons test.

Results: IL-23 expression was consistently elevated across all lesion types, irrespective of morphology, and significantly higher than IL-17A, IL-17F, IL-36, and TNF-α (p-value < 0.0001). No significant differences in cytokine expression were observed among different lesion types (tunnels, nodules, cysts, tombstones). Inter-patient analysis revealed consistently high IL-23 levels, regardless of lesion heterogeneity.

Discussion: UHFUS is a valuable tool for accurately identifying HS lesion morphology and guiding biopsies. Elevated IL-23 expression across different lesion types underscores its potential role in HS pathogenesis, even if to date targeting IL-23 is not a recognized and effective option of treatment. Further studies with larger sample sizes are needed to validate UHFUS-guided biopsies and refine cytokine-targeted treatments in HS management.

CR-074

Determinants Influencing Wound Related Outcomes in Mild Diabetic Foot Infection

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Introduction: Diabetic foot infections (DFIs) are a major global health concern due to their potential for serious complications, such as amputation, if not properly managed. This post-hoc analysis examines how patient characteristics at the start of treatment influence wound-related outcomes in mild DFIs.

Methods: We conducted a retrospective analysis of a randomized controlled trial comparing a novel wound dressing incorporating synergistic copper and silver nanoparticles with a commercially available gelling fiber silver ion dressing. The trial enrolled 30 patients diagnosed with grade 2 DFIs according to the International Working Group on Diabetic Foot (IWGDF) guidelines. Baseline data collected included age, sex, initial wound size, bacterial load, pain levels, and quality of life scores.

Results: The trial demonstrated a reduction in mean wound surface area over time, with smaller initial wounds exhibiting greater improvement. Patients presenting with higher initial bacterial loads consistently maintained higher levels throughout the study. Notably, at baseline, female patients had statistically significantly higher bacterial counts compared to male patients, while older patients displayed lower bacterial loads. Pain associated with the wound decreased during the trial but remained correlated with initial pain levels. The DFS score followed a similar pattern, with baseline scores strongly correlating with subsequent scores. Older patients tended to have higher DFS scores.

Discussion: This study highlights the significant influence of baseline patient characteristics on wound-related outcomes in mild DFIs. Initial wound size, bacterial load, sex, age, and pain all appear to be determinants of wound-related outcomes.

CR-075

Real World Data Comparative Effectiveness Analysis Comparing a Dehydrated Amnion Chorion Membrane and a Fetal Bovine Collagen Dressing for Use in Diabetic Foot Ulcers

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Introduction: Using real-world data (RWD) we conducted a comparative effectiveness analysis (CEA) of a Dehydrated Amnion Chorion Membrane (dACM)(a) versus a Fetal Bovine Collagen Dressing (FBCD)

(b) for the management of diabetic foot ulcers (DFUs).

Methods: Electronic medical records (WoundExpert®, NetHealth, PA) (c) collected between 2021 and 2023, on 632 DFUs were analyzed. Ulcers 1-40 cm2 were included. Patients with no baseline wound measurements or follow-up visits were excluded. Evaluations were performed on 173 dACM- and 459 FBCD treated DFUs. A Kaplan-Meier (K-M) analysis was used to compute median time to healing, and a Cox analysis that adjusted for variables including ulcer area and duration was used to compute frequency of healing. The Hazard Ratio (HR) was calculated to determine the probability of healing.

Results: Patient populations were well matched for patient demographics, wound characteristics and treatment characteristics. The median time to healing was 7.0 weeks for dACM and 16.6 weeks for FBCD; p=0.03. This difference between groups demonstrated a 39.8% reduction in time to healing with the use of dACM; p=0.03. The frequency of healing for dACM was significantly greater compared to FBCD at week 8 (40% vs 32%), 12 (52% vs 42%), 24 (68% vs 58%), and 36 (76% vs 66%); p=0.03. The HR=1.34 [95% CI (1.03, 1.76)]; p=0.03. dACM treated DFUs resulted in a 34% greater probability of healing compared to FBCD at every timepoint through 36 weeks.

Discussion: RWD analyses demonstrated the frequency of healing was significantly greater for dACM compared to FBCD for DFUs. These data may inform patient care and DFU treatment algorithms. RWD dACM results showed effectiveness consistent with DFU RCT findings comparing dACM to standard of care (SOC).

CR-076

Affects of Long Limb Discrepancy on Temporospatial Gait Parameters and the Development of Diabetic Ulcers Using Computer Assisted Gait Analysis

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Introduction: Diabetes mellitus is the most rapidly growing cause of the global disease burden. DFUs are a manifestation of diabetes associated with difficult/delayed wound healing and a five-year mortality rate of 13-42%. Prevention and effective management of DFUs is crucial to reduce the risk of lower limb amputations and improve the quality of life for patients with diabetes. Currently, there is greater focus on treatment of existing DFUs rather than prevention, despite a majority of these conditions being entirely preventable. The current standard of care in ulcer prevention is a custom-molded or depth-inlay shoe mandated by US Congress in 1987 despite lack of convincing evidence on their clinical effectiveness. Computer assisted gait analysis (CAGA) is an emerging technology that allows physicians to see the unseen. Comprehension of abnormal diabetic gait increases the effectiveness of diabetic shoes and orthotics through customized correction of temporospatial gait parameters. We seek to measure the affects of long leg limb discrepancy on the development of abnormal gait leading to diabetic ulceration through the use of CAGA.

Methods: 100 patients with a history of healed diabetic ulcer underwent CAGA testing to identify locations of peak plantar pressure during gait cycle. Physical assessment of limb lengths was conducted to identify patients with long leg discrepancy. Patients with limb length discrepancy were compared to a control group of patients without long limbs to identify altered gait parameters leading to diabetic ulceration.

Results: Patients with limb length discrepancies were found to have altered gait parameters leading to increased propensity to develop diabetic ulceration and amputation. We are able to quantify and qualify these gait metrics in order to predict where ulceration is likely to occur in patients with a long limb. We demonstrate a positive correlation of long leg discrepancy with increased peak plantar pressure measurements comparative to the contralateral limb.

Discussion: These data are able to be used clinically to create orthotic solutions targeted to address long limb discrepancy. We are able to address predicable gait trends that are caused by limb length discrepancy to prevent reulceration and amputation.

CR-078

Pulse Electormagnetic Field Therapy Changes in the Healing chronic Leg Ulcer

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Introduction: Pulsed electromagnetic field (PEMF) therapy has proven to be effective in acute tissue healing and pain reduction. It encourages the growth, maintenance and healing of living cells, soothes muscle pain and stiffness, and improves tissue oxygenation and blood circulation. It is hypothesized that by inducing electrical magnetic current into damaged cells, PEMF therapy slows or stops the release of pain and inflammatory mediators, increases blood flow of the cells, and re-establishes normal cell interaction. With reduced inflammation, pain decreases, energy increases, and faster tissue healing occurs.

We conducted a study on the clinical efficacy and potential biochemical pathways of PEMF therapy

Methods: The study was designed as a prospective randomized, double blinded study. Patients who met the inclusion criteria recorded pain score and had regular wound size measurement and fluid assays. Our wound assays analyzed for transforming growth factor beta (TGF-b), tumor necrosis factor alpha (TNF-a), vascular endothelial growth factor (VEGF), matrix metalloproteinase-9 (MMP-9). The study duration was 16 weeks.

Results: 46 patients completed the study. No patient sustained any harm from the devices. Six patients received placebo devices and 27 received active devices. In the treated group, wound area went from 17 ± 15 cm to 2 ± 3 cm2 and wound circumference improved from 175±113 to 13±13 mm. These were both clinically and statistically significant ($p < 0.01$). For the control group, area went from 13 ± 14 cm to 11 ± 14 cm2 ($p= 0.06$) and circumference from 157±82 to 97± mm ($p = 0.12$) not significant. Pain score rating and medication use were both significantly better for the treated group compared to control. We saw a statistically significant increase VEGF and decrease in TNF-a and MMP-9 compared to the control group.

Discussion: Our results confirm the vulnerary potential of PEMF therapy for patients with chronic venous stasis ulcers when combined with standard evidence-based care. we were only able to document improved healing trajectory. We were also able to document improved pain control with this technology. Pain control may translate to less inflammation and suggest a mechanism of action in this clinical setting. We identified increase in VEGF and decrease in TNF-a and MMP9 which may help elucidate the pathway of action. Further work is needed to better elucidate mechanism and long-term efficacy.

CR-079

Bromelain-based Enzymatic Debridement: Mechanism of Action in Wound Healing Processes, a Literature Review

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Introduction: Chronic hard-to-heal wounds, such as diabetic foot ulcers (DFUs), venous leg ulcers (VLUs), and pressure ulcers, pose significant safety risks, burdens on patients, and challenges to healthcare systems worldwide. A literature review was performed to assess the mechanism of action and clinical effects of Bromelain-based Enzymatic Debridement (BBD) in the context of acute and chronic wound care. Unpublished mechanistic studies with BBD are further described.

Methods: A thorough literature review was conducted on bromelain's mechanism of action as well as clinical and preclinical studies conducted with BBD, using PubMed and Google Scholar databases, covering articles published between November 1992 and December 2023. Additionally, preliminary in vitro mechanistic studies with BBD testing its affinity to extracellular matrix components were conducted.

Results: Ninety-four articles were reviewed, and 70 utilized as references. This review shows that bromelain, a mixture of proteolytic enzymes derived from the pineapple stem, exhibits multifaceted actions that may be beneficial to wound healing, including multi-targeted proteolytic activity, anti-inflammatory effects through the reduction of pro-inflammatory cytokines (e.g., IL-1β, IL-6, TNF-α, PGE-2, NF-κB), and the release of nitric oxide from endothelial cells. In vitro mechanistic studies demonstrated that BBD degrades denatured collagen (i.e., gelatin) twice as fast as native collagen. BBD showed higher collagenase activity and stronger affinity toward collagen types I and III compared to types II and IV. Additionally, BBD proteases effectively degrade various ECM proteins, including elastin and fibrin. Clinical trials reveal that BBD expedites wound debridement in thermal burns, VLUs, and DFUs, promotes granulation tissue formation, disrupts biofilm, and reduces bioburden.

Discussion: The combination of literature review findings and available nonclinical and clinical data highlights BBD's potential as an innovative standard for chronic wound care. Its unique enzymatic composition enables rapid and effective debridement of diverse non-viable tissues in chronic wounds. Further clinical validation across various wound types is warranted to fully establish BBD's mechanism of action and utility.

CR-083

Evaluating the Effectiveness of an Innovative Health Literacy Educational Platform to Improve Patient Retention in Diabetic Foot Ulcer Care

Michael Xie, AB; Lindsey Cauthen, PhD; Yuriko Fukuta, MD, PhD, CWSP

Introduction: Approximately 8,000,000 people experience low levels of health literacy in the US.[1,2] Previous studies have shown that low health literacy leads to increased risk of developing diabetic foot ulcers (DFUs).3 Health Literacy + Innovation for Positive Patient Outcomes (HIPPO) is a preexisting digital app that provides multimedia educational resources for low health literacy patients; however, its efficacy has never been studied. Thus, we aimed to examine HIPPO's effect on patient retention among DFU patients.

Methods: From January 2023 to August 2024, an open-label trial was performed at a wound clinic in a teaching hospital that serves a large, underserved population including immigrants. Newly referred adult participants with DFUs were enrolled and randomly assigned to either HIPPO or control group after enrollment. HIPPO consisted of 7 multilingual instructional videos and graphical illustrations. In the HIPPO group, participants were asked to watch the videos during 3 office visits besides standard of care (SOC). The control group received only SOC. Initial wound assessment, wound healing status in 3 months, patient compliance, and appointment attendance were recorded for both patient groups. We also reviewed the factors that can affect patient retention. Statistical analysis involved unpaired t-tests and 2-sample z-tests.

Results: Sixty-nine participants were assigned to HIPPO and 72 to the control group. Differences in 3-month wound healing rate (HIPPO 68% vs. control 67%), compliance in wound dressing (HIPPO 90.6% vs. control 97.2%), no-show rate (HIPPO 13% vs. control 10%), and attrition rate (HIPPO 20.2% vs. control 23.6%) were not statistically significant (p=0.97, 0.336, 0.5, 0.97). However, HIPPO group had a statistically significant lower percentage of wound reopening (10% vs. control 21%, p=0.04). Between the two groups, differences in percentage of social support, transportation insecurity, full-time employment, distance to hospital, age, and English as primary language were also not statistically significant (p=0.09, 0.11, 0.12, 0.84, 0.45, 0.18).

Discussion: HIPPO shows some promise in improving some patient outcomes but not others. This platform should be refined in the future to include the importance of follow-up in educational materials and in-clinic, face-to-face guidance. Next steps involve adding these new components and testing impact on patient retention.

CR-086

Evaluation of the Efficacy of Different Types of IPC Devices on Edema Fluid Evacuation in Lower Limb Lymphedema

Marzanna T. Zaleska, PhD

Introduction: Lymphedema of limbs is an accumulation of tissue fluid in the tissue space due to lymphatic vessel damage or insufficiency. This fluid should be systematically evacuated to avoid limb enlargement and secondary changes such as fibrosis and recurrent acute skin and subcutaneous tissue inflammation. Pneumatic compression is one of the best methods for evacuating tissue fluid from the distal to the proximal part of the limb. Specific parameters, such as external pressure, compression sequence, compression gradient, and time of compression, should be met to be effective. We aimed to evaluate the effectiveness of different types of compression pumps, ascending and peristaltic, on edema fluid movement from the distal to the proximal part of the limb and changes in limb volume and skin and subcutaneous tissue stiffness in patients with lower limb lymphedema.

Methods: We investigated 10 patients with lower limb lymphedema stages II and III. In all patients, we did ICG lymphography and measured fluorescent intensity along the entire limb, limb circumference and volume, skin water concentration, and skin and subcutaneous tissue stiffness at the baseline and after therapy with peristaltic and ascending pumps. The pressure and time of treatment were the same. Additionally, we measured the interphase pressure at different limb levels.

Results: A higher decrease in circumferences, skin water concentration, skin, and subcutaneous tissue was observed after therapy with an ascending IPC device. While using the peristaltic IPC device, we noticed increased or no changes in circumference values, skin water concentration, and skin and subcutaneous tissue stiffness in the foot, ankle level, and middle calf. These corresponded with the charts of fluorescence intensity, which decreased in the distal and increased in the proximal part of the limb after ascending the IPC pump and increased in the foot, middle calf, and thigh after the peristaltic device.

Discussion: Compression devices with an ascending cycle more effectively evacuate edema fluid from the distal to the proximal part of the limb in patients with lower limb lymphedema.

CR-087

No Treated Lipedema Progress to Lymphedema

Marzanna T. Zaleska, PhD; Natalia Krzesniak, PhD

Introduction: Lipedema of the lower limb is a pathological accumulation of adipose tissue. Depending on the type of lipedema, the adipose tissue accumulates in different parts of the lower body but never in the foot. Patients usually complain about swelling, pain, easy bruising, and leg heaviness. Lipedema is often misdiagnosed with lymphedema. Without treatment and prevention, lipedema progresses and leads to impaired venous and lymphatic vessels, inflammation, and the development of lymphedema.We aimed to evaluate the changes in lymphatic drainage in patients with different stages of lower limb lipedema in LSC and ICG.

Methods: We investigated 50 patients with lower limb lipedema stages I-IV. All patients were women, and they did not have a history of limb injuries and oncological treatment. We analyzed the changes in the skin, such as redness or fibrosis, the presence or lack of varicose, the presence or lack of fluid in the subcutaneous tissue on USG images, and visualization of the limb lymphatic drainage on ICG and LSC images. We mainly concentrated on lymphatic vessels' presence or luck, their appearance (dilatation, interrupted), and the presence or lack of dermal backflow.

Results: In all patients, even obese, we observed disproportionately larger lower bodies than upper. Most of the patients did not use compression stockings. Some patients reported attempts at wearing stockings in the past for a short time. In 12% of patients with advanced lipedema stage III and IV, we observed redness in the skin. The evaluation of LSC images reveals the presence of lymphatic drainage to the regional LNs in all patients. We observed dilated but regular lymphatics and popliteal LNs in lipedema stages I and II. In advanced lipedema

stages III and IV, the lymphatic drainage will still be preserved, but LVs were irregular and dilated, and, in some patients, sites of dermal backflow were seen in the calves.

Discussion: Untreated lipedema progresses and leads to dilatation and insufficiency of lymphatic vessels. Tissue inflammation and lymphedema can complicate it.

CR-088

Customized IPC Reduction Therapy Is Shorter and More Effective in Patients with Lower Limb Lymphedema Than Classic One

Marzanna T. Zaleska, PhD

Introduction: Lymphedema of the lower limb is an accumulation of tissue fluid in tissue space due to lymphatic damage or insufficiency. However, depending on etiology and advancement, the sites of fluid accumulation and tissue secondary changes are different. Although conservative therapy for limb lymphedema consists of elements such as MLD, IPC, compression bandages, and stockings, it should not be the same for every patient. Critical parameters such as therapy time, external pressure, and order of the individual elements of therapy should be adjusted individually for every patient.

Methods: To investigate the effectiveness of individually adjusted reduction therapy in patients with lower limb lymphedema of different etiology lasting for 4-5 days. We investigated 11 patients with lower limb lymphedema stages II and III of different etiology. At the beginning of therapy in all patients, we did the ICG lymphography, measured limb circumference and volume (BadyLux 3D), and measured skin water concentration (LympScanner; Delfin Technologies Ltd.) and skin and subcutaneous tissue stiffness (SkinFibrometer Delfin Technologies Ltd., Wagner, Seattle, WA). According to the results, customized therapy was planned. After each day of treatment, we repeated all measurements to evaluate the effect.

Results: Of the 11 patients, 9 had stage II, and 2 had stage 3 lymphedema. Seven patients had 5-day therapy, three had 4 days, and 1 had only 3 days. After 3-5 days of treatment, composed of MLD, which was done according to the ICG investigation, and IPC, with the pressure adjusted according to tissue stiffness from 80 to 120 mmHg, we reduced all measured parameters in all patients. The mean volume of the swollen limbs at the beginning of therapy was 9.47 ±3.01 l. The highest volume reduction was 12% in a patient with lymphedema stage II after 5 days of treatment. The mean skin water reduction in the middle calf was 37%. Skin and subcutaneous tissue stiffness reduced in the middle calf by 38 and 42 %, respectively.

Discussion: Customized reduction therapy, based on changes in tissue and fluid location in patients with limb lymphedema, is effective and may be shortened.

CASE STUDY

CS-001

The Impact of a Citrus Silver Low PH Foam on Bacterial Loads in Difficult-to-heal Ulcerations: A Ph-based Investigation

Raymond J. Abdo, DPM; Amy Couch, MD – Mercy South Hospital

Introduction: The presence of high bioburden levels and pH levels in wounds has been proven to delay wound healing and significantly affect wound healing rates. The use of the Detec pH device allows monitoring of wound pH changes without contact with the wound. Citrus Silver foam supplementation alongside standard care demonstrated reductions in pH in wounds. In this series of 10 patients, adding a citrus silver foam to the standard of care led to observable reductions in the level of bacterial loads and change in the pH level in chronic diabetic wounds.

Methods: Ten patients were enrolled with chronic ulcerations (DFUs, VLUs, which had not begun healing after 4 weeks of treatment. Wounds were instilled with citrus silver foam. Measurements of pH, size of wound, and SP O2 were taken at each of the four patient visits. Standard of care wound treatment were administered during the course of the citrus silver treatment. Additional treatments with citrus silver foam were administered as needed by home caregiver, patient or other medical professionals if the need existed It was applied daily or at least with each dressing change. Wound alkalinity was determined using wound Detec pH methods.

Results: The overall size of wounds decreased by XX, the ph average decreased to XX, and the oxyhemoglobin xxx

Discussion: Prescence of high bioburden levels and pH levels in wounds has been proven to delay wound healing and have a significant negative effect on wound healing rates. The use of the Detec pH device allows monitoring of wound pH changes without contact with the wound. Citrus Silver foam supplementation alongside standard care demonstrated reductions in pH in wounds. In this series of 10 patients, the addition of a citrus silver foam to standard of care led to observable reductions in the level of bacterial loads and change the pH level in chronic diabetic wounds.

CS-002

ECM and Polyvinyl Alcohol Foam with Methylene Blue and Gentian Violet in Conjunction with NPWT for a Complex Fournier's Gangrene Wound with Tunnels

Vanessa Abraham, PT, CWS, PT, CWS

Introduction: 58-year-old male admitted with Fournier's Gangrene with new onset of diabetes mellitus and severe sepsis. Emergent surgical debridement resulted in a large wound to the peri-rectal, perineum and groin region. Hartmann's procedure was completed to protect wound. This wound required complex wound care to treat. Wound measured 19.0 x 10.0 x 10.0cm with tunnels at groin measuring 6.0cm at 11 and 1 o'clock. The intact skin circumferential to the rectum needed to be preserved. An additional concern was present for the healing to follow the anatomical curves to allow for pain free sitting without pain or tension.

Methods: Wound was cleansed with hypochlorous acid for a period of 10 minutes. Wound perimeter was cleansed then sealed with a skin barrier wipe. Tunnels were packed with dense version of polyvinyl alcohol foam with methylene blue and gentian violet for antimicrobial benefits. A stoma ring was used around the intact peri rectal skin to facilitate Negative Pressure Wound Therapy (NPWT) seal and preserve skin. NPWT at 125mmHg was completed with dressing changes every Monday, Wednesday and Friday. At week 2, an Ovine extracellular matrix was initiated over the wound base to facilitate granulation with a contact layer and NPWT. The patient was discharged to home at 2 weeks and continued with outpatient wound care dressing changes three times per week. By week 4, the frequency was reduced to twice a week. Polyvinyl alcohol foam with methylene blue and gentian violet was used on edges which were starting to roll or over areas with hyper-granulation. By week 7.5 the wound measured 11.0 x 1.3 x 1.5cm and tunnels were now closed. The NPWT was discontinued at 13 weeks and wound fully resolved at 15 weeks. Patient continued with colostomy with the option for reversal after one year.

Results: The combination of using hypochlorous acid, polyvinyl alcohol foam with methylene blue and gentian violet, ovine extracellular matrix and NPWT allowed for this patient to heal without the need for a skin flap, without scarring and with pain free return of functional mobility with standing, sitting and walking.

Discussion: Attention to detail including wound bed preparation, management of edge advancement and creative use of advance products to achieve the desired goals was essential to close this wound. It is always a team effort from everyone involved especially the surgeon, hospitalist and the infectious disease doctor.

CS-003

Lymphangioma Circumscriptum (LC): A Case Series Involving Gynecology-oncology, Plastic Surgery, and Complex Wound Management

Laurel Adams, BS; Julia McGee, BS – Tulane University School of Medicine; Jes-

sica Reid, MS – Tulane University School of Medicine; Molly Gaffney, BS – Tulane University School of Medicine; Cameron Belding, MD – Tulane University School of Medicine; Katarina Stephanos, MS – Tulane University School of Medicine; Abigail Chaffin, MD, FACS, CWSP, MAPWCA – Tulane University School of Medicine

Introduction: Lymphangioma Circumscriptum (LC) is a rare, benign condition characterized by fluid-filled blisters or wart-like growths, commonly found on the abdomen, axillae, or mouth. It results from abnormal lymphatic vessels forming thick-walled vesicles filled with lymphatic fluid and can develop after trauma. This case series examines two patients with LC, presenting with draining, milky vesicles in the perineum, vulva, lower abdomen, and thighs. Through collaboration between Gynecology-Oncology and Plastic Surgery, both underwent complex surgical interventions focused on resection, reconstruction, and post-operative wound care. These cases emphasize the need for early diagnosis and a multidisciplinary approach.

Methods: The first patient, a 38-year-old female with chronic Hurley Stage 3 Hidradenitis Suppurativa and LC, was initially misdiagnosed with HPV. A biopsy confirmed LC, leading to a wide local resection of the vulvar, pubic, and thigh regions with flap advancement and complex closure. The second patient, a 29-year-old female with a history of trauma to the vulva and left thigh from a biking accident, developed LC. She underwent extensive surgery, including radical left vulvectomy, partial right vulvectomy, and wide resection of the lower abdomen, inguinal region, and thighs.

Results: The first patient experienced minor superficial wound dehiscence, which healed with outpatient care. The LC lesions were excised, leading to symptomatic relief and improved quality of life. No recurrence or lymphatic drainage was reported. The second patient initially recovered well but developed minor lymphatic fluid leakage on the inner thigh. She returned to the OR for over-sewing, flap advancement, and reclosure. Retrograde doxycycline sclerosis and an abdominal binder reduced lymphatic output. After discharge, two instances of spontaneous fluid drainage resolved with pressure. A lymphangiogram revealed abnormal drainage through the left renal lymphatics, and the cisterna chyli could not be clearly identified. The surgery was successful, and the patient demonstrated significant improvement. She was managed at the outpatient wound clinic with conservative treatment and lymphatic compression garments for approximately two months until fully healed.

Discussion: This case series highlights the need for a multidisciplinary approach in managing LC, often misdiagnosed as conditions like HPV. Timely diagnosis is crucial for effective management. Collaboration between specialties ensures comprehensive care and improved outcomes.

CS-006

Management of Infected Dehisced Abdominal Wounds with Adjunctive Negative Pressure Wound Therapy and Instillation of a Topical Wound Solution

Misael C. Alonso, MD; Michael Desvigne, MD, FACS, CWS; Christopher Gonzales, MD

Introduction: Body-contouring procedures following weight loss are prone to complications including delayed wound healing, secondary wound dehiscence, postoperative hematoma, or seroma. Full-thickness abdominal surgical wound dehiscence following abdominoplasty or liposuction is a severe postoperative complication that requires immediate treatment and can lead to prolonged hospital stay, high incidence of incisional hernia and subsequent reoperations. Negative pressure wound therapy with instillation and dwelling (NPWTi-d) of a topical wound solution has been shown to aid in automatic cleansing of the wound surface, solubilizing devitalized tissue for removal, removing infectious exudate, and reducing bacterial load. We report our experience with NPWTi-d to adjunctively manage three massive, infected dehisced abdominal wounds following abdominoplasty or liposuction.

Methods: NPWTi-d was applied with hypochlorous acid solution via a reticulated open-cell foam dressing with through holes (ROCF-CC) in 3 full-thickness surgically dehisced abdominal wounds of 3 patients following elective body-contouring surgery. Systemic antibiotics were administered, and sharp surgical debridement was performed prior to or in conjunction with NPWTi-d application. Infection was confirmed via non-contact real-time fluorescence imaging. NPWTi-d settings included instilling hypochlorous acid every 2.5 to 3.5 hours with a 10-15 minute dwell time between cycles of continuous negative pressure at -150 mmHg. Imaging technologies (non-contact real-time fluorescence wound imaging and non-contact near infrared spectroscopy studies) were used at each dressing change to guide clinical decision making. Dressings were changed 3 times/week. NPWTi-d was discontinued when the wound was clear of infection, at which time patient was transitioned to outpatient care with conventional NPWT.

Results: At admission, infection was confirmed for all wounds, and percent surface area slough coverage was 15%-50%. Following the initial surgical debridement, wound size volume ranged from 130.6 cm3 to 1,186.1 cm3. Average time to infection clearance/patient discharge was 8.7 days (range: 7-11 days), and wounds were healed in 7.9 to 12.8 weeks.

Discussion: Rapid conversion in each case to a non-infected wound with clean granulating wound base allowed for quick transition from hospital to outpatient care. NPWTi-d facilitated hydromechanical debridement as evidenced by removal of devitalized tissue through the ROCF-CC dressing. Following NPWTi-d, all wounds progressed to closure without further sequelae.

CS-007

Hydromechanical Debridement with Use of Negative Pressure Wound Therapy and Instillation to Assist Limb Salvage

Misael C. Alonso, MD; Michael Desvigne, MD, FACS, CWS; Christopher Gonzales, MD

Introduction: Tissue necrosis and infection stall wound healing and can lead to other complications, including disseminated infection and amputation.1 For wound care patients at risk of lower limb amputation, rapid conversion from infected nonhealing wounds to healing wounds is essential in avoiding amputation. Use of negative pressure wound therapy with instillation and dwelling (NPWTi-d) of a topical wound solution assists in diluting, solubilizing and removing nonviable tissue in infected wounds,2,3 which may help reverse a negative wound healing trajectory. We report our experience with NPWTi-d to adjunctively manage infected lower extremity ulcers of diabetic patients admitted under a limb salvage protocol.

Methods: NPWTi-d was applied with hypochlorous acid via a reticulated open-cell foam dressing with through holes (ROCF-CC) in 9 complex lower extremity ulcers of 3 patients. Systemic antibiotics were administered, and sharp surgical debridement was performed prior to or in conjunction with NPWTi-d application. In addition to NPWTi-d, limb salvage protocol included diabetic control, offloading, revascularization, nutritional support and smoking cessation. NPWTi-d settings included instilling hypochlorous acid every 2 to 3.5 hours with a 10-20 minute dwell time between cycles of continuous negative pressure at -125 mmHg. At each dressing change, non-contact real-time fluorescence wound imaging was used to determine the presence and location of pathogenic bacteria, and non-contact near infrared spectroscopy studies were performed to measure deoxyhemoglobin, oxyhemoglobin, and ratio of tissue oxygenation (StO_2). Dressings were changed 3 times/week. NPWTi-d was discontinued when patient was discharged and/or wound bed was covered with clean granulation tissue.

Results: At presentation, wound size volume ranged from 4.6 to 49.2 cm3 and percent surface area coverage of nonviable tissue was between 15% and 100%. Wounds were converted to at least 90% coverage with clean granulating tissue in an average of 24.1 days during use of NPWTi-d. Amputation was avoided in all cases.

Discussion: Limbs previously at risk of amputation were salvaged following adjunctive use of NPWTi-d. NPWTi-d facilitated hydromechanical debridement as evidenced by removal of devitalized tissue through the ROCF-CC dressing. A clean granulating wound base allowed for successful application of cellular, acellular or matrix-like products.

CS-008

The Use of Timolol and Alginate in a Variety of Chronic Wounds Unresponsive to Traditional Therapies

Stacy Amer-Davis, MSN; Tyler Fedak, LVN

Introduction: Chronic wounds that do not respond to the standard wound treatment therapies impact a patient's economic well-being and general quality of life and require clinicians to incorporate innovative and effective wound care strategies.

Methods: Topical Timolol and alginate applied on a daily basis, by the patient or caregiver, to a variety of chronic wounds. The patients were assessed weekly or biweekly and debridement's were performed as needed.

Results: Topical Timolol and alginate lead to reduction in wound size and eventual closure of recalcitrant wounds.

Discussion: Topical Timolol presents as a viable avenue used to heal wounds. Clinicians should be encouraged to try this modality in those wounds not responding to the traditional wound therapies.

CS-009

Initial Experience with Flowable Porcine Urinary Bladder Matrix in Podiatric Wounds: A Multi-center Case Series

Malachy Asuku, MD, FACS, MBA; Hannah Baker, PhD; Yifei Dai, PhD; Rikesh Patel, DPM, AACFAS; Tyler Sten, DPM; Claire Witherel, PhD

Introduction: Tunneling and undermining continue to complicate podiatric wound management. Cellular, acellular, and matrix-based products (CAMPs) are often utilized as a part of standard of care to achieve wound closure in complex podiatric wounds. The porcine-derived urinary bladder matrix (UBM) particulate and sheets have been associated with a pro-remodeling host immune response that supports complex wound closure. Recently, a flowable preparation of the UBM particulate was cleared for use in same indications, including ulcers and surgical wounds with tunneling and undermining.

Methods: This multi-center case series captures the initial experiences of two foot and ankle surgeons utilizing flowable porcine UBM in six patients. Pertinent patient demographics, history, wound size, notes on device handling and application, and available early follow-up outcomes (>/= 90 days), including time to closure were collected

Results: All six patients showed clinical improvement following use of flowable UBM device. Four patients attained wound closure following one or two applications within a 12 weeks' time span. One patient was lost to follow up and another was eight weeks post device application with clinical evidence of healing. A table of summary will be presented to chronicle individual patient journeys

Discussion: This early positive experience with the flowable configuration of UBM in complex podiatric wounds should serve as a prelude to further research on its utility in these difficult-to-treat chronic ulcers

CS-010

Enhanced Infection Control and Accelerated Healing of Diabetic Foot Wounds with Silver Alginate Dressing and Silicone Adhesive Border Foam Dressing

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Introduction: The prevalence of diabetes mellitus in Indonesia ranks as the fifth highest in the world (IDF 2021). Diabetic foot (DF) is one of the most common and serious chronic complications of diabetes. Currently, various dressings are used in diabetic foot care, including Silver Alginate Dressing and Foam Dressing Silicone Adhesive Border. Three cases of diabetic foot wounds have been successfully treated to full recovery using Silver Alginate Dressing and Foam Dressing Silicone Adhesive Border, based on evidence-based medicine to draw conclusions with higher levels of evidence, providing a foundation for clinical DF care.

Methods: Wound care was performed using the Moisture Balance concept with the TIME Management principle, conducted twice a week. The first step involved cleansing the wound with normal saline, followed by evaluating the wound using the Diabetic Foot Ulcer Assessment Scale (DFUAS). Mechanical debridement was performed on necrotic tissue, and wound dressings were selected according to wound condition, using Silver Alginate Dressing as the primary dressing and Foam Dressing Silicone Adhesive Border as the secondary dressing. The implementation method included: (1) Cleansing wounds with 0.9% NaCl and Polyhexamethylene Biguanide (PHMB), (2) Preparing the wound base by removing biofilm and necrotic tissue, (3) Using Silver Alginate Dressing and Foam Dressing Silicone Adhesive Border as the primary care.

Results: After four treatment sessions using Silver Alginate Dressing and Foam Dressing Silicone Adhesive Border, wound care results were significantly improved: Case 1 reduced the DFUAS score from 44 at the first visit to 32 at the fourth; Case 2 improved from 41 to 30, and Case 3 from 38 to 26.

Discussion: The application of Silver Alginate Dressing and Foam Dressing Silicone Adhesive Border for diabetic foot wounds proved highly effective and accelerated wound healing. Silver Alginate Dressing offers greater contact surface and stronger bactericidal effects compared to regular dressings. Moreover, this dressing can be repeatedly disinfected to better control wound infections and promote faster healing.

CS-014

A Case Series for Management of Complicated Diabetic Foot Wounds

Tracy L. Basso, DPM, FACFAS, FAENS

Introduction: Diabetic foot ulcers (DFUs) are a very common side effect of diabetes and are considered as chronic wounds that impact healthcare systems and patient quality of life. Even more problematic are patients with significant co-morbidities and a history of complications. For many patients, the standard of care is not enough to get their wound closed, necessitating advanced wound care products like human placental membranes. These products are intended as a covering for acute and chronic wounds. We are reporting three cases of DFU patients who received placental allografts using a proprietary processing method (RE-AC).

Methods: Case one shows a diabetic patient with a previous 5th partial ray amputation presenting with macerated, undermined ulcers of the foot. RE-AC (AW2) was applied to these wounds every 7 days with the exception of one missed treatment. Case two shows a diabetic patient with Charcot arthropathy. The patient had osteomyelitis of the foot, cellulitis and probing to the bone. RE-AC (AW2) was applied to these wounds every 7 days. Case three shows a diabetic patient with multiple amputations developed necrosis on the right foot down to the bone. RE-AC (AW2) was applied to these wounds every 7 days.

Results: The application of RE-AC proved to be very effective in the treatment of these patients. The patients demonstrated clinical improvement with within one to three applications of the skin substitute. Two of the three patients went on to complete closure.

Discussion: Even in the most challenging cases, the use of this RE-AC, as a wound covering, offers significant improvement in the timeline to closure, which reduces the risk for limb threatening infection, and allowing the patient to return to a more normal lifestyle. This translates to reduced treatment costs, and optimized resource utilization in a healthcare setting.

CS-015

Case Series: A Novel Silicone Foam Dressing* for Wound Symptom Management in Hospice Care

Laura Berry White, MSN,APRN,FNP-BC,ACHPN,CWON, MSN, APRN, FNP-BC, ACHPN, CWON

Introduction: In the hospice setting, wound care is heavily focused on symptom management. This case series describes trialing a novel silicone

foam dressing* on multiple patients receiving hospice services.

Methods: Eight patients experiencing various types of wounds —pressure injuries, a bullous pemphigoid lesion, a skin tear, and a fungating tumor, among others— were transitioned to a novel silicone foam dressing* in December 2024. The silicone foam dressing* was applied directly to the wound bed without a primary filler dressing. Five patients received concurrent topical treatment for additional wound symptom management (eg, bleeding, infection). Dressing changes were performed regularly, from once daily to once weekly. The primary outcomes were change in wound symptom (drainage, odor) management and change in quality of life from baseline to end-of-treatment (or end of life)

Results: The duration of treatment varied from several days to several weeks; two patients died of unrelated causes before the second dressing change. In the remaining six patients, the silicone foam dressing* reduced wound drainage, improved odor control, and decreased dressing change frequency. Reductions in caregiver burden were also reported. Limitations include lacking an antimicrobial dressing option and difficulty monitoring dressing changes in varied home settings.

Discussion: This case series demonstrates that the novel silicone foam dressing* may improve the management of wound symptoms in the hospice care setting. Dressing application was simple for nursing staff and lay caregivers, and the decreased frequency of dressing changes reduced patient discomfort. Using the silicone foam dressing* also reduced the number of home nursing visits related to dressing changes, which may reduce the overall cost of care.

CS-016

Effect of Biomimetic Peptides* on Reepithelialization in Superficial Second-degree Face Burn: A Case Report

Juan A. Biguerias Osuna, N/A, MD

Introduction: Second-degree burns often result in significant tissue damage, necessitating advanced therapeutic approaches to accelerate healing and reduce complications. Biomimetic peptides* have gained attention for their potential to promote reepithelialization due to their regenerative properties by imitating biological natural processes.

Methods: A 35-year-old patient with a superficial second-degree burn on the face underwent treatment with a peptide-based formulation administered topically. The treatment regimen included daily application over a 6 days period, complemented by standard wound care practices. Progress was monitored through photographic documentation and clinical evaluation of Vancouver Scar Scale.

Results: By the end of the treatment period, the burn site exhibited significant reepithelialization, with over 80% observed within 3 days. Erythema and inflammation were markedly reduced by day 6, and the patient reported minimal discomfort throughout the recovery process. Minimum adverse reactions were documented. Comparative analysis with standard care outcomes in similar cases suggested an accelerated healing timeline.

Discussion: This case underscores the potential of biomimetic peptides* in enhancing wound healing in second-degree burns. The observed rapid epithelialization suggests that these peptides may play a pivotal role in modulating cellular responses and promoting tissue regeneration. Future studies with larger cohorts are needed to validate these findings and explore the molecular mechanisms underlying these effects. These preliminary results highlight the promise of integrating biomimetic peptides into standard burn care protocols, potentially improving outcomes and reducing recovery times.

CS-020

Fish Skin Xenografts Facilitating the Healing of Complex Achilles Tendon Wounds

Richard R. Bruno, DPM

Introduction: The Achilles tendon region is noted to be a historically complex area to heal wounds due to its known poor vascular supply. Multiple different theories have been proposed of the exact angiosome supply to this region, most famously by Taylor and Attinger. While there has been conflicting research in the exact distribution, the watershed area located 2-6 cm proximal to the insertion is undoubtedly a vexatious area to heal once a wound has formed. This case series exemplifies 7 patients sustaining wounds in the watershed area with tendon exposure that were healed with application of fish skin xenografts.

Methods: Twenty-one patients exhibiting heel wounds from a multitude of pathologies including surgical wounds, pressure injuries, or infections were included. All twenty-one patients underwent formal surgical debridement and at least one graft placement. Single grafts were cut and layered as needed in cases which were indicated. For cases requiring more than one graft application, this was completed on average every three weeks. Comorbidities including diabetes, peripheral arterial disease and osteomyelitis were also present in the case series. Negative pressure wound therapy was implemented as needed for severe soft tissue deficits. Wounds were considered healed after reulceration was not encountered after 3 months. Patients remained completely nonweightbearing until complete healing was achieved.

Results: All twenty-one patients proceeded to undergo complete healing with implementation of at least one fish xenograft application. The graft showed excellent success in various wound types as noted previously, showing versatility for multiple wound types, especially those with suboptimal vascular supply. At time of most recent follow-up, patients were healed on average for 15.2 months with one patient undergoing reulceration 8 months following complete and sustained healing of the wound.

Discussion: This case series displays great success in the healing of complex wounds in a known area of difficult healing. These wounds should have a very low threshold to pursue grafting due to the propensity to become stagnant and the potential for bacteria to track the large tendon and advance into bone. Failure to treat these wounds diligently can result in severe loss of function as well as proximal amputations in severe cases. Future retrospective studies with a higher study population and perhaps a more standardized patient population could provide further insight on the success of fish skin xenografts with success in healing Achilles wounds with tendon exposure.

CS-022

Treatment of Stage IV Decubitus Ulceration in Spinal Cord Injury Patients with Skin Substitute, Icelandic Cod Skin: a Care Study

Diana A. Burgueno-Vega, MD

Introduction: Deep pressure ulcers (PU) secondary to spinal cord injury are among the most challenging conditions in public health, both to treat and to prevent. Approximately 1–3 million people in the United States (US) develop pressure ulcers each year. A meta-analysis including 600078 patients using random effects model showed that a global prevalence of pressure ulcers of 32.36% among patients with spinal cord injured.

Methods: Case study of patient with refractory stage IV deuce ulceration treated with icelandic cod matrix with favorable progression to closure after several years without resolution of the ulcers

Results: Advance tissue regeneration matrix, icelandic cod matrix, is a acceptable and efficient surgical treatement for patient with full thickness pressure ulcers in patients who also have spinal cord injury

Discussion: Skin substitute matrix are an option to full thickness flaps in patient with full thickness pressure ulcers

CS-023

Combination Therapy of Cellular And/or Tissue-based Products and Platelet-rich Plasma in the Treatment of Chronic Wounds: A Case Series

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Introduction: Autologous growth factors, particularly platelet-rich plasma (PRP), have drawn attention for their vital role in chronic wound healing, promoting tissue formation and epithelialization. PRP, which contains a concentrated form of growth factors, can accelerate healing. Chronic wound healing is often challenged by limited growth factors and infections, making PRP a valuable treatment. Bioengineered Cellular and/or tissue-based products (CTPs) have become more common over the past two decades, acting as biological dressings that encourage tissue regeneration. This case study explores the use of combination therapy with PRP-soaked CTPs to enhance chronic wound closure.1-4

Methods: Chronic wounds were initially treated with standard of care (SOC), followed by the serial application of PRP-soaked CTPs. The wound bed was first prepped with thorough cleaning and debridement of nonviable tissue through sharp and/or non-contact MIST or ultrasonic methods. PRP was concentrated by centrifuging the patient's whole blood. The CTP was prepared and soaked with PRP before being applied to the wound bed. The peri-wound area was treated with stoma paste, as needed, to seal off the graft, protect the surrounding skin, and contain the material. A primary dressing was applied to secure the PRP-soaked graft in place. The primary dressing was perforated to allow excess drainage to escape, while a secondary dressing was used to absorb the remaining drainage. The PRP-soaked graft was left in place for seven days, with the secondary dressing being changed 2-3 times per week. This process was repeated weekly for a maximum of 12 applications.

Results: Overall, significant improvement and closure of the wounds were observed using PRP in combination with CTPs. The patient's comorbidities included diabetes, peripheral vascular disease, coronary artery disease, hyperlipidemia, atrial fibrillation, osteomyelitis, and hypertension. A total of 8 to 12 applications of PRP-soaked CTPs were administered. The time required for complete wound epithelialization, from the onset of the wound to closure, was, on average, 8 to 12 weeks.

Discussion: PRP-soaked CTPs are an effective advanced treatment option for chronic wounds. This case study demonstrates the successful use of PRP combined with CTPs to treat complex wounds. Proper wound bed preparation is crucial to maximize the benefits of advanced treatments like PRP and CTPs. Current literature supports the use of PRP and CTPs as advanced modalities to enhance wound healing, compared to conventional therapies. However, further research is needed to evaluate the efficacy of PRP in combination with CTPs and allografts.

CS-024

Chorion Killed the Radio (Necrosis)

Elizabeth Carradini, DNP, CWS

Introduction: Radiation dermatitis is one of the most common side effects of radiotherapy treatment for cancer, affecting over 90% of patients receiving it. There are several different modalities that can be used to encourage wound healing in these patients, including hyperbaric oxygenation, topical corticosteroids, and grafting.

Methods: This case follows an 84-year-old female with a history of radionecrosis following removal of squamous cell carcinoma and subsequent radiation treatments to the right shin. Patient first presented to provider three months after irradiation with complaints of increase in wound size and pain. Over a one-year period, patient underwent several treatments including topical corticosteroids, collagen, silver dressings, gentian violet and methylene blue dressings, aggressive debridement, two types of skin substitute grafts. In addition, patient underwent ten hyperbaric oxygenation treatments but had to stop due to risks of ocular changes. Through these treatments, patient had no meaningful decrease in pain or wound size. Only after introducing chorion and amnion grafts did the patient have a significant reduction in pain and wound size.

Results: Patient began irradiation for squamous cell carcinoma 8/2023. Over a one-year period, the wound initially worsened in size and pain, then stalled while several different treatments were used including skin substitute grafts, hyperbaric oxygenation, and several different dressings. The only alleviation of pain and size was with application of dehydrated chorion and amniotic graft placement. Initial measurements 11/2023- 5.4 x 3.2 x .1 cm-within one week we began to see more slough, and necrosis of tissue that was irradiated. 2/2024-7.8 x 4.3 x.1 cm; May 2024-began hyperbaric oxygenation and skin substitute grafts; July 2024-6 x 3 x .1 cm; 8/2024-first application of DHACM- 5.9 x 2.9 x .1 cm; Week 4 of DHACM application- 5.2 x 2.3 x .1 cm; Week 8 of DHACM- Tissue is completely re-epithelialized.

Discussion: Dehydrated human chorion and amniotic grafts (DHACM) have many growth factors that are missing from injured tissues that aid in promotion of wound healing. DHACM was successful in treating this patient's pain and radionecrosis successfully where other modalities failed.

CS-025

Pyoderma Gangrenosum: A Comprehensive Analysis of Comorbidities and Prognosis

Bianca Cei, MD; Alessandra Michelucci, MD; Giammarco Granieri, MD; Irina Balan, MD; Valentina Dini, PhD; Marco Romanelli, PhD

Introduction: Pyoderma Gangrenosum (PG) is a rare neutrophilic dermatosis causing rapidly progressive ulcers. It is often associated with systemic conditions like inflammatory bowel disease (IBD), rheumatoid arthritis (RA), and hematologic malignancies. Clinical management is challenging due to diagnostic heterogeneity and limited treatment evidence. This retrospective study evaluates outcomes in 59 PG patients, focusing on comorbidities, therapeutic approaches, and prognostic trends.

Methods: Data from 59 patients with confirmed PG diagnoses since 2013 were retrospectively analysed via interviews and medical records. Key parameters included age at diagnosis, comorbidities, anatomical sites affected, therapies, wound healing, and relapse rates.

Results: Among the 59 patients (41 female and 12 male), 32 (54%) were alive at the time of analysis; the results focus on this subgroup. The mean age at diagnosis was 68.8 years. Five patients presented with neoplasms (two hematologic malignancies and three solid tumours) at diagnosis. Pre-existing comorbidities included IBD (4 cases), RA and ankylosing spondylitis (AS; 1 case), primary biliary cirrhosis (1 case), and psoriasis (2 cases, 1 paraneoplastic). New comorbidities post-diagnosis included RA (1 case), paradoxical psoriasis during anti-TNF-α therapy (2 cases), arterial hypertension, osteoporosis, and myocardial infarction. Notably, 40.6% of alive patients developed no new comorbidities. Complete wound re-epithelialization occurred in 62.5% of survivors, with no reported relapses. However, 45% required ongoing therapy for associated conditions (e.g., RA, AS, ulcerative colitis). Two patients underwent amputation of the affected leg. Anti-IL and anti-TNF-α therapies were the most used treatments, in 15.62% and 18.75% of cases, respectively.

Discussion: This study highlights the significant systemic burden of PG, with frequent pre-existing conditions like IBD, RA, and psoriasis. The emergence of new comorbidities post-diagnosis underscores the disease's dynamic nature. The absence of new conditions in 40.6% of survivors suggests variability in systemic progression. The high rate of wound healing (62.5%) is promising, though ongoing therapy requirements in 45% reflect PG's chronicity. These findings emphasize the need for individualized, multidisciplinary management to address skin and systemic involvement. Future research should focus on the temporal evolution of comorbidities and long-term biologic therapy outcomes.

CS-026

Comparing Quality of Life in Chronic Dermatological Diseases: Pyoderma Gangrenosum, Hidradenitis Suppurativa, and Venous Ulcers

Bianca Cei, MD; Alessandra Michelucci, MD; Giammarco Granieri, MD; Valentina Dini, PhD; Marco Romanelli, PhD

Introduction: Chronic dermatological diseases, including Hidradenitis Suppurativa (HS), Pyoderma Gangrenosum (PG), and Venous Ulcers (VU), significantly affect health-related quality of life (HRQoL). These

conditions impose physical, psychological, and social burdens that vary in severity. This study compares HRQoL across these three diseases using the Dermatology Life Quality Index (DLQI).

Methods: This study evaluated a cohort of 45 patients, comprising 15 with HS (Hurley stage II and III), 15 with PG (including post-surgical cases), and 15 with VU. HRQoL was assessed using the DLQI, a validated tool designed to quantify the impact of dermatological conditions on patients' daily lives. The analysis was conducted at the time of diagnosis, prior to the initiation of any therapeutic interventions. Statistical analyses were performed to compare mean DLQI scores, assess intergroup variability, and identify significant differences across the three conditions.

Results: The DLQI scores showed that PG had the highest impact on HRQoL, with an average score of 25 (range 8–30). This reflects the chronic and recurrent nature of the disease, although post-surgical cases, which had less pain, slightly lowered the average. HS had a mean score of 20 (range 16–27), indicating significant impairment due to pain, draining lesions, and psychosocial challenges. VU had a mean score of 15 (range 7–25), showing moderate impact, though severe cases still faced significant burdens.

Discussion: This study highlights severe HRQoL impairment in PG and HS compared to VU. The inclusion of post-surgical PG cases and advanced HS stages demonstrates the need to tailor HRQoL evaluations to specific patient populations. Multidisciplinary care strategies focusing on both physical and psychological challenges are critical, especially for PG and HS. Future research should develop condition-specific tools to better measure HRQoL and explore treatments that reduce disease burden and improve patient outcomes.

CS-027 (RPT-005)

ON101 Significantly Enhances Healing and Reduces Amputation Rates in Infected Diabetic Foot Ulcers (DFUs)

Zoe Chen, MD

Introduction: Infection is a leading contributor to high amputation rates among diabetic foot ulcer (DFU) patients. Standard care for infected DFUs typically includes systemic antibiotics and silver-impregnated dressings, but clinical outcomes remain suboptimal, with published wound closure rates of only 27.5% at 6 months and 44.5% at 12 months. Modulating macrophage-driven immune responses within the infected wound microenvironment has emerged as a promising strategy to enhance healing. This study evaluates the efficacy of ON101, a topical macrophage modulator, used alongside systemic antibiotics in managing infected DFUs.

Methods: Retrospective data were collected from 178 patients with Wagner 2 to 4 DFUs who received standard hospitalized care, including pressure relief and adjuvant therapies such as negative pressure wound therapy, dermal regeneration templates, skin grafts/flaps, partial amputations, and silver foam dressings, to reduce ulcer severity. Following this downgrading phase, 88 patients with active infection DFUs (IDSA grade 2/3) receiving systemic antibiotic, 62 patients were treated with ON101 monotherapy and 26 continued with adjuvant therapies. The incidence of wound closure in 90 days, 120 days and 150 days and mean healing time were assessed. Amputation incidence in one year post-downgrading phase was also followed up.

Results: The ON101 group significantly increased healing vs. the control group: at 90 days: 62.9% vs. 11.5% , $p < 0.0001$; at 120 days: 75.8% vs. 23.1% , $p < 0.0001$; and at 150 days: 85.5% vs. 46.2% , $p = 0.00013$. Additionally, the mean healing time was significantly shorter in the ON101 group (94.5 days) compared to the control group (144.5 days, $p < 0.0001$). Among the IDSA 2/3 patients, the amputation rate within 1 year after the downgrading process showed that the amputation incidence occurred in ON101 group versus the control was 3.2% (2/62) vs. 19.2% (5/26), with $p = 0.011$. Notably, for those who healed within 120 days, the amputation rates were 0% vs. 16.7% , with $p = 0.0047$.

Discussion: ON101 significantly enhances wound closure and reduces healing time in infected DFUs. At 90 days, ON101 achieved a five-fold increase in wound closure compared to the control, demonstrating its potential as an early intervention during infection control to deliver faster and more favorable outcomes. These results highlight the critical role of macrophage modulation in repairing tissue damage and promoting healing within infected wound environments. ON101 offers a compelling therapeutic advantage in managing infected DFUs and reducing the risk of limb loss.

CS-028

Efficacy of ON101 in Enhancing Healing and Reducing Re-amputation in Wagner Grade 2 to 4 Diabetic Foot Ulcers (DFUs)

Zoe Chen, MD

Introduction: Wagner grade 2 to 4 diabetic foot ulcers (DFUs) present substantial challenges in limb salvage. Treatment often requires advanced interventions such as negative pressure wound therapy (NPWT), dermal regeneration templates, skin grafts/flaps, or partial amputation, depending on ulcer severity. Recent studies suggest that modulating macrophage-driven immune responses can enhance wound healing. ON101 promotes tissue repair via this mechanism. This retrospective study evaluates the impact of ON101 on DFU healing outcomes when combined with NPWT, dermal regeneration templates, or skin grafts/flaps. Re-amputation rates in patients who underwent partial amputation was also observed.

Methods: A total 178 patients with Wagner grade 2 to 4 DFUs received hospitalized standard of care, including pressure relief and adjuvant therapies such as NPWT, dermal regeneration templates, skin grafts/flaps, partial amputations, and silver foam dressings, to reduce ulcer severity and ulcer size. Following this downgrading phase, ON101 was applied in 80 patients as monotherapy while 98 patients in the control group continued with adjuvant therapies and silver foam dressings. The primary endpoint was ulcer healing incidence within 120 days, stratified by the types of adjuvant therapy used in the initial phase. Re-amputation incidence was assessed in the 57 patients who had partial amputation during the downgrading phase.

Results: ON101 significantly improved healing across all subgroups stratified by adjuvant therapies compared to the control group: NPWT: 79.2% (38/48) vs. 50.0% (34/68), $p = 0.00143$; Dermal regeneration template: 84.8% (28/33) vs. 62.1% (36/58), $p = 0.0222$); Skin grafts/flaps: 68.8% (22/32) vs. 45.9% (28/61), $p = 0.036$; NPWT + Dermal regeneration template: 82.6% (19/23) vs. 53.5% (23/43), $p = 0.01911$; NPWT + Skin grafts/flaps:

68.0% (17/25) vs. 45.7% (21/46), $p = 0.07134$, showing a similar trend. Among the 57 patients with prior partial amputation, re-amputation incidence was 7.1% (2/28) vs 17.2% (5/29).

Discussion: The results demonstrate that ON101 combined with existing therapies, significantly enhances DFU healing outcomes and reduces re-amputation rates. Based on macrophage modulation, ON101 facilitates tissue repair and accelerates wound closure. These findings indicate the add-on value of ON101 as non-invasive adjunct to NPWT, dermal regeneration templates, or skin grafts/flaps, offering substantial benefits in managing complex DFUs and improving limb salvage.

CS-030

Clinical Evaluation of Tendon Repair with the Application of Lyophilized Full Thickness Human Amniotic Membrane

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Introduction: Adhesion formation between repaired tendons and surrounding tissues is one of the main complications after tendon repair resulting in poor clinical outcome. Human amniotic membrane is an established modality in epithelial defects which acts as an anti-inflammatory, nonimmunogenic, and mechanical barrier to promote epithelialization, inhibit fibrosis and scar formation. This case study presents the

clinical outcome of two patients who received a lyophilized full thickness human amniotic membrane (FT-AC) after tendon repair surgery as an adhesion barrier.

Methods: The first patient is a 53-year-old male who was having pain in his right lower extremity for the last 1.5 years with no improvement. He rated the pain as 6/10, tight and pulling in nature. Intraoperative diagnosis included acute Achilles rupture, peroneal tendinitis, and a severe split tear. During surgery, debridement of non-viable tissues occurred with repair of the Achilles tendon and Peroneus brevis. FT-AC was wrapped around both tendons and secured by sutures. The second patient is a 49-year-old female who complained of right posterior heel and calf pain for one year. She rated the pain as 7/10, achy and shooting in nature. Intraoperative diagnosis included peroneal tendon tear, and Achilles tendinosis with thickening. During surgery, 40% of the Achilles tendon was debrided, peroneus brevis and longus tenosynovectomy, and peroneus brevis excision of a low-lying muscle belly were completed. Re-tubularization and repair of peroneal tendons, FT-AC was applied and sutured to both tendons.

Results: The pain score in both patients significantly decreased to 1-3/10, and range of motion using repaired tendons improved within 3-4 weeks. There are no reported adverse events related to the FT-AC through 4 months post-surgery. Long-term follow-up is ongoing.

Discussion: FT-AC is a tissue allograft, processed using the proprietary method by LifeLink. The graft maintained the mechanical and biological properties of native tissues. FT-AC will be a valuable tool to prevent adhesion during tendon repair procedures and tendon reinforcement.

CS-031

Acellular and Lyophilized Piscis Dermis and Suspended Skin Cell Transplantation for the Management of a Full Thickness Burn Wound in a Canine Model

Alfredo Cordova, MD; Edward Trathan, BVSc; Talia Selembo, BS; Sammy Shihadeh, BA

Introduction: Full-thickness skin burn wounds may be challenging to treat, even more so on animals. This is true not only for their unique skin flora but also due to their particular and more unpredictable behavior. Skin substitutes may enhance the development of an optimal wound bed for grafting and provide temporary wound coverage. Decellularized and lyophilized north Atlantic cod fish dermis have properties in the 4-stages of wound healing. Subsequent resurfacing with autologous split-thickness skin graft (STSG) and suspended skin cell transplantation (SSCT) may lead to faster and complete healing of the skin grafts with reduced donor sites.

Methods: A 6-year old neutered male dog, boxer, experienced a full thickness skin burn while undergoing a mass removal and dental procedure. Iatrogenic injuries to bilateral lower extremities affecting nearly 10%TBSA were sustained from a warm air device while being under general anesthesia. Once demarcated, all the burn wounds were tangentially excised. Subsequently, the wounds were resurfaced with fish dermis Xenograft and negative pressure wound therapy was applied. 14-days later, when the wound beds appeared optimal for grafting, autologous STSG was performed, using punch biopsies, in addition to SSCT.

Results: Xenograft integration and optimal granulation tissue was evidenced in >95% of the surface area within 14-days after grafts application. This was considered ideal for resurfacing. Skin coverage with a STSG and SSCT revealed nearly 100% skin graft take and epithelization in all cases within 12 additional days.

Discussion: Decellularized and lyophilized fish dermis provide excellent wound coverage and enhances the formation of the optimal wound bed for grafting on a canine patient. Subsequent, autologous suspended cell transplantation reduces time of healing with smaller donor sites and donor site morbidity. Further animal studies may be performed to reproduce these results to further validate its use in human beings for the treatment of full thickness burn wounds.

CS-032

Regenerative and Antibacterial Properties of Lyophilized Piscis Dermis for the Treatment of Challenging Surgical Wounds

Alfredo Cordova, MD; Talia Selembo, BS; Sammy Shihadeh, BA

Introduction: Despite repeated excisional debridements and aggressive wound care burn wounds, traumatic injuries, surgical wounds from abdominal catastrophes and necrotizing soft tissue infections (NSTI) may remain heavily colonized. Most skin-substitutes are highly sensitive to bacterial colonization and infection. Decellularized and lyophilized fish dermis (DLFD) have been shown in-vitro to possess effects decreasing bacterial migration and proliferation acting as a bacterial barrier. Omega-3 contribute to these attributed effects. DLFD may serve with bacterial protection and enhance optimal wound regeneration in preparation for grafting.

Methods: Multiple patients with numerous comorbidities sustaining full-thickness skin defects and complicated wounds with at least heavy bacterial colonization were included. These patients had sustained traumatic and surgical wounds from abdominal sepsis and NSTI, and they underwent prior debridements and local wound care. Application of DLFD and negative pressure wound therapy was then performed. Subsequently, they underwent resurfacing with a split-thickness skin graft (STSG).

Results: Despite bacterial colonized environment complete Xenograft incorporation and wound enhancement for grafting was noted within 5 to 14-days. Graft integration and optimal granulation tissue was evidenced in >95% surface area as early as 5-days after product application. No graft loss occurred. Subsequent, STSG revealed nearly 100% graft-take and epithelization within 2-weeks.

Discussion: DLFD provide excellent wound coverage of colonized wounds, act as bacterial barrier, and enhances formation of optimal wound bed for skin-grafting. Even though these properties have been observed, we do not advocate using any skin substitute on an infected field. Adequate wound bed preparation is paramount for the success of our patients.

CS-035

The 6 Month Follow up of Treatment of Full Thickness Chronic Wounds Using of a Novel Skin Morcellation Device for Skin Grafting

Thomas A. Davenport, MD

Introduction: Non-healing wounds can represent a significant clinical challenge. Autografting with freshly harvested minced full-thickness skin grafts can enhance healing but can also present technical challenges. We present the 6 month follow up of the use of a novel skin morcellating device that morcellates full thickness skin with high viability which provides for the use of full thickness skin grafting for chronic wounds with a closed donor site.

Methods: Six patients with long standing chronic wounds (4-16 week) that had failed standard of care were included in the study. Wound etiologies were post-surgical, post traumatic, and diabetic foot wounds. Under local anesthesia full thickness skin was harvested and processed using a novel mechanical skin morcellation device. These processed graft morsels were then placed into a prepared wound bed with various expansion ratios (2 – 10). The graft was then dressed with a non-adhesive compression dressing which was removed after 1 week. Wounds were then dressed with daily non-adhesive dressings and patients were followed post operatively and assessed for wound closure. Patients were reassessed for long term durability of the grafts and long term characteristics.

Results: All wounds (100%) healed during the study period with healing times ranging from 3 weeks to 10 weeks. All donor sites healed spontaneously with no complications. There were no graft infections and no graft losses. All patients continued to ambulate during the healing period. During the expanded study period of six months, Five patients continued to have closed wounds with one patient with a history of venous stasis had a 1cm x 1 cm area of breakdown in the center of the graft with possible etiology of leg trauma in addition to the stasis diagnosis.

Discussion: Full thickness skin that is mechanically morselized using a novel device designed to deliver high viability morselized full thickness skin grafts can be used to heal chronic wounds with sustained closure in various wound etiologies. These grafts in general show sustained healing

over 6 months. Further studies are necessary to assess the healing potential of this device in various wound types and versus other wound treatment etiologies.

CS-036

Advanced Management of Dog Bite Wounds: A Case Series Highlighting Culture-driven Antibiotic Therapy and Innovative Irrigation Techniques

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Introduction: Dog bite wounds, particularly those involving the hands, present complex challenges due to the risk of infection, involvement of deep structures, and the need for precise wound management to preserve functionality. This case series examines outcomes associated with culture-driven antibiotic therapy, surgical interventions, and the use of advanced irrigation techniques to optimize healing and reduce complications.

Methods: A retrospective review was conducted on patients treated for dog bite wounds involving the hands between 2021 and 2024. Data collection included wound characteristics, culture results, antibiotic regimens, and the use of advanced irrigation techniques, including Irricept. Key outcome measures included infection rates, time to wound closure, and functional recovery.

Results: The majority of injuries involved the fingers, with the palm and dorsal hand less commonly affected. Positive wound cultures were obtained guiding tailored antibiotic therapy. Infection rates were reduced through early intervention and culture-based management. Surgical debridement and irrigation, combined with advanced dressings, facilitated wound healing. Irricept irrigation was associated with improved wound cleanliness and reduced infection in cases involving deep structures. At a three-month follow-up, majority of patients achieved full or near-full hand function. No cases of tetanus or rabies were reported.

Discussion: This case series demonstrates that a comprehensive, evidence-based approach to dog bite wound management can significantly improve outcomes. Culture-directed antibiotic therapy and the use of advanced irrigation techniques, including Irricept, were key in reducing infection rates. The findings support the integration of innovative wound care practices to optimize healing and functional recovery in complex bite injuries. Future studies should explore the scalability and long-term benefits of these strategies across diverse patient populations.

CS-038

Concomitant Hyperbaric Oxygen and Retention-processed Placental Grafts for Dfus

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Introduction: Diabetes has become a very prevalent disease in the United States. Up to 39% of diabetic patients will develop a diabetic foot ulcer (DFU), with about 1.6 million DFUs treated each year. These wounds are very susceptible to infection with 20% of these infections leading to amputation. Sadly, the 5-year morbidity of lower limb amputees is over 80%. Additionally, amputations can have a serious economic impact due to increased expenditures on surgery, post operative care, prosthetics, rehabilitation, etc. It is imperative to treat DFUs with an aggressive approach to aid in quicker healing, avoid amputation and unnecessary costs. A combination of placental membrane grafts as wound coverings with hyperbaric oxygen (HBO) therapies is an example of such an aggressive approach. This case report follows a patient treated with HBO and retention-processed full-thickness amnion/chorion (RE-AC) placental grafts resulting in great success and a fully recovered wound.

Methods: A 72-year-old, male patient with a past medical history of obesity (BMI=42.1), Type 2 Diabetes, lymphedema with extensive dermatosclerosis, non-compliant OSA with pulmonary hypertension developed a R heel ulcer. During and after hospitalization, the patient underwent multiple debridements and 4 artificial grafts, with no success. The patient was started on a novel approach of HBO therapy and RE-AC placental grafts. HBO dives were 5 days a week and dressing changes were completed daily. It is important to note this patient had significant drainage due to his lymphedema. The treatment was concluded after 44 total HBO therapies and 3 RE-AC placements, resulting in complete re-epithelialization.

Discussion: Approximately 40-60% of all lower limb amputations are in patients with diabetes.(3). As noted earlier, 85% of amputations are preceded by a foot ulcer. Aggressive treatment of foot ulcers can result in a 50% decrease in the amputation rate (3). Lifetime cost of an amputation is around $750,000* (4). In the case presented, the patient had a grouping of comorbid factors that made his DFU very difficult to heal. Previous attempts by other caregivers had been unsuccessful for several months. The combination of hyperoxygenation of tissues through HBO with growth factors and other mediators in the retention- processed RE-AC placental graft create a wound environment that is highly conducive to healing compromised tissues. In this patient, HBO and RE-AC were very successful in the treatment of this recalcitrant wound.

CS-039

Wound Care in a Patient with Symmetric Peripheral Gangrene

Jazmine Duran, MD; Mariam Ahmed, MD

Introduction: Symmetric peripheral gangrene (SPG) is characterized by peripheral ischemic lesions without significant vascular occlusion. SPG mortality rates range from 40% to 90%. SPG manifests as peripheral cyanosis, mottling, and symmetrical ischemia in the distal limbs, which can lead to gangrene. Although the underlying etiology is not quite understood, the pathophysiology has been tied to three main factors: disseminated intravascular coagulation (DIC), use of vasopressors, and microbiological influences. Management strategies focus on addressing the underlying conditions, with wound care customized to the specific clinical scenario. This case details a patient found to have SPG whose wound care was adapted to his clinical presentation. A 68-year-old male with a past medical history of heart failure with mildly reduced ejection fraction, severe aortic insufficiency, untreated hepatitis C cirrhosis, and cocaine use underwent a Bentall procedure and single coronary artery bypass graft. On post operative day 1, he experienced a cardiac arrest with successful resuscitation and placed on extracorporeal membrane oxygenation. While in the intensive care unit, he required vasopressor support. Physical exam revealed gangrenous changes in the toes as well as the fingers bilaterally, sparing the right fifth digit. An ankle-brachial index was negative for peripheral arterial disease. Povidone iodine was used on gangrenous sites. Due to concern of transition from dry to wet gangrene in the interdigit spaces of the feet, daily application of silver coated antibacterial barrier dressing and silver hydrofiber was implemented and moisture resolution occurred within 2 weeks.

Discussion: The unique presentation of the patient's dry gangrene with concern of transition to wet gangrene highlights how wound care treatment is similar in both forms of gangrene as treatment is tailored to the wound's clinical presentation. Application of povidone iodine on dry gangrene decreases the bacterial burden and prevents the progression to wet gangrene. When the patient developed drainage in the interdigit spaces of the feet, silver-based dressings with absorbent properties were utilized. Silver-based wound dressings possess broad-spectrum bactericidal activity and induce damage to various cellular organelles essential for bacterial gene transcription and cell wall synthesis. Autoamputation is an expected outcome of the gangrenous areas.

CS-040

Percutaneous Double Bypass in Setting of Non-healing Chronic Ulcer for Lower Extremity Revascularization

Brittany Faux, DPM; Kanu Alieu, DPM; Nicholas Petruzzi, MD; Talia Younus, DPM

Introduction: Atherosclerosis affecting the lower extremities frequent-

ly results in rest pain, non-healing ulcers and extensive soft tissue loss. Peripheral arterial disease affects 8-10 million people in the USA (3). It is characterized by atherosclerotic occlusions that can occur in any of the arteries of the lower extremity and limit blood flow to one or both lower extremities. For patients with non-healing ulcers, re-establishing flow to the area facilitates healing. The angiosome concept (AC) introduced in 1987 by Taylor and Palmer divided the body into three-dimensional vascular territories supplied by specific source arteries (4). According to the AC, the foot and ankle has six distinct angiosomes arising from the posterior tibial artery, anterior tibial artery, and peroneal artery. Revascularization based on the angiosome concept is highly debatable for various reasons but has been used successfully. Open bypass and endovascular bypass techniques have been the mainstay of revascularization. Endovascular bypass has several advantages over open, including decreased recovery time and wound infections. With modern advancements in endovascular medicine, the DETOUR bypass has become frontline therapy for long segment SFA disease. In our case, the patient had a previous endovascular bypass (popliteal to posterior tibial) but developed a non-healing ulcer with cellulitis in the anterior tibial angiosome requiring revascularization that was performed using DETOUR bypass.

Methods: Wires were directed through the popliteal artery above the site of ligation. The left anterior tibial (AT) artery was accessed. The left popliteal vein was accessed and stripped of valves. The arterial popliteal re-entry catheter was entered into the popliteal vein. Through pedal retrograde access the AT vein was accessed followed by the AT artery. This resulted in successful endoluminal bypass utilizing the popliteal and anterior tibial veins to restore blood flow to the anterior tibial artery angiosome.

Results: To date, the wound on the left lower extremity post revascularization has decreased significantly in size with a granular wound base.

Discussion: Angiosome based revascularization using the DETOUR bypass can be an alternative therapy for wound healing of non-healing ulcers in a specific angiosome followed by conservative care.

CS-041

Efficacy of a Transforming Powder Dressing for Deep and Tunneling Wounds

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Introduction: Management of deep, tunneling, undermining and pressure wounds can be challenging. Cellular, acellular, and synthetic matrices that come in powdered, morcellated, or flowable forms can be useful for filling deep wound spaces and reducing wound volumes to promote closure. Considering its unique ability to form a shape-retaining hydrogel that locks in moisture, allows exudate to escape, and prevents bacterial penetration, we assessed if a synthetic, transforming powder dressing (TPD*) composed of biologically inert, hydrophilic polymers could accelerate granulation and closure in deep and tunneling wounds.

Methods: The patients had an initial debridement followed by application of the TPD*(Altrazeal®, Uluru Inc., Addison, TX). Weekly re-application occurred in the outpatient setting. A nonadherent dressing was placed overlying and compression was applied when appropriate. Wound measurements, images, and wound characteristics were assessed at each visit.

Results: A patient with a 1cm deep, post-surgical abdominal wound measuring 5.4cm2 was treated with TPD* at twice weekly visits. After 2 applications, wound depth decreased to 0.3cm and wound area was 4.2cm2 and after 7 applications, the wound had no appreciable depth and measured 1.6cm2. After 9 TPD* applications, the wound was 0.9cm2 and subsequently closed 3 weeks later. Another patient with a 0.5cm deep traumatic heel wound measuring 0.9cm2 underwent weekly TPD* applications and after 2 TPD*, wound depth decreased to 0.3 and area was 0.2cm2. Depth was no longer appreciable after 6 TPD* and the wound closed 2 weeks thereafter. All patients underwent an average of 8 TPD* applications.

Discussion: In our current experience, TPD* appears to be highly effective in maintaining a wound environment that promotes healing at an accelerated rate, specifically in deep and tunneling wounds. These wounds are likely too small to be managed with negative pressure wound therapy (NPWT) and TPD* may possibly be a replacememt for NPWT in larger tunneling wounds, however we did not explore this. TPD* application was somewhat cumbersome and alternative packaging that facilitates easier product application may be a worthwhile future endeavor. Presently, the majority of the applications occur in the outpatient setting but the lack of outpatient reimbursement calls for unique algorithms of care; which the QA nature of this trial did not require.

CS-042 (RPT-008)

Experience Using Neuromuscular Electrostimulation to Reduce Pain in Atypical Wounds

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Introduction: Atypical wounds are difficult to treat owing to their usual characteristics, poorly understood etiologies, and the severe pain associated with them. Management often relies on wound care, systemic therapy and pain control, though many still remain chronic. Neuromuscular electrostimulation(NMES) is a unique method of increasing blood flow to a lower limb by inducing intermittent muscular contractions via a transdermal stimulus to the common peroneal nerve. NMES has been effectively used in a variety of clinical settings, including pain management, and more recently, its ability to augment microvascular blood flow and heal wounds has shown favorable results. We explored if using a NMES device(NMESD*) could facilitate wound closures and decrease pain in several highly recalcitrant, atypical wounds.

Methods: All patients were instructed to wear the NMESD*(geko™, FirstKind Ltd., High Wycombe, UK) for 12 hours a day over a period of 6 weeks. They were seen weekly over 7 weeks for standard wound care, dressing changes, and compression application, when appropriate. At each visit, near infrared spectroscopy(NIRS) was used to assess tissue oxygenation as a marker for perfusion and subjective pain was recorded.

Results: 4 patients and 7 wounds(4 sickle cell, 1 pyoderma gangrenosum, 2 unknown ulcers) were included in the study. Average initial wound area was 27.9cm2, initial O2 saturation was 42% (range 44%-63%), and initial pain score was 8 for all but 1 wound which had a pain score of 0. After 2 weeks of use, almost all patients had a minimum 2 point drop in their subjective pain score. After 6 weeks of use, mean pain score was 5.8, average wound area reduction (WAR) was 7.17%, and the average wound O2 saturation was 52% (range 41%-60%) with a mean change in 02 saturation of 5.6%.

Discussion: The NMESD* led to a decrease in subjective pain across all participants who initially endorsed pain. The device appears to show some modest benefit in WAR and O2 saturation in this difficult cohort, however, it was not statistically significant. Based solely on NIRS, the NMESD* did not significantly alter tissue perfusion, however, alternative measurement modalities may show different results. A larger cohort and continued use of the NMESD* past 6 weeks and in other wound etiologies would be valuable.

CS-043

Case Series Highlighting the Efficacy of PHMB Wound Dressings for Pain Reduction, Infection Control and Wound Progression

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Introduction: Effective wound care requires balancing infection management with patient comfort. Polyhexamethylene biguanide (PHMB) dressings have emerged as a solution for reducing microbial load while minimizing pain, particularly during dressing changes. This abstract presents two case studies showcasing the clinical and patient-centered benefits of PHMB dressings.

Methods: Two patients with challenging wound conditions were selected for evaluation. Case 1 involved a 50-year-old diabetic female patient with a chronic venous leg ulcer to the right lateral ankle and Case 2 featured a 52-year-old trauma patient with a large, infected surgical

wound following amputation of two toes. Both cases required infection control and pain-sensitive management. PHMB dressings were applied weekly over a 4-week period. Pain levels were measured using a 10-point visual analog scale (VAS) at each dressing change. Wound progression and symptoms of infection were monitored weekly.

Cases: Case 1: The patient reported a dramatic reduction in pain, with VAS scores decreasing from 6 at baseline to 1 by week 2. By week 6, the wound area had reduced by 71%, and the patient was not showing signs and symptoms of infection. Case 2: Pain scores dropped from 3 at baseline to 0 by week 1, with the patient describing dressing changes as "painless". The wound achieved 97% closure by week 6, with significant reductions in redness and exudate and a promotion of epithelial tissue.

Discussion: These case studies demonstrate the dual benefits of PHMB dressings in managing infection and reducing pain, even in complex wounds. These findings underscore the value of PHMB dressings as a patient-centered approach to wound care. Further research is warranted to confirm these outcomes across diverse wound types and larger populations, but these initial results are highly promising.

CS-044

New Biomimetic Matrix Results in Rapid Healing Response of Complex Pressure Ulcers with Exposed Structures

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Introduction: With an underreported prevalence of 2.5 million in the United States, pressure ulcers are associated with pain, infection, and high mortality rates1. The estimated costs of hospital-acquired pressure ulcers are $26.8 billion per year, with over 50% attributed to managing Stage 3 and Stage 4 injuries1. The ideal treatment provides an environment conducive to healing while preventing infection, reducing pain, and preserving peri-wound skin quality. This small case series evaluates the efficacy of a novel self-assembling peptide biomimetic matrix (BMM) in pressure ulcers with exposed structures. As a wound-conforming extracellular matrix-like scaffold with antibacterial protection, BMM was engineered to facilitate healing of complex wounds.

Methods: Four patients with multiple comorbidities presenting with chronic (> 2 months) Stage 4 pressure ulcers were selected to receive a novel FDA-approved flowable BMM*, in addition to standard of care. Three out of the four ulcers (75%) presented tunnels and/or undermined areas. Wound measurements, pain, and peri-wound skin appearance were assessed at baseline and monitored during following visits

Results: All patients responded positively to BMM treatment, showing rapid wound depth reduction and wound healing progression. In two cases, rapid wound closure was observed, with > 70% area reduction achieved after a single BMM application and healthy granulation tissue formation. In two other cases, while there was no marked reduction in wound surface area within the first one to two applications, a substantial wound depth reduction with granulation tissue formation was observed. Easy access of BMM to hard-to-reach areas was also noted and resulted in rapid progress towards resolution of tunneling / undermining. In all four cases, the post-BMM treatment visits recorded no pain, no signs of infection, and intact peri-wound skin with healthy skin appearance. No adverse events were observed.

Discussion: This small case series demonstrates the potential of BMM for treating chronic, complex pressure ulcers with exposed structures and tunneling or undermining by intimately contacting all wound areas, creating an environment that promotes tissue regrowth and revascularization, and preventing re-infection. Larger clinical trials with longer follow-up period are required to expand on these findings.

CS-045

A Right Breast Abscess Extending into the Chest, That Required Chest Wall Debridement, Empyema Drainage and Pericardial Window and Reconstruction

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Introduction: Empyema usually develops after pneumonia and contiguous spread from skin and soft tissue infection is very uncommon. The aim of this report is to describe a case with Mycobacterium abscessus surgical site infection after breast biopsy, that was complicated by Streptococcus constellatus chest wall abscess and empyema

Case: A 53-year-old female with history of stage IB pT3N0M0 biphasic mesothelioma s/p right open pleurectomy, decortication, chest wall resection, adjuvant chemotherapy and radiotherapy, developed a right breast mass. Although CT guided needle biopsy did not reveal malignancy or infection, she developed a non-healing wound after the biopsy. The size was 1.3x1.2x2.9cm and it drained purulent discharge every day. Many deep swab cultures grew Mycobacterium abscessus. Her wound became deeper, measuring 4cm, despite oral antibiotics including omadacycline and linezolid, daily wet and dry dressing, and weekly amikacin injections at wound clinic. CT chest only showed pleurodesis changes about the right hemithorax with extensive atelectasis of the right lung. Incision and exploratory evaluation in the operating room was performed by thoracic surgery in conjunction with plastic surgery. The chest wall had purulent material that was draining through a sinus tract in the intercostal muscle. The area was opened and purulent material drained from the intrathoracic cavity along the pericardium. The intercostal muscle, the residual thoracic cavity, the subcutaneous fat and the chest wall were debrided. Pericardium window was performed. Right pectoralis major muscle flap and Ryan flap were performed by plastic surgery. Multiple surgical cultures grew Streptococcus constellatus. The histopathology showed granulation tissue and scarring, negative for malignancy. Special stains for Gomori Methenamine-Silver Nitrate and Acid Fast Bacteria were negative for fungal and acid-fast micro-organisms. Acid Fast Bacteria cultures have been negative for 3 weeks so far. She was discharged with outpatient parental antibiotics including cefoxitin and tigecycline along with oral linezolid.

Discussion: This is the first case Mycobacterium abscessus surgical site infection was complicated by Streptococcus constellatus chest wall abscess and empyema. Mycobacterium abscessus complex is one of the most aggressive rapid-growing mycobacterium requiring combination antibiotic therapy and surgical resection. A simple non-healing wound could be complicated by extensive infection. Multidisciplinary team approach is warranted when non-healing surgical wounds do not improve with medical management in outpatient settings.

CS-046

Revolutionary Flowable Gentamicin: Calcaneal Osteomyelitis Does Not Need to End in Below Knee Amputation

Amanda Fuller, LPN, WCC, DAPWCA, TCC-C

Introduction: Osteomyelitis of the calcaneus is a leading cause of below-knee amputations and requires urgent attention and intervention. A new product is making significant strides in transforming the treatment of osteomyelitis infections. Instead of resorting to radical debridement or below-knee amputation, a flowable gentamicin antibiotic-based bone graft* is being successfully injected to treat these infections. In this study, we aim to demonstrate that healing can be achieved even in complex cases.

Methods: This case series involved five diabetic patients with multiple comorbidities and heel ulcers complicated by osteomyelitis. All underwent surgery with an injection of gentamicin-based flowable bone graft*. After the procedure, patients were monitored in an outpatient setting with regular dressing changes, and imaging studies were conducted at various stages: before surgery, during, and at healing. Some patients received multiple injections throughout their treatment.

Results: The study aims to evaluate whether bone injections of antibiotics could serve as an effective curative treatment for osteomyelitis. All five patients demonstrated resolution of their osteomyelitis and returned to full weight-bearing status upon healing. Notably, three of these patients were initially offered amputation as their first-line treatment option.

Discussion: It is crucial that we explore new approaches to treating osteomyelitis. By employing this innovative surgical technique, we

successfully prevented amputation in five patients with difficult-to-heal calcaneal osteomyelitis. This is a promising new approach that warrants further research.

CS-047

Unleashing the Power of Copper: Reducing Chronic Inflammation and Biofilm Formation for Effective Wound Healing

Amanda Fuller, LPN, WCC, DAPWCA, TCC-C

Introduction: Infection and chronic inflammation are critical factors that obstruct wound healing. These factors slow healing progress and increase the risk of infection in the wound bed. This underscores the urgency for new dressings. The application of copper effectively degrades biofilm and controls inflammation, which is essential for revitalizing the healing process and achieving wound closure.

Methods: Represented in this case are detailed clinical descriptions of three patients exhibiting chronic, stalled wounds. The patients have multiple comorbidities. The wounds have clinical signs of biofilm and inflammation present and have been treated with multiple dressings with little to no progression until the introduction of copper alginate dressing*.

Results: This case series effectively illustrates that copper dressings* demonstrate superior efficacy compared to their silver counterparts. Clinical signs of biofilm and inflammation were significantly decreased or eradicated, and wound healing began progressing at each visit exhibited by decreased wound measurements, pain, and inflammation at the wound site with no adverse effects on the patient.

Discussion: Copper is an essential natural element that is vital for the optimal functioning of body tissues and skin. In addition to its established antimicrobial properties, copper provides a comprehensive array of benefits that facilitate wound healing. This innovative dressing introduces a novel mechanism that disrupts bacterial cell walls electrostatically, thereby preventing and eliminating biofilm formation. Additionally, it effectively regulates the inflammatory response in the wound bed. The treatment poses no measurable risk of adverse effects or sensitization, making it a preferred choice for addressing chronic wounds that have stalled in the healing process. The analysis of the clinical cases presented emphasizes the numerous advantages and limitations associated with a copper dressing. This evaluation is essential for making informed decisions regarding its use.

CS-048

Guarding Your Gait: Preventing Metatarsal Amputation and Its Long-term Effects

Amanda Fuller, LPN, WCC, DAPWCA, TCC-C

Introduction: Amputation, regardless of the type, leads to long-term complications. When we change the structure of the foot, we create new pressure points that increase the risk of developing new ulcers. While inserts and orthotics can help prevent ulceration, they necessitate frequent adjustments and more regular follow-ups. Therefore, the primary goal for long-term wound healing and prevention of new wounds should be to avoid any amputation.

Methods: In this case series, we treated five patients with metatarsal ulcers who tested positive for osteomyelitis using a flowable gentamicin antibiotic-based sulfate graft* during surgical intervention. Additionally, we corrected hammertoes and other anatomical issues when necessary. After the procedure, each patient was followed up in an outpatient wound care setting for secondary healing of their ulcers.

Results: After closely monitoring these patients until their wounds were completely healed, we discovered that not only were we able to close the ulcers, but we also successfully treated the osteomyelitis, thereby avoiding the need for any amputations. All five patients healed at the outpatient wound clinic and are now able to bear full weight without the use of orthotics.

Discussion: These findings provide a promising foundation for research aimed at salvaging limbs rather than resorting to amputation as a first option. Our study demonstrated that preserving something as small as a digit can prevent the long-term requirement for orthotics. Correcting biomechanical deformities helps prevent the recurrence of ulcers at the same site. The flowable antibiotic product proved effective in clearing osteomyelitis in these cases. Further research is essential in this field, particularly regarding the long-term follow-up of these patients.

CS-049

Modified Gips Procedure in the Treatment of Pilonidal Sinus Disease: A Case Series

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Introduction: Pilonidal sinus disease (PSD) is an inflammatory condition affecting hair follicles beneath the skin of the sacro-coccygeal region. PSD is acquired through local trauma and hair penetration, inducing a foreign body reaction. The Gips procedure is published in pediatric surgery literature as a preferred technique for management of PSD involving minimal soft tissue resection and trephination for excision of draining sinuses without incision closure for young patients at higher risk for wound dehiscence after wide resection and flap reconstruction due to higher activity levels. This case report highlights the use of a modified Gips procedure for extensive pilonidal disease with wide resection where indicated and tissue sparing techniques, combining the Gips procedure and standard flap advancement to decrease wound dehiscence complications.

Methods: Three patients, 17-year-old male, 35-year-old female, and 32-year-old male, presented with chronic pilonidal cysts despite comprehensive wound management and now required surgical intervention. A modified Gips procedure was created to perform tissue sparing with less wide resection and flap advancement to decrease wound complications. First, methylene blue was used to visualize the tunnels, followed by excision with a dermal curette. Where there was no disease in areas of the gluteal cleft and in patients requiring wide resection flap advancement, skin bridges were preserved. These skin bridges function like native retention sutures, sparing tissue to prevent wide resection and wide dehiscence risks. A combination closure was used to heal with more tissue preservation and fewer complications, and quarter-inch iodoform wicks were placed throughout the tunnel to provide deep drainage. Post-operative care involved minor outpatient wound care and culture-directed antibiotic therapy.

Results: All patients required minor outpatient wound care in the wound clinic and healed well with no evidence of large dehiscence of their surgical incisions. None noted recurrence of pilonidal sinus disease to date.

Discussion: This case report highlights the use of a modified Gips procedure to ensure quick recovery, lower wound complication and dehiscence rates, and greater long-term cure rate in the treatment of PSD. This modified technique combines the tissue preservation technique with surgical closure and wide drainage to accomplish tissue preservation and minimize open wounds for patients with PSD.

CS-050

Botanical Hydrogel Treatment Following Distal Phalangeal Band Saw Amputation

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Introduction: Among wood workers using powered cutting equipment, hand injuries and distal fingertip amputations are common. In fact, woodworking equipment produces approximately 720,000 injuries per year with up to 60.5% of injuries occurred to amateur woodworkers. Although lacerations are the most frequent type of fingertip injury, with potential for partial or complete amputations depending on the severity of the accident, secondary to the initial injury the greatest risk is to a wound infection after open exposure related to environmental flora.

Methods: A 34-year-old male developed a fascination for wood working over many years, and with it a proficiency for shaping and designing

unique constructs using a band saw. In a small misstep, as often causative to accidents, his left index finger was amputated mid-distal phalange. The amputation removed the soft tissue pads, the distal nail bed, and transected the bone. SW was taken to an emergency treatment center for evaluation. Given the lack of tissue to regraft to the site, the wound was treated topically with a botanical hydrogel cleared by FDA as an antimicrobial, effects pH balancing and improves wound healing.

Results: The wound was treated, and an anti-desiccation dressing (vaseline impregnated gauze) was used to retain the hydrogel and prevent additional flora from entering the wound. Dressings were changed daily, and new hydrogel administrations continued throughout the treatment arc. Images demonstrate the active healing from onset to complete closure at 30 days. Remarkable about the closure of the amputation was restoration complete with bone, soft tissue, nail, and even fingerprints. No antibiotics were administered, and no infections were noted at any time during the treatment.

Discussion: Traumatic hand injuries are common in otherwise healthy patients. This case reports discusses common care procedures such as irrigation, debridement, and sterile gauze. Uncommon to this study was the use of an antimicrobial hydrogel that was instrumental in providing anatomical and functional return to pre-injury levels. Recognizing risk, aligning immediate attention, and avoiding secondary risk to infection were accountable assets of this successful treatment.

CS-051

Comparative Evaluation of a Novel Skin-friendly, Double-sided Super Absorbent Dressing versus Alginates and Foams in Compression Therapy for Enhanced Wound Healing

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Introduction: An 85-year-old male patient with a past medical history of chronic venous insufficiency (CVI), hyperlipidemia, GERD, hypertension, and former tobacco use presented with a non-healing left lower extremity wound. The patient had been self-treating with Neosporin with a non-sterile dressing when he initially presented for treatment.

Methods: Initially, the patient was treated with an antimicrobial alginate dressing, bordered foam, and a compression sleeve. Layered compression and strict elevation were added at the next visit due to skin irritation from the patient's CVI. The patient was re-evaluated 10 days later, at which time the alginate and foam dressing was discontinued due to the patient's foam sensitivity, a known symptom present in patients with chronic wounds. A novel silicone-based super absorbent dressing was trialed along with continued layered compression.

Results: The patient was reassessed five days later, and the peri-wound maceration had resolved, skin fragility had improved, and the wound had significantly improved. At the second follow-up visit one week later, there was complete resolution of the wound.

Discussion: The introduction of the skin-friendly, silicone-based super absorbent resulted in complete wound healing within two weeks of implementation on the patient's wound. Further evaluation of the product is underway.

CS-052

Effect of Bioactive Glass Wound Matrix on Non-healing Diabetic Foot Ulcers

Marcus L. Gitterle, MD

Introduction: It is estimated that 18.6 million people worldwide and 1.6 million in the US are affected by diabetic foot ulcers annually [1]. Synthetic materials such as bioactive glass are becoming commercially relevant as the next generation of skin substitutes. A case series consisting of eight patients with non-healing diabetic foot wounds managed with bioactive glass wound matrix therapy is presented presently.

Methods: A case series of eight patients with non-healing diabetic foot ulcers were managed with weekly applications of bioactive glass wound matrix. All patients presented with non-healing diabetic ulcerations failed to heal by standard of care therapy. Patients saw rapid progress after starting the bioactive glass wound matrix applications. After the diabetic ulceration resolved, excellent tissue remodeling was observed in all patients.

Results: All eight non-healing diabetic wounds resolved after application of the bioactive glass wound matrix. Of these resolved wounds, tissue quality was noted as excellent and formally painful wounds were reported to have resolved after just the couple applications.

Discussion: Improvement in wound healing progressing was observed in each of the eight patients. These findings are consistent with a previously published RCT comparing bioactive glass wound matrix to standard of care in a 40-patient trial on diabetic foot ulcers [2]. Patients with painful wounds have also reported a significant reduction in pain after the application of bioactive glass wound matrix [3-4]. The improvement in these patients is significant due to the complicated nature of the patients and the severity of the wounds. While the number of wounds in this case series is small, it provides sufficient real-world data to suggest bioactive glass wound matrix has can have a significant impact on non-healing diabetic foot wounds.

CS-053

Transforming Chronic Wound Healing: Efficacy of Vaporous Hyperoxia Therapy in Complex Cases

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Introduction: Vaporous Hyperoxia Therapy (VHT) represents a promising approach for the management of chronic wounds, particularly in cases such as diabetic foot ulcers, pressure ulcers, and venous insufficiency ulcers. This innovative treatment modality combines hydrating vapor with concentrated oxygen, which is believed to enhance wound healing through several biological mechanisms. Research indicates that hyperoxia can stimulate angiogenesis and promote collagen synthesis, both of which are critical for effective tissue repair and regeneration . Furthermore, hyperoxia has been shown to modulate inflammatory responses, thereby potentially reducing the chronic inflammation often associated with non-healing wounds .

Methods: In a case-series study involving four patients with chronic lower extremity wounds, VHT* was integrated into a multimodal treatment protocol that included standard wound care. Patients received 2-3 VHT sessions weekly, and their progress was monitored using advanced imaging techniques such as Near-Infrared Spectroscopy (NIRS) and thermography imaging**. Clinical outcomes, such as wound size reduction and pain alleviation, were tracked, with follow-up durations extending up to 9 weeks.

Results: The results demonstrated significant clinical improvements, with all patients showing increased tissue oxygenation after each VHT session and a clear longitudinal trend, suggesting enhanced blood flow and angiogenesis. No signs of infection were detected via thermography. In one case, a patient with wounds on both the medial and lateral posterior legs was showing early signs of healing. Although new wounds developed, the initial site demonstrated notable healing progress.

Discussion: The findings from this case-series study underscore the potential of VHT as an adjunctive therapy in chronic wound management. The therapy not only addresses immediate concerns such as wound size reduction and pain alleviation but also facilitates long-term wound management by promoting a favorable healing environment. The use of NIRS and thermography for monitoring therapeutic effects allows for personalized care adjustments, enhancing the overall effectiveness of the treatment protocol. These results advocate for the broader integration of VHT into clinical practices, particularly for complex wounds that are resistant to conventional therapies.

CS-054

Application of a Dehydrated Human Umbilical Cord Particulate (dHUCP) Device* in the Management of a

Postoperative Hip Wound Dehiscence

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Introduction: Wound dehiscence can become a serious postoperative complication commonly associated with pain, infection, and delayed healing. These wounds can have complex features such as tunneling and draining, often requiring advanced wound care therapies. As the first FDA-cleared human birth tissue medical device for wound management, the novel dehydrated human umbilical cord particulate (dHUCP) device* is intended to cover, protect, and provide a moist wound environment. Indicated for the management of chronic and acute wounds, such as tunneled and surgical wounds, herein reports a clinical example of dHUCP use in postoperative hip wound dehiscence management.

Methods: A 59-year-old female underwent total left hip replacement and later developed a postoperative wound dehiscence. The patient's primary complaint was pain of the left hip. Initial wound size was approximately 12x1.5x0.2cm with a tunneled area that measured 3x3cm. The patient was prescribed vibramycin to treat deep incisional infection and outfitted with negative pressure wound therapy (NPWT). While NPWT was noted to aid wound healing progress overall, the care team remained concerned about the persisting tunnel. After the infection was cleared, dHUCP was implemented to manage the wound as tissue regrowth occurred in that region. dHUCP was hydrated and applied to the wound bed, covered with a non-adherent dressing and NPWT. A week later, NPWT was discontinued, and a second application of dHUCP was administered to the wound. The decreased wound severity at this stage enabled the care team to allow the patient to perform dressing changes herself as part of home care.

Results: Two weeks after the second dHUCP treatment, the wound size decreased by 98% and the tunneled portion was resolved. Patient reported satisfaction with pain resolution, and the care team was pleased with the wound progression. The wound was confirmed closed by three weeks-post second dHUCP application.

Discussion: The versatile particulate format of dHUCP in combination with its diverse matrix composition was advantageous in this case and facilitated expedited resolution of the dehisced wound. dHUCP is a novel advancement, offering an allogeneic device with a unique structural complexity designed for challenging wound topographies and readily incorporates into the wound as it heals.

CS-055

Use of 3% Sea Salt Cleaning Solution with Negative Pressure Wound Therapy with Instillation in a Driveline with Multi-resistant *Candida Albicans*

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Introduction: Heart Failure is defined as a syndrome caused by an anomaly in the structure and/or function of the heart, with the greatest impact on global public health, and one of the main causes of morbidity and mortality throughout the world. Although Heart Transplantation is the most recommended treatment, mechanical circulatory assistance devices (right, left or biventricular) have emerged, which respond to the lack of donors, with the most common being the left ventricular assist device – LVAD. The device is controlled by an extracorporeal interface, through a subcutaneous tunneled cable called driveline, which transports energy to the pump, and provides pump information to the system controller. The driveline exit site is percutaneously, in the abdominal wall, posing a greater risk of infection and consequent system failure. When there is an infection of the driveline, it must be cleaned so that bacterial progression does not develop into the implanted device, which if this happens could be a cause of death. The presence of multi-resistant microorganisms makes the cleaning process difficult and may put the system's functioning at risk. The use of hyperosmolar solutions is an effective tool in this type of complex wounds.

Methods: Case study of sternotomy dehiscence after LVAD implantation with multi-resistant *Candida albicans* infection.

Results: After 8 weeks with intravenous antifungal medication, and with exudate positive for *Candida albicans*, the driveline is cleaned, osteosynthesis material removed from the sternum and debridement of non-viable tissue in surgery. Application of negative pressure wound therapy with instillation of a 3% sea salt cleaning solution, with hyperosmolar action in the open sternotomy and driveline insertion sites. In 4 weeks, all biopsies were negative.

Discussion: The use of hyperosmolar solutions allows a new approach to multi-resistant microorganisms in cleaning complex wounds. In this case, it allowed for secondary intention closure of the sternotomy region and maintenance of the life support device.

CS-056

An Atypical Peristomal Ulcer

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Introduction: A 44-year-old woman with a colostomy for metastatic rectal cancer developed an ulcer under her pouch system. A large incisional hernia was present on her midline as well as a parastomal hernia. A hernia belt was used to decrease symptoms; however, due to pain and nausea from the hernias, she was scheduled for palliative surgical repair. She was receiving panitumumab which is a monoclonal antibody used in treatment of metastatic colon cancer.[1] Doxycycline was prescribed to prevent skin toxicities related to panitumumab.[2] Nevertheless, a rash developed 3 days after starting the medication. After 10 weeks, an ulcer appeared under her pouch system. It began as a pustule and rapidly increased in size to 1.7 x 3.3 x 0.2 cm. Skin toxicities can occur with panitumumab which include rash or dermatitis.[3] Dermal ulcers occur in 6% of patients on panitumumab.4 Did panitumumab cause or contribute to the development of this ulcer?

Methods: The patient's pouch system was modified to a one-piece flexible pouch system to eliminate any pressure from the flange. The hernia belt was limited to eating and activity. A hypochlorous acid topical solution was used to cleanse the ulcer. Initially, a silver hydrofiber dressing was used. The plan of care was changed to cadexomer iodine gel with a hydrofiber dressing when the ulcer continued to increase in size. A treatment break from panitumumab was initiated due to the patient's toxicities. Her hernia surgery was then scheduled.

Results: The ulcer epithelialized 6 weeks after the panitumumab was discontinued. The hernia surgery was also performed at that time.

Discussion: Dermatological issues can occur under an ostomy pouch system. A wound care provider must evaluate wound and ostomy patients holistically to determine all potential causes and contributing factors effecting peristomal ulcers.

CS-057

Super-absorbent Dressings and Two-layer Compression Wrap Use in the Management of Lower Extremity Wounds

Emily Greenstein, ARPN, CNP, CWON-AP, FACCWS

Introduction: Up to 3/1000 people are estimated to have leg ulcers with prevalence increasing to 20/1000 for people >80 years old.[1] These lower extremity wounds are often chronic, highly exudative, and associated with venous insufficiency. Management of these wounds involves advanced wound dressings designed to absorb large amounts of wound exudate and compression therapy. The use of advanced wound dressings, super-absorbent secondary dressings, and two-layer compression in 7 patients with lower extremity wounds is presented.

Methods: Wounds were assessed and managed with advanced wound dressings (oxidized regenerated cellulose [ORC]/collagen/silver-ORC* or hydrofiber with silver dressings†) along with super-absorbent dressings‡ and two-layer compression wrap§. Dressing changes occurred 1-2 per week, depending on the level of exudate present. One patient received an advanced elastomeric skin protectant** prior to dressing and compression application.

Results: Seven patients presented for care (age range 41-88 years).

Wound types included skin breakdown secondary to skin blistering from lymphedema (n=1), fluid overload ulcer (n=1), venous leg ulcers (VLUs, n=3), vasculitis (n=1), and traumatic ulcer (n=1). Previous medical history included VLU, lymphedema, obesity, diabetes, vascular insufficiency, and endovenous ablation. In all 4 patients, increased granulation tissue development along with reduction of wound area and exudate volume was observed after treatment for 14-28 days. Complete wound healing was noted in 4 patients within 46 days of presentation. Granulation tissue development and decreased slough were observed in the wound bed of the remaining patients. Hydrofiber with silver dressing and super-absorbent dressing use was continued.

Discussion: Use of advanced wound dressings, super-absorbent dressing, and two-layer compression wrap resulted in complete wound healing in 4 patients. This wound management plan contributed to increased granulation tissue development and reduced slough observed in the remaining patients.

CS-058

Use of an All-in-one Dressing and Negative Pressure Wound Therapy on Hard to Heal Wounds

Emily Greenstein, ARPN, CNP, CWON-AP, FACCWS

Introduction: Negative pressure wound therapy (NPWT) is widely utilized in wound management.1-3 However, challenges exist with its use such as maintaining a seal in difficult anatomical locations, controlling exudate, periwound skin management, and pain upon dressing removal. A new, all-in-one, multilayer peel and place dressing (MPPD)* for NPWT has been developed that contains a foam dressing and a hybrid acrylic-silicone drape. Use of this new dressing was assessed in 3 cases with complex wounds.

Methods: Patients and wounds were assessed. The MPPD was applied to the wound followed by NPWT† initiation. Dressings changes occurred every 7 days. One patient required dressing changes every 3-4 days due to skin maceration and patient non-compliance with offloading. Wounds and periwound skin were reassessed at each dressing change.

Results: Three patients (age range 56-63) presented for care with a diabetic foot ulcer, a stage 3 pressure injury, and surgical wounds. Previous medical histories included diabetes, transmetatarsal amputation, hypertension, peripheral vascular disease, and Charcot foot. Dressing applications were easy and quick with each dressing application taking 2 minutes or less. Dressing removal was painless for all 3 patients. The negative pressure seal remained intact throughout the duration of therapy in all patients. Periwound skin remained healthy without any complications. The small diabetic foot ulcer was fully healed after 7 days of NPWT use. Wound size reduction and development of healthy granulation tissue were observed in the other 2 patients with larger, more complex wounds.

Discussion: Use of the new MPPD for NPWT helped reduce common challenges with dressing application, dressing removal, and periwound skin management and improved wound healing outcomes in these 3 patients.

CS-059

Flowable Biomimetic Matrix Successfully Treats Pressure Injury with Undermining: A Case Report

Fiona Gruzmark, BS; Natalie Hickerson, MD; Juan Bravo, MD; Hadar Lev-Tov, MD, MAS

Introduction: Pressure injuries account for 2.5 million hospitalizations in the United States, making it the third most costly disease, with more than 60,000 deaths resulting from disease complications. Pressure injuries also reduce patient autonomy, contribute to self-care dysfunction and result in poor mental health for the patient. Here, we describe the use of a novel BMM in a pressure injury that failed to improve with standard treatment. BMM is an FDA-cleared, flowable antibacterial polypeptide technology that promotes infection-free wound healing. The BMM self-assembling peptides form a three-dimensional scaffold that mimics the extracellular matrix (ECM), supporting tissue regrowth. In addition, when in contact with bacteria, these cationic peptides cause bacterial membrane disruption, serving as an antibacterial barrier. This case report describes the therapeutic outcomes from application of a novel biomimetic matrix (BMM)* in a chronic pressure injury with undermining.

Methods: A 43-year-old male presents with a stage 3 pressure injury on the left sacrum secondary to an ill-fitting leg prosthesis, causing him to put more weight on his left sacrum. He received his prosthesis after receiving a below-knee amputation for osteomyelitis of his right heel. He failed to improve after offloading, and treatment with hydrocolloid dressings, foam dressings, and wound packing for over one year.

Results: After a single BMM application with the flexible applicator tip and following wound debridement, the wound size decreased from 9.0 cm2 to 4.8 cm2 (46.7% wound area reduction). Wound depth decreased from 1.0 cm to 0.3 cm, and 3.0 cm undermining surrounding about 58.0% of the wound perimeter completely resolved. Resolution of undermining was observed after 5 weekly applications. The BMM was simple to apply and well-tolerated by the patient, with no pain or discomfort during or after application, and no surrounding irritation of the tissue with improved wound bed appearance.

Discussion: This case report highlights the potential utility of the self-assembling peptide BMM in treating chronic, unresponsive wounds with undermining. Larger, controlled trials will validate our observation.

CS-060

Implementing Mechanical Debridement Guided by Wound Imaging Device

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Introduction: Clinical Problem: Wound healing has been shown to be impeded by the presence of bacterial biofilms which exist in most chronic wounds. It is not surprising that biofilm disruption is the focus of wound management and essential to the healing process. “Regular debridement is the cornerstone for maintaining a healthy wound bed in most chronic wounds with a potential to heal.” Past management: Within our large corporation we were looking for ways to improve patient outcomes, shorten wound healing times and help patients with decreased pain and improved healing. Advanced wound care was being used but healing was slow.

Methods: Our agency uses monofilament debridement pads to mechanically debride wounds between wound clinic visits. This quality improvement project looked at the efficacy of these pads by using point-of-care fluorescence imaging devices for the detection of the presence and location of elevated bacterial loads and biofilm.

Results: Patient outcomes: Several patients with chronic wounds were selected for the trial. We highlight three for our series. Wound photos and fluorescence imaging were taken prior to cleansing the wound. Surprisingly, the results of the imaging showed that the periwound was more contaminated with bacteria than the wound bed. The wounds and periwound areas were then cleansed using the monofilament debridement pads and the same imaging repeated. The results showed that post cleansing with the monofilament pads the bacterial load was significantly decreased.

Discussion: Conclusion: “Optimal wound-bed preparation consists of regular debridement to remove devitalized tissues, reduce bacterial load, and to establish an environment that promotes healing”3. However, if the periwound skin is contaminated this will also slow healing. With these results in hand, our providers order monofilament debridement between visits to keep the wound and periwound skin as free as possible from bacteria to promote improved healing rates.

CS-061

Integrating Multispectral Near-infrared Spectroscopy and Thermography Imaging in the Management of Diabetic Foot Ulcers and Venous Leg Ulcers with Skin Substitutes

Christine A. Handley, MBA, BSN, RN

Introduction: Diabetic Foot Ulcers (DFUs) and Venous Leg Ulcers (VLUs) represent significant healthcare challenges in the United States, exacerbated by demographic shifts such as an aging population and increasing rates of chronic diseases like diabetes and obesity. Skin substitutes have become a crucial component of treatment strategies for these wounds, driven by increasing evidence supporting their efficacy. In response to evolving clinical needs, recent Local Coverage Determinations (LCDs) have broadened the scope of acceptable vascular assessment methods to include tissue oxygenation measurements, complementing traditional techniques. This case study examines the integration of multispectral near-infrared spectroscopy (NIRS) to assess tissue oxygenation as part of a comprehensive approach to managing patients with lower extremity ulcers undergoing advanced treatment (AT) using skin substitutes.

Methods: A handheld, FDA 510(k)-cleared NIRS and thermal imaging device* was used to measure tissue oxygenation and skin surface temperature. Wound images were taken at various stages: pre- and post-debridement during the four-week standard of care (SOC) treatment period, before the first skin substitute application, and after each subsequent application (pre- and post-debridement, prior to placement). The case series involved four patients, and the key parameters of interest were wound size reduction and changes in tissue oxygenation with SOC and skin substitute application treatments.

Results: The integration of NIRS and thermography imaging, alongside wound size measurements, enabled comprehensive, objective documentation of wound progression. Tissue oxygenation levels confirmed sufficient perfusion necessary for wound healing, while thermography re-confirmed the absence of infection prior to skin substitute application. These combined technologies streamlined clinical workflows and provided the objective data necessary to meet the medical necessity criteria for skin substitute therapy.

Discussion: Non-invasive measurements of tissue oxygenation, in conjunction with skin surface temperature assessment, provide real-time insights that help predict treatment outcomes, guide clinical decision-making, and ensure timely access to advanced therapies like skin substitutes. These technologies enhance clinical workflows by simplifying documentation for insurance coverage and reimbursement. Ultimately, the integration of NIRS imaging into wound care protocols not only improves patient outcomes but also expedites treatment access and reduces the administrative burden on healthcare providers.

CS-062

Abdominoplasty Flap Necrosis and Wound Dehiscence: Complete Closure Without Reoperation

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Introduction: According to the America Society of Plastic Surgeons (ASPS), society members performed almost 162,000 abdominoplasty procedures in 2022. This is the third most common cosmetic surgical procedure trailing only liposuction (325,669) and breast augmentation (298,568.)1 One metanalysis found that the incidence of skin necrosis varies between 3% and 4.4%2. This is one of several complications that can lead to significant delays in healing and suboptimal aesthetic results. An additional consideration is the ever-important doctor-patient relationship, which may erode following a significant complication of an aesthetic procedure. These situations, as well as patients returning from a "medical tourism" trip, often find themselves without adequate post-operative care. We present a case of a patient who underwent a redo abdominoplasty which resulted in recurrent wound dehiscence and flap necrosis. They ultimately sought out a second opinion for potential non-operative wound closure.

Methods: With the understanding that the patient did not wish to undergo any further major surgical procedures at the time of presentation, our team devised a multimodal wound healing plan and frequent outpatient clinic follow up. Sharp debridement, enzymatic debridement, negative pressure wound therapy (NPWT), animal and human based advanced tissue products, and registered dietician collaboration were among the many advanced modalities utilized.

Results: In the first four weeks of treatment, the wound volume decreased from 111 cm3 to 7.8 cm3, or approximately 93% volume reduction. Treatment remains ongoing with the expectation of complete closure within the next 4-8 weeks.

Discussion: There are several reasons why patients elect not to follow up with their original surgeon following a cosmetic surgical complication. Many patients are unable to find another surgeon willing to take on a post-operative complication of a cosmetic procedure while others simply do not wish to undergo further surgery. This case of flap necrosis and wound dehiscence following abdominoplasty demonstrates a potential option for successful closure without reoperation as well as the key role advanced wound centers play in the treatment of these "wound orphans".

CS-063

Hidradenitis Suppurativa Revision Surgery with Split-thickness Skin Graft After Contracture Development Following Primary Closure: A Case Report

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Introduction: Hidradenitis suppurativa (HS) is a chronic and debilitating inflammatory skin condition necessitating a multidisciplinary approach, including medical management, surgical intervention, and wound care. The disease is associated with lifestyle factors like smoking and obesity and has known genetic predispositions; however, its pathophysiology remains incompletely understood. HS frequently involves areas such as the axilla, inner thighs, and genitalia, causing significant physical discomfort and profound psychosocial impacts due to visible, painful lesions. Patients often pursue extensive treatments to mitigate the disabling effects of HS. While surgical excision is a cornerstone of therapy, complications such as infection, dehiscence, and scar contractures are common.

Methods: We present the case of a 35-year-old male with Hurley stage III HS involving the bilateral axillae, upper arms, and chest wall. On 8/29, the bilateral axillary and chest lesions were excised, yielding defects measuring 18×12×4 cm (right) and 17×13×4 cm (left). The right defect was closed primarily, while the left required an adjacent tissue transfer rotation flap and a 3-layer skin substitute for a residual 7×7 cm defect.Despite expected wound dehiscence managed with debridement and dressing changes, the patient developed right axillary scar contractures two months postoperatively with the right axilla experiencing restricted range of motion. On 11/7, right axillary contracture was released, and recurrent HS was excised. Z-plasty, and split-thickness grafting were employed for complex closure.

Results: At follow-up on 12/11, the patient reported improved pain, minimal drainage, and full shoulder range of motion. There were no signs of infection, and pain was controlled with acetaminophen.

Discussion: Scar contractures are a common complication of HS excision due to reduced skin elasticity. This patient was young with a lower BMI (25) and minimal skin laxity. This case highlights the importance of individualized closure techniques and a balance between more invasive procedures such as flaps and grafts and the potential functional complications of primary closure like contracture. When successful, primary closure helps afford the patient fewer stages of surgery. Further research is needed to optimize surgical strategies for HS closure, particularly in patients with challenging anatomical considerations.

CS-064

The Effect of Topical Macrophage-regulator on Chronic Burn Wound : A Case Report

Shu-Hung Huang, MD/PhD

Introduction: Flame burn victims are forced to live a life of long-last-

ing morbidity. Delayed wound healing affect patients not only physically, but mentally. Various treatments are used to treat chronic wounds but the best treatment is still debatable. Topical macrophage-regulator is a cream with the proprietary ingredients to manage chronic wounds through macrophage subtypes regulation and betterment of anti-inflammation. Numerous studies reported the cream's good healing outcomes on diabetic wounds but currently no study was reported to investigate its effect on burn wounds. This case report aims to present the effect of topical macrophage-regulator on chronic burn wound.

Methods: A 26-year-old female burn victim presented to our Plastic Surgery clinic with the complaint of a chronic wound over her left post auricular area. Tracing back her history, she was a Chemistry teacher who experienced a 13% TBSA (Total Body Surface Area) second to third degree fire related skin burns in the face, bilateral upper limbs and anterior chest during an accident in the experiment class. She was admitted in another burn centre where first aid and management were given. She visited our facility due to a chronic non-healing skin wound over her post auricular area. During physical examination, a 2nd degree superficial burn wound was noted behind her left ear with redness and blister formation. We provided the wound with moisturizer and wound dressing with Silicone-Faced Dressing. Despite long-term care for weeks, the wound healing progress was slow with very limited improvement. Regarding her skin wound, topical macrophage-regulator was applied twice daily after well sterilization. First, the burn wound was cleansed by normal saline solution. Then, topical macrophage-regulator is applied to most of the wound. The patient changed wound dressing at home by herself for 3 weeks and the condition of the wound is recorded by a camera.

Results: After the treatment with topical macrophage-regulator, the healing process started with the decrease in serous secretion and followed by formation of granulation tissue and epithelialization of the wound. Three weeks after topical treatment of macrophage-regulator initiation, the wound healed uneventfully with acceptable aesthetic outcome.

Discussion: Topical macrophage-regulator is an effective and affordable alternative to chronic burn wounds. To our best knowledge, this is one of the first case reports of this topical cream's effect on burn injuries with satisfactory outcome. For patients presented with a chronic burn wound, topical macrophage-regulator may be considered.

CS-065

TMA Wound Treated with Bovine Dermal Collagen Matrix*: At-risk Amputation Wound with Compromised Perfusion and Effects Long-standing Diabetes

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Introduction: The average length of a song is approximately three to four minutes. According to the American Diabetes Association, "Every 3 minutes and 30 seconds in the United States, a limb is amputated due to diabetes." Patients with diabetic foot ulcers represent 80% of nontraumatic amputations. Typically, these patients have impaired foot perfusion and high wound complication rates including surgical site infection rates as high as 63.2%. Surgical site infections represent to most costly hospital acquired infection. Patients who undergo minor or major amputations five year mortality rates are 46.2% and 56.66%, respectively. Advanced modalities to support surgical wound closure are needed in this fragile patient population. We submit a transmetatarsal amputation case where a Bovine Dermal Collagen Matrix*, which is intended for the management of moderately to heavily exudating wounds, to control minor bleeding and to support wound closure, was applied.

Methods: A 69-year-old polymorbid male, with longstanding type 2 diabetes, presented with an infected diabetic foot ulcer and impaired arterial perfusion. Cultures identified Enterococcus Faecalis which was treated with antibiotics. A transmetatarsal amputation was performed and a Bovine Dermal Collagen Matrix* was applied to the irregularities of the transmetatarsal amputation surgical wound.

Results: The transmetatarsal amputation wound closed without complication or additional advanced therapy use.

Discussion: Proactively addressing high risk surgical wounds may benefit patients and avoid the costs associated with surgical wound complications. This foundational evidence is important in the evaluation of adjunctive product use in high-risk surgical wounds such as Bovine Dermal Collagen Matrix*

CS-067

Nitric Oxide Delivering Foam Outperforms Other Commercially Available Actives for Wound Healing

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Introduction: Nitric oxide (NO) plays a critical role in the regulation of various wound healing processes, including perfusion, inflammatory response, cell proliferation, collagen formation, antimicrobial action, angiogenesis, wound contraction, and epithelialization.1-3 For patients with chronic or critical illness, NO bioavailability is reduced, resulting in delayed wound healing.1,2 Despite a large body of evidence supporting the benefits of supplemental NO, there were no available NO delivering products available for wound treatment prior to introduction of the study product. The aim of this study was to observe treatment time among patients with chronic wounds before and after being treated with a topical nitric oxide-delivering foam (NODF).

Methods: A research protocol, data collection form, and informed consent form were developed. A data registry was designed and automated. After product and registry training, the NODF was implemented in 21 skilled nursing facilities. Patient selection was guided by physician judgement. Clinical cases were entered into the registry by facility staff. Data were analyzed in aggregate form.

Results: Data analysis included 54 clinical cases, representing severe wounds (full-thickness pressure injuries (FTPI) and lower extremity wounds such as DFUs, VLUs, and Arterial Ulcers) and trauma wounds. Clinicians recorded the age of the wound as 1-3 months, 4-6 months, or 6-12 months. The midpoint of these ranges was used to calculate the wounds age (1-3 months = 60 days, 4-6 months = 135 days, 6-12 months = 270 days). Of the 54 cases, 40 chronic severe, lower-extremity, FTPI, and trauma wounds persisted for 77 days on average before being treated with NODF. All 40 wounds (with an average initial size of 12cm2) healed in an average of 24 days. The other 14 wounds persisted for 90 days on average before being treated with NODF. These 14 wounds were treated with NODF for an average 35 days before treatment was stopped (typically due to discharge) and experienced a 49% reduction in the size of the wound on average.

Discussion: This data suggests that the topical NODF moves wounds from a chronic trajectory into a healing trajectory. This suggests using NODF to treat chronic wounds of multiple etiologies can improve patient outcomes.

CS-068

Salvaging Exposed Lightweight Polypropylene Mesh in Complex Ventral Hernia Repairs: A Case Series of Advanced Wound Care Techniques

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Introduction: Hernia repair remains one of the most common surgical procedures in the United States, with over 700,000 cases annually utilizing mesh. Complex and multiply recurrent ventral hernias, while comprising a smaller proportion of these cases, are challenging due to their high complication rates. Wound dehiscence leading to exposed hernia mesh is a significant concern, traditionally managed through mesh removal. This approach often subjects patients to prolonged recovery, increased recurrence, and greater morbidity. Advancements in wound

care now offer alternatives that emphasize the salvage of exposed hernia mesh. Understanding the material composition, porosity, and mesh behavior in wound environments is critical for guiding decisions. This case series highlights a novel, successful approach to managing exposed ventral hernia mesh without removal, emphasizing wound care in optimizing patient outcomes.

Methods: We prospectively reviewed a single surgeon's database of 900 complex abdominal wall reconstruction patients for mesh extrusion and identified 7 patients with exposed hernia mesh. Patient and outcome data were performed. All patients had lightweight large-pore (3 mm) polypropylene mesh. Mesh was placed in either the retro-rectus plane or the on-lay position. Two patients had mesh contaminated with succus from entero-atmospheric fistulas. Treatment regimens included a combination of standard and advanced wound care techniques to address both contamination and wound healing, tailored to individual patient needs.

Results: All patients achieved complete wound healing within a mean of 71 days. Aggressive debridement removed necrotic tissue while preserving mesh integrity. NPWT and CAMPs promoted granulation tissue formation through mesh pores, facilitating healing even in contaminated cases. Delayed primary closure was performed when feasible, improving functional and aesthetic outcomes. Notably, no mesh was removed, and no hernia recurrences were observed during follow-up.

Discussion: Traditional surgical teaching advocates mesh removal in cases of exposure or contamination. However, this series demonstrates that lightweight large-pore polypropylene mesh can be effectively salvaged with mechanical and enzymatic debridement, NPWT, and CAMPs. These findings challenge conventional paradigms, offering a viable alternative to minimize surgical morbidity while achieving successful wound healing. Further studies with larger cohorts are needed to validate findings, refine protocols, and assess long-term durability in complex abdominal wall reconstruction.

CS-069

Low-carb, High-protein Nutritional Approach in Diabetic Wound Healing: Real-world Outcomes, Patient Perspectives, and Empowering Techniques with Platform-based Tracking

Ravi K. Kamepalli, MD; Durga Prasad Gutta, MBBS; Bhavya Kamepalli, BS Neuroscience; Tejas Kode, BS

Introduction: Chronic wounds, particularly in patients with diabetic ulcers, represent a significant healthcare challenge due to underlying metabolic dysfunctions such as insulin resistance and glucose toxicity. Traditional wound care approaches often overlook the critical role of tailored nutritional interventions in addressing these metabolic barriers. This study explores the impact of a therapeutic carbohydrate restriction diet, high-protein nutritional guidance, and platform-based patient engagement on wound healing outcomes.

Methods: A retrospective review of 29 patients revealed that reductions in BMI, weight, and waist circumference were positively correlated with faster healing times. High levels of nutritional compliance, which were supported by weekly counseling and digital tracking tools, were key contributors to improved outcomes. The study highlights that empowering patients with personalized dietary education and tools to monitor compliance resulted in enhanced wound healing and better metabolic fitness.

Results: Patients adhering to dietary recommendations experienced faster wound healing, with average healing times of 1-3 months. Reductions in BMI (average decrease of 2.5 kg/m^2), weight (average loss of 6.3 kg), and waist circumference (average reduction of 7.2 cm) were strongly correlated with faster recovery. Patients reported a mean satisfaction score of 9.67 (on a 10-point scale) for the quality of care and nutritional counseling received. Understanding of nutritional guidance averaged 9.0, while ease of following recommendations averaged 7.86, highlighting the need to address practical challenges like meal preparation and food affordability. Despite these barriers, 85% of patients expressed confidence in sustaining dietary changes long-term, with many citing improved energy levels, reduced pain, and better glycemic control as additional benefits. These numbers are based on surveys submitted by patients, which were more than half the patients.

Discussion: These findings underscore the potential of integrating therapeutic carbohydrate restriction into wound care practices to improve outcomes for metabolically compromised patients. Future studies should explore scalable interventions to address adherence challenges, further validating this holistic approach to wound healing.

CS-070

Tactical Approaches to Managing Moisture-associated Skin Damage (MASD): Insights from a Retrospective Case Study

Ravi K. Kamepalli, MD; Bhavya Kamepalli, BS Neuroscience; Uday Kode, BS Biology

Introduction: Moisture-associated skin damage, MASD, is a very common issue in healthcare settings, especially for people at risk of immobility or incontinence. The sacral and coccyx areas are mostly affected by MASD because prolonged exposure to any form of moisture, be it urine, feces, or perspiration, damages the protective barrier of the skin and causes inflammation, maceration, and erosion of the skin. This case-study retrospective chart review of 185 patients with MASD located in the sacral/coccyx area provides insight into the management and outcomes of this condition.

Methods: Treatment consisted of AMD Gauze dressing, Calmoseptine Ointment (60% Zinc Oxide), and No Sting Cyanoacrylate to assist in skin protection and moisture control, along with skin separation techniques to reduce the accumulation of moisture under the folds of skin. Consistent supervision allowed for the monitoring of progress, and proactive measures, including hygiene maintenance and moisture control, were part of the management plan.

Results: Analysis of the data revealed an average healing time of approximately 4.51 weeks, with the majority of cases being "Stable," "Improving," "Resolved," and "Healed." This suggests that most patients experienced positive improvement; however, 8 cases had less than favorable outcomes, defined as "Deteriorating" or "Worsening" statuses, which means that while the general trends are usually positive, the speeds of improvement and responses to therapeutic input can vary based on comorbidities or outlying factors. These variations underline the need for personalized and adaptive treatment plans and a continuous assessment mechanism to improve patient outcomes.

Discussion: Several important lessons can be learned from this experience. First, it enables a multifaceted approach to managing MASD, including not only the use of targeted treatments but also consistent patient education and monitoring. The findings underline the variability of healing rates, meaning that the needs of patients can best be addressed through individualized care strategies. This retrospective review has also found early intervention and repeated assessment to be important for preventing complications and improving outcomes from healing. Overall, this case study shows the huge impact that this management strategy, combined with personalized care, can have on MASD healing and the quality of life for patients.

CS-071

Continuous Oxygen Diffusion (CDO) Therapy Used in the Context of Low Carbohydrate Nutritional Advice and Comprehensive Wound Healing Approaches – a Retrospective Chart Review

Ravi K. Kamepalli, MD; Bhavya Kamepalli, BS Neuroscience; Durga Prasad Gutta, MBBS

Introduction:

Wound healing is a complex physiological process that involves a series of coordinated events. Oxygen and insulin play critical roles in this process, influencing various cellular and molecular mechanisms facilitating tissue repair. Oxygen supports metabolism and energy production, which are crucial for cell proliferation and collagen synthesis. Adequate oxygen-

ation enhances fibroblast and keratinocyte function, which is essential for tissue regeneration, while hypoxia impairs healing. Equally critical, insulin promotes glucose uptake, providing energy for cellular repair activities. Its anabolic effects stimulate protein synthesis and cell proliferation. Research in diabetic patients highlights that impaired insulin signaling leads to chronic wounds due to reduced cellular responsiveness and energy availability. The interplay between oxygen and insulin resistance improvement in wound healing is particularly evident in diabetic patients. In such cases, both oxygen deficiency and insulin resistance contribute to delayed healing. Hyperglycemia and hyperinsulinemia are often the core causes of numerous problems in diabetic individuals. Research indicates that combining insulin sensitivity approaches with strategies to improve tissue oxygenation can synergistically promote wound closure and reduce healing time. The connection between delayed wound healing, hypoxia, and hyperglycemia was evaluated, and the left foot connection is relevant for people with diabetes and non-diabetic individuals.

Methods: This retrospective study examines wound healing in 15 patients using CDO therapy. Thirteen –– eight non-diabetics and five diabetics –– showed significant improvements in granulation and healing. Sharp debridement and comprehensive wound care, particularly low-carbohydrate, high-protein nutritional guidance to improve insulin sensitivity, were standard treatments. Patient characteristics and glucose levels were analyzed.

Results: Patients of varying ages, wound durations, and etiologies were reviewed from 2022 to 2024. Preliminary data show a strong correlation between CDO therapy and improved granulation, healing, and glycemic control in 13 of 15 patients. Two patients had a very short CDO duration and were not evaluable. All patients, including non-diabetics, who received CDO therapy were analyzed.

Discussion: Oxygen and insulin are integral to wound healing, influencing key cellular pathways. Ensuring adequate oxygenation and improving insulin sensitivity through nutritional guidance can enhance healing outcomes. Optimizing oxygenation and blood glucose regulation with insulin-sensitizing strategies benefits all wound care patients, not just diabetics.

CS-072
Working in Synergy to Heal: Integrating Multimodal Therapies with Comprehensive Monitoring

Traci A. Kimball, MD, MBA

Introduction: Chronic, non-healing wounds pose significant challenges in clinical practice, placing substantial burdens on patients, caregivers, healthcare providers, and payers.[1,2] A multimodal therapeutic strategy, enhanced by advanced monitoring technologies, is critical for achieving optimal wound healing outcomes. This work aims to demonstrate the clinical efficacy and cost-effectiveness of integrating multimodal therapeutic strategy with advanced monitoring technologies. Through a comprehensive approach, this case study illustrates how chronic wounds in patients with complex comorbidities can be effectively managed.

Methods: A 76-year-old female with Type 2 diabetes mellitus (initial hemoglobin A1C: 10%) and rheumatoid arthritis (managed with Leflunomide) presented with complex bilateral lower extremity ulcerations. The left leg exhibited exposed bone, while the right leg revealed exposed Achilles tendon and muscle. Histopathologic evaluation confirmed medial calcinosis of blood vessels. The patient demonstrated high compliance with nutritional recommendations; however, sustained glycemic control (A1C < 8%) was vital for wound healing, particularly due to microbial dysbiosis challenges. Initial management included serial debridement and autolytic dressings. This was followed by a 15-week comprehensive wound care protocol, incorporating advanced therapies such as Negative Pressure Wound Therapy, Vaporous Hyperoxia Therapy, topical antibiotics targeting polymicrobial infections (Serratia and Pseudomonas), and cellular tissue products (CTPs). Treatment was occasionally interrupted by hospitalizations and long-term care stays. Monitoring tools, including Near-Infrared Spectroscopy (NIRS), infrared thermography,[3,4] and wound measurements, assessed tissue oxygenation, skin temperature, and wound dimensions, enabling data-driven therapeutic adjustments.

Results: Significant clinical improvement was achieved with the treatment protocol. The left leg achieved full wound closure, while the right leg demonstrated an 81% reduction in wound area. Advanced imaging modalities provided essential insights into wound dynamics. NIRS revealed progressive tissue oxygenation improvements, and thermography demonstrated normalization of skin temperature, indicative of enhanced perfusion and reduced inflammation. Moreover, the economic implications of this integrated approach cannot be overstated. Cumulative charges, calculated using the Novitas Medicare Fee Schedule, covered 47 unique billing codes, with all services reimbursed by insurance.

Discussion: This case highlights the clinical efficacy and cost-effectiveness of an integrated multimodal wound care strategy. By combining innovative therapies with robust monitoring tools, this approach successfully addresses chronic wounds in patients with complex comorbidities. It also offers a scalable model for broader implementation, aligning with goals for improved clinical outcomes and healthcare cost efficiency.

CS-073
Negative Pressure Wound Therapy with an All-in-one Dressing Use over Skin Grafts

Robert J. Klein, DPM, FACFAS, CWS

Introduction: Traditional negative pressure wound therapy (NPWT) has been utilized for both wound bed preparation and as a bolster over grafts. A new multilayer peel and place dressing (MPPD) has been developed that incorporates a fenestrated, non-adherent layer and negative pressure drape into the dressing. This design allows for a longer dressing wear time up to 7 days. However, data are limited on use of MPPD over grafts. A small 4 patient case series assessed the use of NPWT with MPPD* over skin grafts.

Methods: Patients received systemic antibiotics and sharp debridement as needed. Prior treatment included NPWT or NPWT with instillation for wound bed preparation. A graft procedure was performed once the wound bed was fully covered with healthy granulation tissue and had no wound depth. NPWT with MPPD was applied over the graft in the surgical suite. Dressings remained in place for 5 days followed by removal and discontinuation of NPWT. Once the dressing was removed, the area was cleansed with hypochlorous solution and gently patted dry.

Results: Four patients (age range: 41-75) with lower extremity wounds presented for care. Previous medical history included diabetes, hypertension, peripheral vascular disease, poor nutrition, and neuropathy. Wound types included surgical dehiscence (n=2), open surgical wound (n=1), or diabetic foot infection (n=1). NPWT with MPPD application was quick and easy, taking only approximately 2 minutes to apply without the need for dressing or drape trimming. No negative pressure seal leaks occurred during therapy. At dressing removal, all grafts remained intact. No complications, periwound irritation, or pain at dressing removal were observed. All wounds remained closed at the follow-up visits.

Discussion: In these patients, NPWT with MPPD was an effective bolster over grafts. The all-in-one MPPD dressing design resulted in a simplified dressing application process with less time needed for dressing application and increased patient comfort during dressing removal.

CS-074
Utilization of Platelet Rich Plasma Reconstituted with Ascorbic Acid (Vitamin C) to Treat Hard to Heal Wounds in Patients with Diabetes

Devin Kramer, MHA, BSN, RN, WCC

Introduction: The problem that was addressed by our wound clinic was that we had hard to heal chronic wounds that had been present often times for greater than 6 months in patients with diabetes. Diabetic patients often times have wounds that are hard to heal, one of the reasons is due to a deficiency in Vitamin C.

Methods: In order to solve the problem of hard to heal wounds in

patients with diabetes a platelet rich plasma system was used that also included reconstitution with Vitamin C. This allowed for topical application of not only platelet rich plasma, but also re-introduced Vitamin C into the wound bed to help aid in patient healing.

Results: What was found through the utilization of a platelet rich plasma system that also integrates Vitamin C into the wound bed is that we could often times get wounds to heal at a much quicker rate, jump starting old wounds that had been present for long periods of time. We found that depth improved rapidly and significantly and that size was decreased with as little as 1 or 2 applications. One patient example is of a Chronic wound that had been treated for 7 months with little progress. After 1 application of the PRP with Ascorbic Acid reconstitution the wound reduced by 93% and achieved closure with only 3 applications over the course of 3 weeks. Another patient who had a wound for 4 months with little progression healed by 26% (started at 32 sq cm) after 1 application and achieved complete closure after only 6 applications in as many weeks. A third example is a patient who had a stalled wound for 8 months, and after just 1 application had a reduction in size of 71%.

Discussion: What we learned from this experience is that utilizing the patients own blood and using centrifugation to separate the platelets and reconstitute them with Ascorbic Acid (Vitamin C) was able to jump start wounds that had been stalled for a significant period of time and showed large reduction in size after very few applications and often progressed to closure quickly. Continued utilization of Platelet Rich Plasma and Ascorbic Acid has yielded similar results in the majority of patients we have utilized this therapy on. This poster was also presented at SAWC Fall 2024.

CS-075

Transforming Chronic Wound Healing Outcomes with Vaporous Hyperoxia Therapy (VHT®): A Two-wound Case Series

Dustin Kruse, Kruse, DPM, MA, D.ABFAS, FACFAS

Introduction: Vaporous Hyperoxia Therapy (VHT)* combines hydration with concentrated oxygen to enhance wound healing.

Methods: To evaluate VHT's efficacy in resolving chronic wounds in a high-risk diabetic patient through two distinct wound cases treated in 2019 and 2024.

Methods: A 51-year-old Caucasian female with type 1 diabetes (HbA1c 7.8, historically well-controlled) and a history of anemia presented with chronic wounds resistant to standard treatments. In 2019, she had a Wagner Grade 2 diabetic foot ulcer (DFU) on a forefoot stump following a trans metatarsal amputation (TMA). Standard care, including negative pressure wound therapy, skin grafts, and other advanced therapies, failed to achieve closure. In 2024, the same patient developed a new DFU on the right foot, which worsened under initial treatment with collagen, Medi honey, and topical antibiotics. Healing progress was monitored using advanced imaging techniques such as Near-Infrared Spectroscopy (NIRS) and thermography imaging.

Results: Wound #1 (2019): At VHT initiation, the wound measured 1.4 x 1.6 x 0.3 cm with an area of 2.24 cm^2 and volume of 0.672 cm^3. After 4 weeks, the wound achieved a 45.98% reduction in area and a 64.88% reduction in volume. By 8 weeks, the wound showed a 64.29% reduction in area and a 76.19% reduction in volume, ultimately achieving 100% resolution after 46 treatments over 28 weeks. Wound #2 (2024): Initially measured 1.2 x 1.9 x 0.5 cm with bioburden and pale granulation tissue. After 4 weeks of VHT®, the wound achieved a 56.6% reduction in area and a 74.0% reduction in volume. At 7 weeks, the wound showed an 89.5% reduction in volume, measuring 0.6 x 1.0 x 0.2 cm, and is on track to fully resolve with continued treatment. At baseline (day zero), a temperature gradient was observed between the wound and periwound areas, suggestive of a potential infection. The mean tissue oxygenation at the wound bed was 90% ± 14%, with a hypoxic area present (St2 < 39%). Following four weeks of treatment, the temperature gradient persisted, though wound bed oxygenation improved to 91% ± 11%, and the hypoxic area was no longer detectable. By six weeks, both the temperature gradient and hypoxic area had resolved, indicating positive healing trajectory.

Discussion: These cases highlight VHT's transformative potential in reversing chronic wound deterioration in complex diabetic cases. For this patient, who previously experienced treatment failures, VHT facilitated remarkable healing outcomes.

CS-076

Efficacy of Biodegradable Synthetic Matrices in an Ischemic Ulcer

Robert L. Kulwin, MD; Marvin Mendez, RN

Introduction: Peripheral vascular disease (PVD) is a global issue affecting roughly 200 million people. This disease comes secondary to atherosclerosis of vessels and can lead to complications such as lower extremity ulceration and amputation [1]. Following a lower extremity amputation, mortality rates increase from 39% to 80% in five years [2]. A multidisciplinary approach in conjunction with dermal substitutes have shown success in wound healing and limb salvage [3]. This case study demonstrates the efficacy of a bilayer biodegradable synthetic matrix (BBSM) and monolayer biodegradable synthetic matrix (MBSM) to heal a complex PVD ulcer secondarily.

Methods: The patient presented with an 8 cm by 10 cm non-healing left ankle ulcer with exposed sural nerve, Achilles tendon and 2 cm of depth into the retrocalcaneal bursal space, despite percutaneous vascular intervention and wound care. The ulcer was surgically debrided to viable tissue, requiring the removal of the sural nerve. MBSM was folded and used for volumetric fill in the retrocalcaneal space, BBSM was stapled on and used for wound coverage, and negative pressure wound therapy (NPWT) was used as an absorptive bolster dressing.

Results: NPWT was discontinued due to patient intolerance and transitioned to dressings with a non-adherent silicone layer. After two weeks, the BBSM/MBSM showed some integration and staples were removed. After six weeks, occlusion of the left posterior tibial artery required percutaneous revascularization. The patient was immobilized in a posterior splint, followed by a control ankle motion (CAM) boot for three weeks, until full integration was visible. After four months, repeat angiography showed worsening PVD and the patient underwent another revascularization. Wound care continued for five months until the ulcer healed secondarily with no evidence of recurrence or wound necrosis.

Discussion: PVD related ulcers are difficult to heal and require a multidisciplinary approach. In this case study, the patient had repeat complications of impaired perfusion to the left lower extremity. Despite these complications, BBSM and MBSM persisted and successfully aided in closing this ulcer secondarily. This case study demonstrates the efficacy of BBSM and MBSM reconstruction in a PVD related ulcer while overcoming physiological barriers to healing.

CS-077

Bovine Dermal Collagen Matrix* as Adjunct for Closure of Challenging Wounds After Surgical Incision Dehiscence

Dorothy H. Kurtz Phelan, DPM, CWSP, FACFAS, DBFAS

Introduction: Post surgical wounds with the complication of dehiscence present a challenge in compromised patients. When traditional incision re-closure is not an option, secondary intent closure is the goal. The aim of this case series is to introduce a unique collagen matrix designed to support the wound healing process in the complication of wound dehiscence. Bovine dermal collagen matrix* is an absorbent extracellular matrix (ECM) comprised of Type I and Type III bovine collagen that closely resembles the human body's native collagen. Fibrillar collagen derived from bovine dermis is biocompatible, biodegradable, and is used in this case series as a wound healing adjunct. We present 2 podiatric surgical dehiscence cases with challenging wounds, all treated successfully with bovine dermal collagen matrix*.

Methods: Two surgical dehiscence cases are presented in this

series, showing the efficacy of bovine dermal collagen matrix*. Male to female ratio was equal, average age was 55.5 (55-56). The average number of applications of collagen matrix was 3.5. Average time to heal was 28 days.

Results: Hard to heal wounds presented here resulted in wound closure after the application of bovine dermal collagen matrix. Wound healing times were an average of 28 days with an average of 3.5 applications. All wounds maintain closure without significant scarring or adhesions. None of the wounds resulted in recurrence.

Discussion: The results of this case series show efficacy and reduced healing times of hard to heal postoperative dehisced wounds using bovine dermal collagen matrix*. Bovine dermal collagen matrix* provides a collagen scaffold like human native collagen and is known to sequester excess proteases away from the wound bed, allowing blood and new vessel formation to integrate within its scaffold. Bovine dermal collagen matrix* contains intrinsic hemostatic properties to control minor bleeding and is 100% resorbable through normal metabolic pathways. When surgical procedures resulted in postoperative dehiscence, bovine dermal collagen matrix* showed efficacy in improving results with reduced closure time and prevention of further complications.

*HELIOGEN, Mimedx, Inc

CS-078

Use of a Negatively Charged Fiber Based Dressing* on Painful Atypical Wound Patients to Deslough as an Adjunct to Sharp Debridement

Loan Lam, DPM FAWPHc FAPWCA CWSP CHWS CLWT

Introduction: Desloughing of wounds is a critical first step to healing and considered a low-risk form of debridement. Slough is the yellowish/whitish, gelatinous/stringy material that covers wound surfaces and impairs healing by creating a bacterial burden. Based on previously published randomized controlled trials, negatively charged fiber dressings* can be used to attract slough carrying a positive charge, particularly when moistened with a mildly acidic cleanser such as pure hypochlorous acid solution. While such products tend to be studied on common wounds like diabetic or venous ulcers, there are also various atypical wounds of uncommon etiologies like pyoderma gangrenosum, vasculitis, sickle cell anemia, and spider bites that tend to be exquisitely painful and difficult to tolerate typical sharp debridement.

Methods: We retrospectively studied a newly launched product using negatively charged fibers on various atypical wounds in our wound center. We described 14 wounds treated with this product over 8 weeks and excluded venous, arterial, pressure, and diabetic wounds. All wounds were initially reported by the respective patient to be rated 3 or higher on the Pain Visual Analogue Scale. We monitored wound size, wound condition, and extent/speed of desloughing using imaging technology compatible with electronic medical recordkeeping. We followed the usage instructions provided in the packaging and presoaked all wounds with a pure hypochlorous acid solution.**

Results: We found that product was effective in desloughing wounds when used consistently, particularly when the wounds were pretreated with a hypochlorous acid based soak at every dressing change. We present tabulated results of 14 atypical wounds (pyoderma gangrenosum, vasculitic, sickle cell, and spider bite wound types). Each patient had previously been treated with sharp debridement at least once prior to use of the negatively charged fiber dressing and reported intolerance to sharp debridement due to pain. Each reported good tolerance of subsequent sharp debridements and reduction of pain with the use of the negatively charged fiber dressing.

Discussion: We decided to stock this product in our wound center after an evaluation on all wound types. While the randomized controlled trial to support this product's use is consistent with the claims associated with the product, it still is worthy to note that it works well on atypical wounds, especially more painful wounds. The use of the hypochlorous acid based cleanser is consistent with the recorded ability of the product to work synergistically with the negatively charged fiber dressing presented here.

CS-079

Clinical Applications of a Novel Biomimetic Matrix in Refractory Diabetic Foot Ulcers (DFUs): A Case Series Analysis

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Introduction: Chronic wounds represent a significant challenge in clinical practice, particularly when traditional therapies fail to induce healing1. Biomimetic Matrix (BMM) is a fully synthetic peptide matrix designed to support chronic wound healing by providing a scaffold similar to the native extracellular matrix (ECM) with antibacterial protection. This preliminary case series explores the potential clinical applications of BMM in eight patients with chronic diabetic foot ulcers (DFUs) that fail to respond to standard of care and/or previous treatments with biologics.

Methods: Eight patients with chronic DFUs and multiple comorbidities, including venous stasis, Charcot neuroarthropathy, obesity, osteomyelitis, peripheral vascular disease, and partial foot amputation, were treated with the FDA-approved BMM. All patients received appropriate off-loading to protect the wound site. Wounds were measured and photographed before the initial application and at subsequent visits.

Results: The wounds in this clinical case series consisted of Wagner Grade 3 (n=2; 25%), Grade 2 (n=3; 37.5%), and Grade 1 (n=3; 37.5%) ulcers. All patients treated with BMM achieved a substantial reduction in the percent wound area, with a reduction of 63.6% in wounds measuring 7.5 cm2 on average after six weeks of treatment with one to three applications. Odor, drainage, inflammation, and reepithelization were also noticeably improved, with most wounds showing a reduction in depth within one or two BMM applications. The treatment length ranged from 5 to 11 weeks, with one patient achieving full wound closure at six weeks following a single application of BMM.

Discussion: In this small case series, we explored the potential of using BMM based on a novel synthetic peptide technology. Our results show that BMM treatment substantially reduced the wound area, improved overall appearance, and reduced the depth of complex, stalled chronic diabetic lower extremity wounds.

CS-080

Novel Use of Non-contact, Low Frequency Ultrasound (NLFU) to Facilitate Healing in Unstageable Pressure Injuries to the Heel

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Introduction: Treatment guidelines for unstageable heel pressure recommend leaving eschars intact and taking a conservative approach due to a poor prognosis for healing. In patients with adequate perfusion, unstageable heel wounds might benefit from approaches used to facilitate wound healing in other types of hard to heal wounds. These approaches would typically include debridement, infection management, and treatments to promote wound closure. Non-contact, low frequency ultrasound (NLFU) has been documented to reduce bacterial load, improve vascularity and facilitate wound closure in many types of hard to heal wounds. NLFU could be a beneficial adjunct therapy to facilitate faster wound closure and better overall outcomes in patients with unstageable heel pressure injuries.

Methods: Patients were considered for inclusion in this study If the following criteria were met: 1) they had an unstageable pressure injury to the heel, 2) they consented to use of their non-identified wound in-

formation and to wound treatments including NLFU and debridement and 3) they were found to have adequate perfusion to the affected limb (ABI >0.6). Patients were scheduled for NLFU treatments with a goal of completing two visits per week for a duration of 4-6 weeks prior to the initiation of debridement. Once the wound bed was adequately debrided, treatments were applied to the wound to facilitate wound closure.

Results: Ten patients with unstageable heel pressure injuries were evaluated and treated using this model. Four of the ten patients achieved wound closure and six are still undergoing treatment. The four patients who achieved wound closure had an average treatment duration of 15.5 weeks with an average of 18.75 NLFU treatments. The patients currently undergoing treatment have achieved an average wound reduction of 47.4% over an average of 4.8 weeks with an average of 9.6 NLFU treatments.

Discussion: Pressure injuries to the heel are very challenging to treat due to the poor perfusion of this part of the body and poor prognosis for healing. Clinical guidelines have long recommended that providers avoid debridement of these wounds and encourage eschars to remain dry and stable. Non-thermal, low frequency ultrasound (NLFU) appears to be effective as an adjunct therapy to promote improved vascularity, tissue viability and healing potential in patients with these hard to heal wounds. The positive outcomes noted in these cases suggest that further exploration of this approach might be beneficial in helping to develop appropriate patient selection criteria and treatment guidelines.

CS-081

Cell-free Human Amniotic Fluid (cfAF) in the Treatment of Chronic Venous Leg Ulcer in a Patient with Type 2 Diabetes and Chronic Venous Insufficiency: A Case Study

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Introduction: Approximately 67% of patients with diabetes mellitus have deep venous incompetence lower legs. Treatment of chronic non-healing venous leg ulcers (VLU) represents a significant health care problem resulting in a reduction of quality of life and significant economic burden due to increased direct healthcare costs and decreased productivity. Non- or poorly-treated VLUs carry a high risk of infection and amputation, especially with concomitant diabetes and/or ischemia. Absence of successful management of non-healing VLUs represents a significant gap in current ulcer management and mandates use of novel safe and effective treatments. This study presents successful treatment of a complex VLU refractory to standard of care for over three years.

Methods: A 73-year-old African American male with a history of chronic venous insufficiency (previously treated with venous laser ablation and skin substitutes), type 2 diabetes, hypertension, hyperlipemia, and obesity (BMI 29.3) presented with a 4.92 cm2 medial peri-malleolar non-healing VLU of the right leg. The VLU had persisted for approximately 37 months prior to presentation. The patient was treated weekly for three months with 1 mL doses (12 treatments) of cfAF* delivered by subcutaneous injection at 3, 6, 9, and 12 o'clock positions; 3 mm outside of the ulcer margin and a single injection into the center of the ulcer bed. Additional procedures consisted of mechanical debridement, visual inspection, ulcer area measurement to determine changes over time and patient reported pain score by visual analog scale (VAS).

Results: During the 12-week cfAF treatment, VLU area decreased from 4.92 cm2 to 0.9 cm2 (- 81.7%). Complete closure, without drainage, was documented two months after the last treatment. No side effects were observed, and the treatment appeared well tolerated. The VAS score decreased from 4 at Baseline to 0 at Week 12, while Dermatology Life Quality Index decreased from 3 at Baseline to 1.

Discussion: The findings presented indicate that cfAF effectively treats chronic non-healing VLUs in complex a patient with multiple co-morbidities. While larger studies are needed to determine optimal application for individual subsets of VLUs patients, initial data from our study strongly suggest that cfAF can be safe and effective in management of complex VLUs.

CS-083

Treating Infected DFU with Proprietary Topical Cream – a Case Series in the US

Brock A. Liden, DPM; Amanda Fuller, LPN

Introduction: 60% of diabetic foot ulcers (DFUs) were reported to have infection and the treatment strategies with infected DFUs are mostly surgery and antibiotics with standard moisturizing dressing and literature has reported the incidence of wound closure at only 27.5% in 6 months and 44.5% in 12 months. Given infection remains the leading cause of amputation, overcoming the challenges in healing infected DFUs is urgently needed. This study evaluates the efficacy of a novel topical cream with a proprietary formulation used concurrently with systemic antibiotics in treating infected DFUs

Methods: DFUs with infection classified as Wagner II and adequate blood perfusion were eligible. Systemic antibiotics and debridement were given to the patients and the proprietary topical cream was applied twice daily by patients at home until healing or for up to 8 weeks. The wound closure and time to wound closure were observed

Results: 3 patients with Wagner Grade II DFUs had a baseline HbA1c 8.2% and mild infection. The proprietary topical cream was used when all of them were having oral antibiotics for infection control. After using the proprietary topical cream for up to 8 weeks, the wound closure occurred on all 3 patients.

Discussion: This is the first time using the proprietary topical cream in US DFU patients with mild infection and it is worth noting that the wound closure occurrence is much earlier than the reported in the literature. The proprietary formulation was studied and noted it enables tissue repair by regulating macrophages. This provides the future treatment in infected DFUs with a novel solution to accelerate healing.

CS-084

Epidermal Grafting: Effect on Healing of Burn, Surgical, and Chronic Wounds

Paul Linneman, ACNP; jeff litt, DO FACS – Burn Medical Director, HCA/Chippenham Hospital

Introduction: Chronic wounds are a significant healthcare problem in the United States. Their costs exceed 25 billion dollars in the United States. Current wound-care treatments of source control and local wound care, while often necessary for wound healing, are frequently not enough to attain timely wound closure. The current technique of split-thickness skin grafting is an operative procedure, requiring operating room time, general anesthesia, and associated with significant donor site pain and scarring. Epidermal grafting involves harvesting skin at the dermal-epidermal junction and transplanting this onto an open wound. Epidermal grafts contain keratinocytes, melanocytes, and epidermal stem cells. Keratinocytes secrete growth factors and cytokines that stimulate the wound bed and accelerate wound closure. A recently discontinued harvester for epidermal grafting using heat and suction to produce approximately 120 two-millimeter diameter grafts became available at a University Medical Center in 2015. This is used in the clinic without sedation, takes less than one hour, and the donor site is healed in one week without scar. It was used for a variety of types of acute and chronic wounds until 2023 when it was removed from the market by the manufacturer. This review looks at the types of wounds treated, outcomes, and comparison with standard-of-care wound care treatment.

Methods: A registry was used to identify patients treated. Date of grafting, wound type, wound dimensions at time of graft as well as one month prior and at 1 & 2 months post-grafting were identified from the EMR. Wound closure was calculated as the percent reduction in wound area (length x width) at 1 & 2 months post-grafting compared with baseline at the time of graft. To compare with standard care, percent reduction from one month prior to grafting was calculated.

Results: Between November 2015 and May 2023, 95 grafting procedures were identified. A variety of wounds were treated, predominantly burns & abrasions, surgical wounds and venous leg ulcers. All body parts were treated, with about half in the lower extremity. Wound size ranged from 1.5 to 126 cm2 (median 16.0). Standard of care treatment, reflected in % wound reduction during one month prior to graft, was 30%. Median reduction in wound size at one month post epidermal graft was 50% (p=.0006), and at 2 months was 82%.

Discussion: Use of the epidermal graft on a variety of acute and chronic wounds in aggregate was associated with a greater rate of wound closure compared with standard of care.

CS-085

A Novel Application of KCI Prevena Adaptiform for Patients at High Risk of Poor Amputation Healing

Xiaoyan Liu – Department of Surgery, Washington University in St. Louis

Introduction: Major limb amputation is a life-altering procedure affecting approximately 2 million Americans, a number projected to double by 2050. Effective post-operative incision management is crucial to reduce complications such as surgical site infections (SSIs), wound dehiscence, and prolonged edema, which delay recovery, increase healthcare costs, and impair rehabilitation. These challenges are further compounded in high-risk patients with comorbidities like diabetes, obesity, and peripheral arterial disease. Incisional negative pressure wound therapy (iNPWT) has demonstrated efficacy in reducing SSIs, seroma, and hematoma formation, particularly in high-risk populations. This study explores the novel application of the Prevena Adaptiform (KCI, 3M Company), a second-generation iNPWT system designed to optimize incision healing, manage larger soft tissue envelopes, and enhance lymphatic drainage in this challenging population.

Methods: This retrospective case series evaluated four high-risk patients undergoing major limb amputation or revision who were treated with the Prevena Adaptiform. The system was applied immediately post-operatively and maintained for five days per manufacturer guidelines. Patient selection criteria included the presence of significant comorbidities, such as diabetes and peripheral vascular disease. Outcomes assessed included rates of SSIs, incidence of wound dehiscence, reduction in residual limb edema (measured qualitatively), and time to rehabilitation or prosthetic fitting. Data were collected from medical records and three-month follow-up visits.

Results: The Prevena Adaptiform system demonstrated 100% uncomplicated healing in all cases, with no SSIs or dehiscence observed. Residual limb edema was visibly reduced in all patients, contributing to faster rehabilitation timelines and earlier prosthetic fitting by an average of two weeks compared to historical outcomes. Ease of application and the ability to conform to complex soft tissue geometries were noted as key benefits by providers, while patients reported improved comfort during use. This case series highlights the potential of the Prevena Adaptiform system to improve post-operative outcomes in high-risk amputation patients, representing a promising advancement in wound care management.

Discussion: The Prevena Adaptiform system builds on traditional iNPWT by addressing the unique challenges of larger soft tissue envelopes in high-risk amputees. Its enhanced surface coverage promotes lymphatic drainage, reduces soft tissue edema, and provides continuous tension relief along incision lines. These features not only reduce complications but also support faster recovery and improved quality of life. Future studies comparing this system to traditional iNPWT and standard care are warranted to establish best practices and cost-effectiveness.

CS-086

A Case Series of ON101 in Acute Radiation Dermatitis

Hsiao-Ling Liu, RN; Chih-Chia Chang, MD; Cheng-Yen Lee, MD; Pei-Syun Lin, RN; Yuk-Wah Tsang, MD; Yu-Wen Wang, MD

Introduction: Acute radiation dermatitis (ARD) is a common adverse effect of radiotherapy, particularly in cases where the skin is included in the target volume, such as head and neck cancer or breast cancer. ARD severity ranges from mild erythema to moist desquamation and, in severe cases, necrosis. Current management strategies for mild to moderate ARD typically include interventions such as moist desquamation care, topical corticosteroids, and antibiotics. ON101, a novel topical macrophage regulator, has shown the ability to inhibit the NLRP3 inflammasome cascade and suppress pro-inflammatory cytokines through M1 macrophage modulation in preclinical studies. This case series aimed to assess the clinical efficacy of ON101 in managing ARD.

Methods: Seven patients with grade 3 to grade 4 ARD were treated with ON101 cream, with secondary dressings applied as needed. The primary endpoints were the resolution of erythema and wound healing. Patient-reported outcomes, including treatment satisfaction and quality-of-life improvements, were also documented.

Results: Treatment with ON101 led to complete resolution of erythema in all patients (100%), with wound healing achieved within 4 to 15 days. Furthermore, four patients reported improvements in quality of life following the intervention.

Discussion: This case series highlights the successful translation of ON101's preclinical efficacy into clinical practice. By targeting the NLRP3 inflammasome signaling pathway, ON101 effectively alleviated radiation-induced skin damage. These preliminary findings suggest that ON101 is a promising treatment option for ARD, providing rapid wound healing and enhanced patient outcomes. Further clinical trials are warranted to validate these results and explore its broader clinical application.

CS-087

Adipose Injectable Filler with Use of Meshed Dermal Matrix and Porcine Urinary Bladder Matrix for the Management of a Complex Achilles Wound

Francois Lokenye, DPM; Orlexia Thomas, DPM; Mariam Kamil, BS; Lady DeJesus, DPM, FACFAS, FACPM, CWSP

Introduction: The purpose of this case study is to demonstrate the efficacy of combining adipose injectable filler, dermal matrix, and porcine urinary bladder matrix in the management of a complex achilles wound. This novel approach seeks to enhance tissue regeneration, provide structural support, and promote wound healing in a challenging anatomical location. By documenting the clinical outcomes and procedural details, this case regarding a 64 year old male with a non-healing full thickness achilles wound, aims to contribute to the growing body of evidence supporting regenerative medicine techniques for chronic wound care.

Methods: The wound to the posterior ankle about the achilles tendon was debrided to a granular base. A powdered porcine urinary bladder matrix was applied to the wound bed and achilles tendon, followed by placement of a meshed dermal matrix graft secured with staples. Next, adipose matrix filler was injected into the tissue plane beneath the ulceration site and above the achilles tendon to support regeneration. This demonstrates a multidisciplinary approach with a combination of sharp wide excisional debridement, biologic grafts, and adipose filler for effective wound healing and tissue regeneration.

Results: There was complete closure of the wound with improved tissue regeneration 11 weeks after surgery. The combined use of adipose filler, dermal matrix, and porcine urinary bladder matrix promoted a healthy granular base, enhanced vascularization, and assisted in complete wound closure. Functional outcomes included restored mobility without pain or complications. There were no adverse reactions, and post-procedure evaluations confirmed durable and aesthetically acceptable tissue repair.

Discussion: This case highlights the transformative potential of regenerative medicine in managing complex Achilles wounds. By combining the structural support of biologic grafts with the regenerative capabilities of adipose fillers, this approach addressed the anatomical and biomechanical challenges of a high-tension area and hard to heal areas due to poor vascularity. The porcine urinary bladder matrix and meshed dermal matrix synergistically created an optimal healing environment, while the adipose injectable filler improved vascularity and stimulated regeneration. This innovative strategy exemplifies a paradigm shift in chronic

wound care, offering superior outcomes.

CS-088

Using a Multilayered Leukocyte Platelet Fibrin Patch over Exposed Bone and Tendon: A Case Series

jada Lowe, RN, BSN; Tiffany Keith, PA-C

Introduction: Healing chronic wounds is particularly challenging when an exposed structure such as bone or tendon is present due to poor vascularization surrounding these structures. When comorbidities and limited compliance are also a factor, the wound is at increased risk of infection with approximately 20% of patients with diabetic foot ulcers (DFUs) developing osteomyelitis. Early advanced modalities combined with good standard of care can greatly improve the time to heal. The use of a multilayered leukocyte, platelet, fibrin patch (MLPF) is one therapy that shows promise in this patient population, where few options are available.

Methods: We examined MLPF patch therapy with standard of care (wound hygiene, offloading, sharp debridement, edema control, and appropriate dressing selection) in several patients. We looked at the number of patches placed, weeks of therapy, wound age prior to therapy, and previously used modalities. The desired outcome was granulation over the exposed structures, as there are limited indicated products.

Results: One 84-year-old male had a Wagner Grade 2 DFU measuring 1.9 x 1.8 x 0.7cm first treated on 5/6/24. Several dressings and offloading was tried, but the wound deteriorated to a Wagner Grade 3. He received his first MLPF patch on 8/29/24 and received 8 subsequent MLPF patches with healing achieved on November 1st, 2024. An 86-year-old male with a DFU, treated osteomyelitis, and bone exposure failed to progress for over 6 months. The patient received his first MLPF patch on 8/14/24 and after 3 patches, combined with total contact casting, the patient healed. Lastly, a 69-year-old female presented to the clinic in May 2024 with a right 4th toe Wagner Grade 2 DFU measuring 1.5 cm2. She was referred for revascularization due to possible need for toe amputation. The patient was treated with IV antibiotics as well as other products with minimal improvement. A cellular tissue product was considered but denied by insurance. Her wound regressed to 31.5 cm2 in July with bone exposed; a bone was biopsied. The MLPF Patch was started in an attempt to save the toe on 8/22/24. The patient was completely healed on 11/13/2024.

Discussion: Medicare spends over $32 billion annually on wound related treatments. The cost for wounds with exposed structures is significant, as it takes much longer to granulate over these structures. More studies should be conducted on the financial benefit of using autologous MLPF patches on patients with exposed structures as a first option of therapy.

CS-089

A Case of Phlegmasia Cerulea Dolens with Compartment Syndrome

Torrin Lundberg, DPM; Michael Broussard, DPM; Usman Javed, DPM; Alejandro Alfonso, DPM

Introduction: A rare presentation of acute phlegmasia cerulea dolens with pulmonary emboli.

Methods: Heparin drip and catheter directed thrombolysis. This ultimately failed and patient went on to amputation

Results: The presentation should have prompted quicker diagnosis and treatment in order to precent amputation.

Discussion: Become more familiar with the rare presentation of the above condition. This can lead to amputation prevention in future patients with this presentation.

CS-090

Adipose Tissue Allograft as a Novel Adjunct Therapy for Lipodermatosclerosis and Venous Leg Ulcer Care

Charles G. Marchese, DPM, FACFAS, FAPWH

Introduction: Chronic venous disease (CVD) affects an estimated 2.5–6 million individuals in the United States, with about 20% developing lipodermatosclerosis (LDS). LDS is a chronic inflammatory condition characterized by subcutaneous adipose tissue degeneration, fibrosis, and skin induration, resulting from tissue hypoxia caused by the adverse effects of fibrosis on microvasculature. LDS significantly increases the risk of venous leg ulcer (VLU) development. Current treatments for LDS fail to address adipose tissue loss or avascularity, leaving patients with chronic pain and a persistent risk of VLUs, even after closure. This case series tested the hypothesis that human cryopreserved adipose tissue allograft (hCAT*), designed to target adipose defects, may serve as an adjunct to VLU standard of care (SOC) in patients with LDS.

Methods: Patients with LDS and either open or newly epithelialized VLUs were selected to receive hCAT. Prior treatments included SOC therapies such as advanced cell therapies and compression therapy with reverse pressure gradient pumps and devices. Each patient received two 3.0 mL subcutaneous hCAT implants, administered via an 18-gauge needle into the periphery of the VLU site, two months apart. Outcomes included skin induration improvement by palpation and ulcer resolution.

Results: Between July and August 2024, two male patients, aged 44 and 70, each received two hCAT implantations. Both had a history of chronic VLUs with underlying venous stasis and significant LDS. At 4-months follow-up, both patients demonstrated significant improvements in the clinical appearance and induration at the implantation sites. Notably, the quality of the skin in previously affected areas improved markedly, becoming more supple, with a healthier overall appearance. hCAT remained palpable at implantation sites, and no product-related adverse events were observed.

Discussion: hCAT shows promise as a therapeutic option for LDS patients at risk for VLUs. Initial outcomes suggest safety, durability, and clinical improvement in the implanted areas. Long-term follow-up is underway to assess sustained efficacy and safety.

CS-091

Utilizing Allograft Tissue as Skin Substitutes in the Reconstructive Ladder Can Improve Reconstructive Outcomes

Charles G. Marchese, DPM, FACFAS, FAPWH; Asaad Samra, MD, FACS

Introduction: The reconstructive ladder serves as a stepwise approach in determining an appropriate path to reconstruction and wound closure. The addition of skin substitutes has provided a plethora of advanced tissue grafts to support the goals of reconstruction. The application of human dermal matrix substitutes can provide a scaffold with matrix proteins and replace the damaged integument. Aseptically processed meshed human reticular acellular dermal matrix (HR-ADM) provides an open, uniform scaffold with preserved matrix proteins that support host infiltration, integration, and reconstruction of damaged or excised tissue. In addition, placental allografts provide native matrix proteins and support wound progression. The repair with like tissue culminates in more durable tissue that is functional and stable.

Methods: This case series presents the application of meshed HR-ADM and placental tissue, which are both aseptically processed without terminal irradiation, to provide a scaffold for host repopulation and support reconstruction and wound closure. The meshed HR-ADM and placental tissue was applied and secured in place. Standard treatment protocols were followed until complete closure was achieved.

Results: Graft integration and wound closure was observed. The meshed HR-ADM and placental tissue provided the missing scaffold that was required for supporting tissue reconstruction. The tissue was vascularized and incorporated, culminating in full closure. The patients were complex cases and were treated successfully.

Discussion: Meshed HR-ADM provides the missing dermal framework that is remodeled and integrated to replace the damaged or missing soft tissue. This preserved structure and extracellular matrix proteins support tissue reconstruction and wound closure. The aseptically processed placental tissue is known to maintain native matrix proteins and growth

factors, which also support wound closure.

CS-092

Complex Lower Extremity Limb Salvage After Open Tibial Fracture Utilizing Ovine Forestomach Matrix Graft for Rapid Granulation over Exposed Bone: A Case Report

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Introduction: Open tibial fractures can lead to amputation, which affects patients physiologically and psychologically1 and increases the one-year mortality rate by 47.9%.2 Ovine forestomach matrix (OFM) has been utilized for limb salvage and reconstruction. This case details a patient with a severe open tibial fracture complicated by peripheral arterial disease (PAD) whose limb was salvaged using OFM as part of a multidisciplinary treatment protocol.

Methods: A 72-year-old female with severe PAD presented with a left proximal tibial fracture, large overlying laceration, and exposed bone after falling. Following initial external fixation then staged tibial open reduction and internal fixation, Orthopaedics consulted Plastic Surgery for soft tissue coverage of the open fracture. Non-palpable distal left lower extremity pulses prompted duplex ultrasonography, revealing severely diminished arterial velocities and total occlusion of the superficial femoral artery. Interventional cardiology was consulted and common femoral artery atherectomy was performed, greatly improving arterial inflow. A partially adipose-replaced medial gastrocnemius flap was rotated over the fracture and exposed tibial hardware. Limited muscle flap size prevented a portion of the tibia from being covered. After complex partial wound closure, a central portion of the flap and periosteum-covered tibia remained exposed due to skin shortage. OFM morselized fine graft was applied over the uncovered central wound and tibia to encourage rapid granulation, followed by negative pressure wound therapy (NPWT).

Results: Four days post-surgery, the patient returned to the operating room. The gastrocnemius flap remained viable and intact, and the OFM had achieved enough granulation to support split-thickness skin grafting. NPWT was applied. The patient was transferred to a long-term acute care hospital (LTACH) for ongoing NPWT and wound management and had full take of the graft and flap. Minor superficial wound dehiscence occurred but is healing well with conservative care.

Discussion: Without a comprehensive, coordinated multidisciplinary team including Orthopaedic and Plastic Surgery, interventional cardiology, and LTACH practitioners, this patient likely would have undergone above-knee amputation. Avoiding free tissue transfer reduced procedure complexity and anesthetic risk. This case demonstrates OFM's efficacy in limb salvage for complicated open fractures while highlighting the importance of readily accessible, multidisciplinary care in such injuries.

CS-093

Evolving Primary Dressings in Combination with Compression Therapy Promotes Wound Healing in Complex Lower Extremity Ulcers of Mixed Etiology

Laurin Mejia, PhD, PA-C, CWS; Matthew Hardy, MD, CWSP

Introduction: Lower extremity wounds present a complex challenge, often with several etiologies collaboratively delaying wound healing. Inflammatory symptoms of venous or lymphedema ulcers are commonly mistaken for infection, further delaying wound improvement. Multi-layer compression bandaging is an excellent treatment foundation to decongest edema and rapidly improves dependent wounds. However, wound progress under compression monotherapy can plateau. Compression bandaging quickly modifies the wound environment, and likewise, primary dressing recommendations must also be adjusted frequently. Here, we demonstrate the critical role of evolving primary dressings to enhance wound healing during the discrete stages of lower extremity wound advancement under multi-layer compression bandaging.

Methods: Three patients presented with multimodal lower extremity wounds and dependent edema, existing for at least three months in the absence of compression. Compression therapy, bioburden management, and wound bed preparation were the mainstay of treatment throughout care. Primary dressing recommendations were modified from visit to visit, based on wound assessment and evolving needs. During early compression bandaging, drainage management was prioritized, e.g., with absorbent dressings or negative pressure wound therapy. Focus then shifted to optimize wound proliferation and epithelialization, e.g., with collagen and scaffolding wound matrices. After wound closure, skin hygiene and edema management were highlighted, e.g., with compression garments, donning devices, and moisturizers.

Results: Here, we demonstrate that even in chronic wounds, dual therapy with multi-layer compression bandaging combined with evolving primary dressings promoted swift wound closure while managing edema.

Discussion: Compression therapy provides a critical foundation for lower extremity wound care. We often observe delayed wound healing due to persistent mismanagement of these inflammatory, edematous wounds by neglecting edema management. Monotherapy with compression bandaging is often not sufficient to advance wound healing through completion. It is common for wounds in the lower extremities to have several contributing etiologies that require a fluid approach to primary dressing recommendations under compression. Identifying evolving wound needs and strategically pairing compression with appropriate primary dressings synergistically enhances wound healing and edema maintenance.

CS-094

Closed Trans Metatarsal Amputation Treated with Bovine Dermal Collagen Matrix as Wound Healing Adjunct

Nneka Meka, DPM, CWSP, FACFAS, DBFAS; Dorothy Kurtz Phelan, DPM, CWSP, FACFAS, DBFAS – Podiatrist, Wound Center, Melrose Wakefield Hospital Center for Wound Care and Hyperbaric Oxygen

Introduction: Trans metatarsal amputation (TMA) is commonly performed to address complications of diabetic foot ulcers, including infection and ischemia. The healing rates and associated complications following closed TMA are critical factors in determining the success of the procedure and the subsequent outcomes for patients. (1) We present a case of closed trans metatarsal amputation utilizing a fibrillar particulate collagen matrix as a wound healing adjunct. Bovine dermal collagen matrix* is an absorbent extracellular matrix (ECM) comprised of Type I and Type III bovine collagen that closely resembles the human body's native collagen and is designed to support the wound healing process. Fibrillar collagen derived from bovine dermis is biocompatible, biodegradable, and is used in this case as a wound healing adjunct.

Methods: 83-year-old male with type 2 diabetes was admitted with infected diabetic foot ulcer. CTA showed occlusion to ATA bilaterally. Distal tissue and bone were found to be non-salvageable.

Results: Trans metatarsal amputation with primary closure was performed in an 83-year-old comorbid male following infected ischemic foot ulcer. Bovine dermal collagen matrix* was utilized under the surgical closure to provide a collagen scaffold to aid and maintain wound healing. Time to heal was 12 days. Surgical wound closure and strength were maintained without complications upon follow up at days 49 and 83.

Discussion: The results of this case show efficacy of bovine dermal collagen matrix* following closed trans metatarsal amputation in a diabetic patient with comorbidities. Bovine dermal collagen matrix* provides a collagen scaffold like human native collagen and is known to sequester excess proteases away from the wound bed, allowing blood and new vessel formation to integrate within its scaffold. Bovine dermal collagen matrix* contains intrinsic hemostatic properties to control minor bleeding and is 100% resorbable through normal metabolic pathways. When challenged with a hard to heal wound after closed trans metatarsal amputation, bovine dermal collagen matrix* showed success in maintaining a closed incision without wound complications.

*HELIOGEN, Mimedx, Inc

CS-095

Closed Great Toe Amputation Treated with Bovine Dermal Collagen Matrix as Wound Healing Adjunct

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Introduction: Great toe amputation is frequently performed to address infected foot ulcers. Due to underlying comorbidities and condition of the distal foot, healing can be compromised, even after removal of non-viable tissue. We present a case of closed great toe amputation utilizing a fibrillar particulate collagen matrix as a wound healing adjunct. Bovine dermal collagen matrix* is an absorbent extracellular matrix (ECM) comprised of Type I and Type III bovine collagen that closely resembles the human body's native collagen and is designed to support the wound healing process. Fibrillar collagen derived from bovine dermis is biocompatible, biodegradable, and is used in this case as a wound healing adjunct.

Methods: 88-year-old female with type 2 diabetes, CKD3, admitted with infected left great toe wound and osteomyelitis.

Results: Great toe amputation with primary closure was performed in an 88-year-old comorbid female to remove infected ischemic toe. Bovine dermal collagen matrix* was utilized under the surgical closure to provide a collagen scaffold to aid and maintain wound healing. Surgical wound closure and strength were maintained without complications upon follow up at days 27, 49 and 83.

Discussion: Bovine dermal collagen matrix* provides a collagen scaffold like human native collagen and is known to sequester excess proteases away from the wound bed, allowing blood and new vessel formation to integrate within its scaffold. Bovine dermal collagen matrix* contains intrinsic hemostatic properties to control minor bleeding and is 100% resorbable through normal metabolic pathways. Distal toe amputations present a challenge to wound healing and risk dehiscence, infection and ischemic complications. This case shows successful primary intent closure with bovine dermal collagen matrix*, maintaining a closed incision without wound complications.

*HELIOGEN, Mimedx, Inc

CS-096

The Impact of Moist Wound Dressings on Quality of Life in Patients with Hidradenitis Suppurativa

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Introduction: Hidradenitis Suppurativa (HS) is a chronic, painful, and debilitating condition that severely impacts patients' quality of life. Recent evidence suggests that moist wound dressings may play a pivotal role in alleviating symptoms and improving overall well-being of post-surgical HS lesions. The aim of this study was to evaluate the effectiveness of moist wound dressings in reducing pain and improving quality of life parameters, including psychological well-being, in patients with active HS lesions.

Methods: A cohort of 20 patients affected by active and draining HS lesions was divided into two groups: group 1 was treated with moist wound dressings over a four-week period according to the principle of HS-TIME, while group 2 didn't receive local wound care management. Key parameters assessed included quality of life using the Skindex score, and psychological distress using the Hospital Anxiety and Depression Scale (HADS). Baseline and week-four measurements were compared to evaluate outcomes.

Results: The population consists in 14 female and 6 males, with a mean age of 33.5 years, a mean disease duration of 7.4 years and a mean BMI of 27.3 Kg/m2. Our findings demonstrate a reduction in Skindex scores, indicating enhanced quality of life, in group 1 (baseline: 58.5 vs W4: 51.44), when compared to group 2 (baseline: 54.5 vs W4: 54.8). Psychological distress, assessed through HADS, also decreased, with notable reductions in both anxiety and depression scores in group 1 (HADS-A baseline: 10.6 vs HADS -A W4:8; HADS-D baseline: 8.2 vs HADS-D W4:7.4) compared to group 2. Additionally, improvements were observed in wound exudate and pain management.

Discussion: Our findings suggested that moist wound dressings for the treatment of HS may have a positive impact on patients' quality of life, reducing pain, improving psychological well-being, and contributing to better management of wound exudate and pain. Patients in the group treated with moist wound dressings (group 1) showed significant improvement in both the Skindex score, reflecting quality of life, and in anxiety and depression measures, compared to the control group (group 2), which did not receive local wound care.

CS-097

Harnessing the Power of Charge: A Case Series with a Novel Approach to Chronic Wound Management

Yvette Mier, Mier, BSN/RN/CWON

Introduction: The presence of slough and biofilm in a wound are barriers in the wound healing cascade preventing movement out the inflammatory phase into the proliferative phase and onto healing. This key transition phase in chronic wounds represents a major challenge in outpatient wound management. Sharp debridement is the standard of care for removal of slough and management of biofilm. Sharp debridement can be painful and poorly tolerated. Failure to remove slough and manage biofilm puts the patient at high risk for infection, rehospitalization, and loss of limb or life. Historically in the outpatient setting, patients who are unable to tolerate sharp debridement receive a treatment plan of cleansing with normal saline followed by autolytic, chemical, or enzymatic debridement. These are all viable choices, but they are slow processes.

Methods: Wounds were cleansed with a pure hypochlorous acid solution, allowing contact from 5-20 minutes to lower the pH of wound giving wound bed a positive charge. Wounds continued to be debrided sharply, as tolerated. A negatively charged fiber dressing was then applied. The interaction between the lower pH and positively charged wound bed with the negatively charged dressing supported rapid debridement of slough and continuous management of biofilm.

Results: The three cases presented in this series were of different etiologies: diabetic foot ulcer, pressure injury, and a venous leg ulcer. All ulcers were chronic and stalled in the inflammatory phase but moved into the proliferative stage after 1-2 applications of a dressing with negatively charged hydrofibers, after being cleaned with a wound cleanser that lowers the pH of a wound bed. Time to closure varied based on size of the wound and co-morbidities of the patients. All closed within 4-12 weeks.

Discussion: This case series illustrates changing, evidenced-based wound care practices based on improved understanding of role of pH in wound healing and how this can be leveraged with the use a negatively charged fiber dressing to quickly move a patient out of the inflammatory phase so healing can occur. This wound care protocol can be used on any wound type and has the potential prevent complications and decrease days to healing.

CS-098

Chronic Venous Disease (CVD) and Venous Dermatitis: A Case Series

Yvette Mier, Mier, BSN/RN/CWON

Introduction: CVD affects approximately 25% of the U.S. population, often progressing from leg heaviness and itching to edema, dermatitis, and ulceration. Early recognition and treatment can prevent disease progression. However, many patients with CVD suffer for extended

periods due to misdiagnosis or delayed referrals.Venous dermatitis, a common manifestation of CVD, can mimic other dermatological conditions, delaying diagnosis. This case series highlights the challenges of recognizing and treating venous dermatitis, in part, with compression using a kit that contains both a short stretch and a long stretch bandage.

Cases: Case 1: A 67-year-old man with hypertension and a history of smoking presented with 3-month persistent venous dermatitis. Despite antibiotic and steroid treatments, the condition worsened. A wound center and vascular evaluation revealed no arterial disease or venous reflux. A compression therapy regimen and walking program led to healing within 3 weeks. Case 2: A 72-year-old woman with diabetes, hypertension, and arthritis experienced intermittent venous dermatitis for 5 months. Despite medical interventions, including antibiotics and a cellulitis related hospitalization, the condition persisted. A wound center with vascular referral evaluation identified venous reflux, and a compression therapy regimen resulted in healing within 3 weeks. Venous reflux was treated with ablation post healing. Case 3: 53-year-old woman with severe osteoarthritis and morbid obesity experienced weeping dermatitis for 2 years. A wound center and vascular evaluation revealed venous disease with normal arterial flow. Compression therapy initiated with referral to physical therapy to improve mobility. Dermatitis resolved in 1 month.

Results: In all 3 cases, the venous dermatitis was resolved in less than 1 month after it was appropriately diagnosed and treated.

Discussion: These cases emphasize the importance of early CVD diagnosis and treatment. Venous dermatitis, often a precursor to more severe complications, can be effectively managed with a multi-faceted approach, including compression therapy, lifestyle modifications, and, in some cases, surgical intervention.

CS-099

A Favorable Response to Hyperbaric Oxygen Therapy and Mirragen in Pyoderma Gangrenosum: A Case Report

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Introduction: We present a case of a 56-year-old diabetic male with an 18 month old non-healing ulcer of the left lower leg that was initially misdiagnosed and worsened despite antibiotics, debridement, and standard wound care. Eventually, a diagnosis of pyoderma gangrenosum was considered by exclusion.

Methods: Patient was treated with 40 sessions of hyperbaric oxygen therapy and 16 applications of a borate based bioactive glass wound matrix (Mirragen) in addition to the standard of care for PG cases which includes oral and topical steroid therapy.

Results: This therapy regimen has resulted in a 99% reduction in surface area from the wound's largest size at 117 sq cm; prior to the PG diagnosis. This also resulted in a 98% reduction in size since the initiation of the therapies mentioned above.

Discussion: This case suggests that combining HBOT with advanced wound matrices like Mirragen may offer a novel and effective therapeutic option for managing complex cases of pyoderma gangrenosum, especially in patients with co-morbidities such as diabetes.

CS-100

Using MPM Medical Wound Care Products on a Medical Mission in the Kingdom of Tonga

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Introduction: Introduction: This study evaluates MPM Medical wound care products' clinical efficacy, patient comfort, and clinician usability during a 15-day medical mission in Tonga. The mission targeted chronic ulcers, trauma wounds, and abscesses in a resource-limited environment. Products such as collagen* and super absorbent dressings* were applied based on individual wound needs. Objectives: The primary objective was to assess the effectiveness of MPM products in enhancing wound bed health, accelerating healing, and increasing patient comfort. Secondary goals included evaluating clinician usability and training local providers.

Methods: Study Design: This observational study was conducted over 15 days involving patients with various wound types. Intervention: MPM Medical products were applied based on wound characteristics, with clinicians monitoring healing parameters. Population: Patients presented with both acute and chronic wounds, many lacking regular access to care. Outcome Measures:

Improvement in wound bed characteristics (e.g., transition from necrotic to granulation tissue); Rate of wound contraction and healing; Patient comfort during treatment; Local provider training and sustainability.

Results: Results: Significant improvements in wound bed health were observed, with many wounds transitioning to healthy tissue. Rapid wound contraction and complete healing were achieved in several cases. MPM products were well-tolerated, with minimal discomfort reported, leading to high patient compliance and satisfaction. Clinicians found the products easy to apply and train local providers on, contributing to care in a resource-constrained setting.

Discussion: Discussion: MPM products significantly enhanced wound healing outcomes, supporting rapid tissue regeneration and wound contraction while being gentle on the skin. Their ease of use made them valuable for clinicians. Training local providers was successful, ensuring continued care. MPM products, including collagen* and super absorbent dressings*, are effective in mission settings, promoting tissue regeneration and offering ease of use. They should be considered for future missions in similar environments, with further research recommended for long-term benefits. Recommendations: continue using MPM products in future missions; expand their application for chronic wounds in resource-limited settings; provide training resources to maximize product use post-mission.

CS-103

Thermal Imaging Analysis of Diseased Skin in Hidradenitis Suppurativa Patients Using Forward-Looking Infrared (FLIR) Technology: A Pilot Study

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Introduction: Hidradenitis suppurativa (HS) is a chronic inflammatory skin disorder which affects the folliculopilosebacous unit. The exact pathophysiology of HS is not yet fully understood; however, it has been linked to upregulation of inflammatory cytokines, leading researchers to agree that the HS cycle of inflammation begins before visible manifestations. Given the known presence of subclinical HS disease, we aimed to investigate forward-looking infrared (FLIR) thermal imaging as a non-invasive tool to identify and map active inflammation through temperature analysis. FLIR technology has the potential to help refine surgical resection boundaries not visible to the naked eye. This pilot study evaluates the utility of FLIR imaging in mapping diseased skin in patients with HS to optimize surgical planning and improve outcomes.

Methods: Patients with HS undergoing surgical excision were imaged pre- and post-operatively using standard photographs and FLIR thermal imaging. To preserve consistency, patients were acclimated to operating room temperature before imaging. FLIR data were analyzed to denote

diseased tissue from healthy tissue. Diseased tissue was considered areas with elevated temperatures indicating greater inflammation. Postoperatively, patients were monitored for persistent disease and complications.

Results: This case series included two patients who underwent surgical excision of HS. FLIR imaging identified high-temperature areas the extended beyond the surgical borders drawn around disease and inflammation visible to the naked eye, involving multiple anatomical sites (inguinal region, medial thigh, anterior vulva, and posterior labia). In Patient 1 (inguinal and left thigh resection), HS disease was successfully excised. Post-operative healing was complicated by mild cellulitis and wound dehiscence which did not require operative intervention. Patient 2 (vulvar and labial resection) also had complete disease excision and healed without complications.

Discussion: This pilot study establishes a foundation for larger-scale investigations and highlights the potential role of FLIR thermal imaging in enhancing surgical planning for patients with HS. The methods employed in this study for analyzing infrared images provide a framework for future research into the application of thermal mapping to optimize surgical interventions in HS.

CS-104

Use of Aseptically Processed Placental Allograft and Meshed Reticular Acellular Dermal Matrix as Wound Bed Stabilizer and Scaffolding to Support Deep Soft Tissue Reconstruction

Daniel Murariu, MD, MPH, MBA, FACS; Shannon Masterson, PA

Introduction: Trauma to the extremities represents one of the most common injury forms leading to large, full thickness soft tissue loss. Achieving closure after extensive debridement of necrotic tissue can be challenging, especially in patients with multiple co-morbidities. The suboptimal wound bed can exhibit poor vascularization, inflammation and potential for infection. Aseptically processed dehydrated human amniotic placental mini-membrane (dHAPM) allografts provide preserved matrix proteins and growth factors, while meshed aseptically processed human reticular acellular dermal matrix (HR-ADM) can provide an open network structure to support host tissue ingrowth. Two cases are presented where dHAPM and HR-ADM are used to rebuild deep soft tissue loss in traumatic injuries.

Methods: Case 1 is a 60 year-old female, hit and dragged by a snowplow truck. She suffered a circumferential right lower extremity full thickness injury, with exposed periosteum and muscle. Case 2 is a 67 year-old male, injured from a tombstone slab, with right humerus fracture, ruptured extensors tendons, and full thickness loss in the antecubital area. Both cases were treated in staged approach, including debridements, and application of dHAPM and meshed HR-ADM with negative pressure wound therapy (NPWT) to stabilize the wound bed. Skin grafting and NPWT was done a week later for the hospitalized first patient and three weeks later for second patient in the clinic setting.

Results: Granulation and vascularization were observed with complete integration of the HR-ADM in both cases. The healthy wound bed supported durable skin graft take and the injuries closed at 4-5 weeks. They remained stable, without signs of graft contracture or decreased range of motion.

Discussion: Patients with full thickness soft tissue loss requiring skin grafts may benefit from a one-time application of meshed HR-ADM. The addition of placental allograft in difficult wounds helps stabilize the wound bed via preserved angiogenic, antimicrobial and anti-inflammatory properties. New regenerative therapies allow granulation and integration activities, added thickness and stabilization of the wound bed in preparation for skin grafting.

CS-105

Bioactive Glass Effectively Heals Complex Lower Extremity Wounds: A Case Series

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Introduction: Lower extremity wounds often pose unique treatment challenges to both clinicians and patients. Because of such challenges, it is often necessary to utilize a combination of different techniques, modalities, and products to successfully treat lower extremity wounds. Skin substitutes belong to a family of advanced wound care products used in challenging wounds. Bioactive glass wound matrix (BGWM) is a new category of skin substitutes that is composed of a water-soluble matrix of fibers and microspheres that readily adheres to wound surfaces. The porous BGWM absorbs wound exudate to maintain moisture balance and serves as a scaffold to support wound healing. The objective of this case series is to describe our experience with BGWM after application on six patients with complex lower extremity wounds.

Methods: A total of six patients had foot, ankle or lower leg wounds and received BGWM applications as determined by medical necessity. Each patient received between one and three applications of BGWM during the course of wound therapy. The patients were four males and two females, aged 49 to 71 years old. Wound etiologies included delayed surgical wound healing, a crush injury, diabetic foot wounds, a decubitus ulceration, and a chronic venous leg ulceration. Wound debridement was performed as needed prior to each BGWM application. No additional dressings or therapies were utilized after initiation of BGWM other than basic cover dressings and debridement when warranted. Deidentified data was collected after obtaining informed patient consent and stored in accordance with federal regulations

Results: BGWM was utilized to effectively treat lower extremity wounds, resulting in positive healing outcomes in all six wounds. All patients healed or demonstrated marked improvement in wound size and disposition during the study period. None of the patients acquired an infection once the BGWM was applied.

Discussion: Wounds from a variety of etiologies saw successful outcomes after the application of the BGWM. These complex wounds were consistent with chronic and refractory wounds treated with BGWM by other investigators [1-4]. BGWM has been shown effective in DFUs in a 40 patient RCT while other wounds that have been refractory for years were found to close after applications of BGWM [1-4]. A common outcome reported in the literature has been a significant reduction in complications associated with wound infection once BGWM was applied to wounds [1-4]. This outcome continues to hold true in this case series.

CS-107

Application of Air-dried Human Amniotic Membrane (dHAM*) on Nonhealing Diabetic Foot Ulcer for a Diabetic Patient with Venous Insufficiency and Peripheral Neuropathy

Luis Navazo, MD, CMD, CWSP; Connie Chung, PhD – Director of Product Development, C5 Biomedical; Samera Taki, BS – Clinical Research Coordinator, Mobile Doctor Medical Clinic

Introduction: Air-dried human amniotic membrane (dHAM) is a sterile placental allograft derived from amniotic membrane tissue developed for wound healing. This clinical case study evaluates treatment outcomes for a patient with a nonhealing diabetic foot ulcer (DFU) managed with dHAM plus standard of care (SOC). Patient is an 86-year-old, non-smoking male with a BMI of 25-26 and PMH of well-managed DMII, atrial fibrillation, GERD, venous insufficiency, and peripheral neuropathy. Patient received SOC with topical wound dressings from the VA Outpatient Wound Clinic for over one year without improvement. Need for expedited healing arose as the wound persisted and risk of osteomyelitis and/or amputation increased.

Methods: Patient presented with nonhealing, full thickness, Wagner 2 DFU on left medial malleolus that persisted over one year with SOC and nearly doubled in size in the five weeks prior to initial visit. At baseline, wound surface area was 8.0 cm2 and patient reported scores of 0 for all Pain, Enjoyment, and General Activity (PEG) parameters. Patient received dHAM plus modified SOC (compression, debridement, offloading, mois-

ture management) weekly for eight weeks. Evaluation of wound healing was determined by time to closure, number of applications, percent area reduction from baseline (PAR), and PEG scale1 scores to assess pain and return to function. PAR >50% by a 4-week surrogate is an early prognostic indicator of effectiveness and predictive of long-term healing2.

Results: By the 4-week surrogate of weekly dHAM applications plus SOC, wound surface area measured 0.9 cm2, reflecting 88.8% PAR. PEG scores increased from baseline during treatment period, but returned to scores of 0 for all parameters by wound closure. In sum, eight applications of dHAM over eight weeks plus SOC augmented complete wound closure without adverse events.

Discussion: This case study highlights the safety and efficacy of dHAM treatment in healing a large, complex, nonhealing DFU that failed to heal with SOC alone for over one year. The biological properties of dHAM likely played a crucial role in achieving positive healing results. Therefore, dHAM is a noteworthy treatment option for chronic ulcers to promote faster healing, improved quality of life, and functional recovery.

CS-108

Application of Air-dried Human Amniotic Membrane* on Nonhealing Diabetic Foot Ulcer for a Diabetic Patient with Chronic Kidney Disease, Hypertension, and Spinal Stenosis

Luis Navazo, MD, CMD, CWSP; Connie Chung, PhD – Director of Product Development, C5 Biomedical; Samera Taki, BS – Clinical Research Coordinator, Mobile Doctor Medical Clinic

Introduction: Air-dried human amniotic membrane (dHAM) is a sterile placental allograft derived from amniotic membrane tissue developed for wound healing applications. This clinical case study evaluates treatment outcomes for a patient with a nonhealing diabetic foot ulcer (DFU) managed with dHAM plus standard of care (SOC). Patient is a 100-year-old, non-smoking female with a BMI of 18-19 and PMH of diabetes mellitus type 2, chronic kidney disease, hypertension, and spinal stenosis. Need for expedited healing arose as the wound persisted and risk of osteomyelitis and/or amputation increased.

Methods: Patient presented with a nonhealing, full thickness, Wagner 2 DFU on the right heel that persisted despite over one month of SOC. At baseline visit, wound surface area was 1.12 cm2. Patient received dHAM plus SOC (including compression, debridement, offloading, moisture management) weekly for three weeks. Evaluation of wound healing was determined by time to closure, number of applications, and percent area reduction from baseline (PAR).

Results: By the third and final dHAM application, in conjunction with SOC, the wound surface area measured 0.32cm2, reflecting 71.4% PAR. Wound closed one week later. In sum, three applications of dHAM over three weeks plus SOC augmented complete wound closure without adverse events.

Discussion: This case study highlights the safety and efficacy of dHAM treatment in treating a nonhealing DFU that failed to heal with SOC alone for over one month. The biological properties of dHAM likely played a crucial role in achieving positive healing results. Therefore, dHAM is a noteworthy treatment option for chronic ulcers to promote faster healing, improved quality of life, and functional recovery.

CS-109

Application of Fragmented Fish Skin Graft* on Nonhealing Traumatic Leg Ulcer for an Obese Patient with Pacemaker, Metabolic Syndrome, Hypertension, and Hyperlipidemia venous Insufficiency

Luis Navazo, MD, CMD, CWSP; Samera Taki, BS – Clinical Research Coordinator, Mobile Doctor Medical Clinic

Introduction: Fish skin graft (FSG) is a xenograft derived from Atlantic cod that augments wound healing1. This case evaluates FSG* in a patient with nonhealing traumatic ulcers with cellulitis on the left lower leg which had not responded to conservative wound care. Patient is a 70-year-old, obese female with a pacemaker and PMH of bradycardia, metabolic syndrome, hypertension, hyperlipidemia, and venous insufficiency. Need for expedited healing arose as the wound persisted despite over five weeks of standard care and risk of further infection and osteomyelitis developed.

Methods: Patient presented with cellulitis on the lower left leg following a fall two weeks prior. At baseline, the combined surface area of the wounds totaled 59.74 cm2 with an average depth of 0.5 cm; purulence was noted in the wound, indicating infection. Subsequently, oral trimethoprim-sulfamethoxazole antibiotics were initiated. Standard care was performed over five weeks, including serial debridement and topical antibacterial wound dressing with two-layer compress. Patient completed the course of antibiotics, however, the infection continued and the risk of osteomyelitis increased due to proximity to the tibia. FSG was deemed necessary and was applied once at the next visit, at which point the remaining wound surface area measured 2.16 cm2 with a depth of 0.5 cm. Within two weeks following FSG application, the wound had reduced to 0.12 cm2 surface area with a depth of 0.2 cm. Seven days later, the wound was determined closed with noted hyperpigmentation.

Results: Despite over five weeks of standard care, wound closure was only achieved once the treatment modality was augmented with FSG application. A single FSG treatment enabled complete wound closure three weeks after implementation.

Discussion: This case illustrates clinical efficiency in using FSG to treat large, traumatic, nonhealing leg wounds in a geriatric female with multiple comorbidities of bradycardia, hypertension, hyperlipidemia, and venous insufficiency. Patient also had a large, subcutaneous hematoma which complicated healing. FSG proved safe and effective in wound healing and prevented further infection and osteomyelitis. More extensive studies should investigate FSG efficacy in treating traumatic wounds in patients with venous insufficiency.

CS-110

Valbenazine Treatment for Tardive Dyskinesia in a 64-year-old Bipolar Female with Chronic Wounds Due to Hypermobility: A Case Report

Luis Navazo, MD, CMD, CWSP; Samera Taki, BS – Clinical Research Coordinator, Mobile Doctor Medical Clinic

Introduction: Tardive dyskinesia (TD) is a movement disorder characterized by involuntary movements developing from dopamine receptor-blocking agents, with long term use of first-generation antipsychotics associated with higher risk1. This case evaluates efficacy of valbenazine for a newly-diagnosed TD patient with lumbar ulcers that failed conservative treatment. Patient was a 64-year-old female with hypothyroidism, pancreatitis, osteoporosis, levoscoliosis, GERD, and BD-I; patient had ten years of quetiapine use, with dosage lowered two months before initial presentation. Wounds were not resolved until proper consideration of effect of dyskinesia on wounds and subsequent treatment.

Methods: Patient presented with two lumbar stage-4 decubitus ulcers that had persisted for five months despite standard care and developed osteomyelitis, subsequently resolved with dicloxacillin. At presentation, lumbar wound measured 2.2cm x 1.0cm x 1.0cm, sacral wound 3.0cm x 1.5cm x 0.3cm. Symptoms of a movement disorder suggested TD prognosis, supported by AIMS2 score of 12. Valbenazine was prescribed but not taken for six months due to patient's diagnosis aversion; serial debridement was performed throughout. At time of valbenazine initiation, lumbar wound measured 0.4cm x 0.4cm x 0.3cm, sacral wound 1.0cm x 2.0cm x 0.5cm, AIMS score was 8. After two weeks, dosage was increased. Within four months, both wounds achieved closure and final AIMS score was 7.

Results: Comprehensive evaluation of patient's trunkal hyperkinesia in the context of AP history informed a TD diagnosis and subsequent initiation of valbenazine, which enabled wound closures within five months. Overall improvement in TD was reflected by a 5-point decrease in AIMS score. While the traditional paradigm for the devel-

opment of decubitus ulcers is usually associated with hypomobility or immobility, this case reports lumbar ulcers arising from shear force caused by intense trunkal dyskinesia.

Discussion: This case highlights the importance of holistic patient assessments in diagnosing concomitant maladies, and how patient aversion and noncompliance can further complicate treatment regimens. While decubitus wound paradigms are generally linked to pressure ulcers, this case exemplifies how providers must be willing to consider potentially unorthodox phenomena in order to properly determine and treat comorbid conditions.

CS-111

Application of Desiccated Human Amniotic Membrane (DHAM)* on Nonhealing Femoral Ulcer for a Wheelchair-bound Patient with Ataxia and Traumatic Brain Injury

Luis Navazo, MD, CMD, CWSP; Samera Taki, BS – Clinical Research Coordinator, Mobile Doctor Medical Clinic

Introduction: Desiccated human amniotic membrane (DHAM) is a chorion-free allograft derived from amniotic membrane tissue. This case evaluates treatment outcomes in a patient with a non-healing, cellulitis-induced ulcer on the right medial thigh that had not responded to conservative wound care. Patient is a 72-year-old, wheelchair-bound male with ataxia, traumatic brain injury, benign prostatic hyperplasia, and obesity. Need for expedited healing arose as the wound persisted and risk of cellulitis recurrence and/or osteomyelitis developed.

Methods: Patient presented with a nonhealing, full thickness ulcer on the right medial thigh that developed as a result of cellulitis six weeks prior and persisted despite debridement of the site of cellulitis and localized standard wound care three times per week (silver alginate, bordered foam, offloading). At baseline visit, wound measured 2.0cm x 2.0cm x 0.8cm with 80% granulation and 20% slough. Along with standard care, wound was debrided and culture was taken. Skin substitute was deemed necessary due to the wound's high risk of recurring cellulitis and osteomyelitis due to the proximity to the femur. The following week, wound was noted to be clean and without drainage; DHAM was applied. After one week, wound measured 0.7cm x 0.8cm x 0.1cm. Again, wound underwent standard care and debridement. Results of the culture taken two weeks prior were positive for moderate growth of MRSA; prescription antibiotics were ordered and infection was later resolved. A second and final DHAM was applied at this visit. Within the next week, the wound was noted to be fully closed.

Results: After failing six weeks of standard care, two applications of DHAM in conjunction with serial debridement and standard care enabled full wound closure within one month.

Discussion: Despite standard care, the heightened risk of cellulitis and osteomyelitis necessitated expedited wound healing. This case illustrates clinical efficacy in using DHAM to treat nonhealing, cellulitis-induced ulcer in a geriatric, wheelchair-bound male with ataxia and traumatic brain injury. More extensive studies should investigate DHAM efficacy in healing cellulitis-induced ulcers.

CS-113

Leveraging sto2 and Temperature Analytics for Enhanced Wound Care Decision-making: A 3-patient Case Series

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Introduction: Advanced wound care technologies offer valuable insights into healing processes. This study explores the use of tissue oxygen saturation (StO2) and temperature analytics in clinical decision-making for complex wounds.

Methods: We present a case series of three patients with diverse wound types: a new ileostomy, a posterior rotational flap, and a spontaneous enterocutaneous fistula. StO2 and temperature measurements were obtained by our two clinical research assistants using non-invasive imaging technology. Data were analyzed to assess healing progress and guide treatment decisions.

Cases: Case 1: Female (63 yrs) with a new ileostomy. Over 54 days, StO2 increased while temperature normalized, indicating improved perfusion and progression of healing. These markers helped differentiate normal healing from complications such as dermal fistula, abscess, seroma, or hematoma. Case 2: Male (37 yrs) with a Posterior Rotational Flap with unilateral area of swelling : StO2 and temperature measurements showed normal values bilaterally along the incision. Based on these findings, the plastic surgeon opted for a percutaneous drain approach instead of open surgery. Case 3: Female (73 yrs) with an Enterocutaneous Fistula: StO2 was higher in areas of missing epithelial cells or moisture associated skin damage, while temperature remained unchanged. This information aided in precise identification of affected areas and guided targeted treatment.

Discussion: StO2 (tissue oxygen saturation) and temperature analytics enhance clinical decision-making in complex wound cases by providing real-time assessments of wound healing and early detection of potential complications. These non-invasive technologies allow for flexible monitoring across various diagnostic applications, improving patient care without causing additional discomfort. The objective data they provide supports informed treatment planning tailored to individual patient needs. However, further research is essential to integrate these technologies into standardized treatment protocols and optimize healing outcomes.

CS-114

Enhancing Wound Healing: The Efficacy of Instillation NPWT with Hypochlorous Acid for Complex Wounds; 6 Person Case Series

Mary Anne R. Obst, RN, BSN, CCRN, CWON, CWS; Brian Myer, Medical Doctor – Surgeon, Acute care surgery, Regions Hospital

Introduction: Chronic and complex wounds present significant challenges due to the presence of debris and biofilm, which hinder the healing process. Effective wound bed preparation is essential, as inadequate cleansing and debridement can delay healing and elevate the risk of infection. This case series investigates the use of instillation negative pressure wound therapy (NPWT) with pure hypochlorous acid solution to effectively manage the most complex wound cases

Methods: Six patients with a variety of chronic and acute wounds were treated using instillation NPWT combined with pure hypochlorous acid solution. The NPWT system delivered the solution in cycles, facilitating the loosening of necrotic tissue and biofilm while simultaneously removing exudate and debris through suction. Key parameters monitored included wound bed appearance, size reduction, and any adverse effects.

Results: All six patients demonstrated a significant reduction in debris and bioburden. Within the first two weeks, there was a marked improvement in wound bed preparation, characterized by a notable decrease in necrotic tissue and biofilm. The antimicrobial properties of hypochlorous acid effectively minimized tissue irritation and odor, making it suitable for various wound types, including chronic wounds, acute wounds, and burns

Discussion: Instillation NPWT with pure hypochlorous acid offers an effective wound bed preparation strategy. While dressing application complexity and initial solution costs might seem challenging, our findings reveal a cost-effective approach. The method's ease of use, shelf availability, and superior wound healing outcomes justify the investment and ongoing educational needs of the staff. By enhancing biofilm and debris removal, this technique provides a patient-friendly solution that significantly reduces tissue and adjacent skin irritation compared to traditional wound care methods, ultimately improving patient treatment and potentially reducing overall healthcare expenses.

CS-115

Improving Wound Hygiene Through Fluorescence Imaging: A

Focus on Spatial Patterns in Diabetic and Venous Leg Ulcers

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Introduction: Wound cleansing, performed at every wound care appointment, is necessary to put stalled wounds back onto a healing trajectory and to prevent infection and its complications. The advent of bacterial fluorescence imaging technology* for wound care has changed our understanding of bacterial distribution in wounds and allows us to evaluate wound hygiene efficacy in real-time. Clinical studies using fluorescence imaging show that significant bacterial colonization is frequently left behind following standard cleansing practices, highlighting the potential for improvement.

Methods: We present a clinical algorithm for effective wound hygiene informed by real-time fluorescence imaging of bacteria and biofilm. Clinical cases illustrate this approach and demonstrate consistent spatial patterns of bacterial fluorescence in venous leg ulcers (VLUs) and diabetic foot ulcers (DFUs). We also discuss practical insights obtained from our routine use of fluorescence imaging that will improve wound hygiene practices for clinicians without access to this technology.

Results: Clinically unremarkable VLUs and DFUs frequently display fluorescence signals indicating high levels of bacterial colonization. For VLUs, cyan fluorescence indicating Pseudomonas aeruginosa is often clustered along the inferior wound edge. Red fluorescence indicating a mixture of bacterial species is more common in DFUs, usually forming a "ring" around the ulcer that extends a few centimeters from the wound edge. We recommend fluorescence imaging before and after wound cleansing, and that providers use fluorescence signals to guide cleansing towards bacterial-laden regions. In cases where bacterial fluorescence cannot be removed after a single round of guided hygiene, we recommend additional rounds and/or additional measures such as debridement and topical antimicrobials. This approach aligns with published guidelines for fluorescence imaging and has led to improved healing outcomes in clinical studies.

Discussion: Wound care providers should exercise a high index of suspicion for bacterial colonization in asymptomatic wounds, and particularly for P. aeruginosa in VLUs. Areas of focus for wound cleansing may differ between VLUs and DFUs, however thorough hygiene across the entire wound bed and periwound is always recommended. Fluorescence imaging is useful for guiding wound cleansing, for confirming its efficacy, and for assessing the need for additional measures such as debridement or antimicrobials.

CS-116

Massive Keloid Excision of the Posterior Scalp with Salvaged Full-thickness Skin Graft: A Case Report

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Introduction: Keloid scars result from excessive collagen production and fibroblast proliferation following dermal injury or inflammation, commonly affecting African Americans. In severe cases, keloids significantly decrease quality of life due to their disfiguring appearance and because they can be painful, pruritic, and chronically infected. Treatments include intralesional corticosteroid injections, immunomodulators, cytotoxic agents, lasers, and cryotherapy. Surgery may become necessary in recurrent keloids resistant to medical management.This case report describes a patient with acne keloidalis nuchae (AKN), a chronic, fibrosing folliculitis causing keloid-like lesions on the posterior neck. This patient's AKN progressed over 20 years, resulting in a multi-lobulated keloid on the occipital scalp, causing difficulty lying flat and chronic infections. Surgical excision followed by recycled full-thickness skin graft (FTSG) reconstruction of the scalp was performed.

Methods: A 50-year-old male presented with a massive keloid on the occipital scalp, treated previously with steroid injections and immunomodulators. The keloid became extensive and painful, necessitating surgical intervention. During the procedure, the fibrotic, infected keloid was excised en bloc to the subcutaneous tissue. Subsequently, recycled FTSG from the keloid scar was soaked in hypochlorous acid and then used to cover the defect. Partial closure was done with local advancement scalp and neck flaps. Following complete wound closure, postoperative management included negative pressure wound therapy (NPWT), admission to the hospital with infectious disease consultation for culture-directed antibiotics, and inpatient wound care. NPWT was removed on postoperative day three. FTSG was harvested from the AKN skin to avoid additional donor site keloid formation.

Results: The patient had initial good take of the FTSG and no infectious complications. Small surgical dehiscence wounds are being managed outpatient and there have been no recurrent keloids to date.

Discussion: This case demonstrates the efficacy of surgical intervention for severe keloids to allow patients to regain quality of life. The strong potential for keloid recurrence at the graft donor site and wound complications make this case complex and multifaceted, requiring both medical and surgical management. Loose wound closure, diligent wound care, and use of additional medical management post-operatively are essential to prevent keloid recurrence and improve patient outcomes.

CS-117

Lisfranc and Chopart Amputations Preserve Limb

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Introduction: Prevalence estimates for total diabetes were 10.3% in 2001–2004 and 13.2% in 2017–2020 (1). Diabetic foot ulcer is a major complication of diabetes. Every year in the United States, there are 150,000 amputations (2), with a majority of people with diabetes. People with diabetes are 30 times at risk for amputation compared to people without diabetes (3). Transmetatarsal amputation (TMA) is done to save people from major amputation. Failed TMA often leads to major amputations. Lisfranc amputation (LFA) and Chopart amputations (CPA) are controversial but have been used to avert major amputations (4). We aim to show LFA and CPA can allow patients to ambulate after healing.

Methods: We present a female patient with a past medical history significant for type 2 Diabetes with polyneuropathy and retinopathy, hyperlipidemia, chronic kidney disease, and homelessness. The patient developed osteomyelitis on both lower extremities. TMA failed in both feet. The patient did not want major amputation; we did more proximal midfoot amputation to salvage the limbs.

Results: Facing major amputations on both sides, the patient had a successful right LFA and a left CPA. After healing, she could ambulate short distances, even without a prosthesis. The patient was able to ambulate short distances even without proper prostheses.

Discussion: In many cases, a failed TMA leads to below-knee amputation or above-knee amputation. Depending on the severity of the infection or ischemia and the status of blood flow, LFA and CPA offer the alternative to major amputation. Surgeons should consider these rarely used procedures.

CS-118

Effectiveness of Osteoclasis in Distal Diabetic Foot Ulcers

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Introduction: The National Diabetes Statistics in 2021 estimated that 38.4 million people had diabetes. The change in foot morphology affects the plantar pressure at the metatarsal heads, causing a callus that can become an ulcer. The lifetime risk of developing a foot ulcer in patients with

diabetes is more than 33%. About two-thirds of diabetic foot ulcers will eventually heal, but approximately 28% may result in some form of lower extremity amputation. The steps to successful treatment include debridement, prevention of infection, appropriate dressings, keeping blood sugar levels under control, maintaining blood flow, and offloading. Surgical offloading is effective in preventing and healing Diabetic foot ulcers. We present a procedure called osteoclasis and aim to show its effectiveness.

Methods: We present two reports of patients with chronic distal foot ulcers.

Cases: Case 1: The patient is a 60-year-old female with diabetes mellitus, peripheral neuropathy, and a history of chronic neuropathic ulceration presents with a chronic recurrent ulcer beneath the third metatarsal head of the right foot. She was taken to the operating room; an incision was made dorsally over the third metatarsal head of the right foot, and a 0.5 cm collar of bone was removed from the anatomic neck of the third metatarsal. Case 2: The patient is a 63-year-old male with diabetes, peripheral neuropathy, and chronic kidney disease presented with chronic recurrent ulcers under the left metatarsal head two and three. He was taken to the operating room; with a dorsal approach, a 3-millimeter collar of bone was removed from the second and third metatarsals.

Results: The surgical site and the ulcer healed in six weeks for case one and ten weeks for case two. There were no complications, and no amputation was needed.

Discussion: Osteoclasis involves making an osteotomy at the distal metatarsal where the ulcer is present to allow the metatarsal head to move upward and reduce the pressure on the ulcer. Some surgeons also take a thin slice of the metatarsal at the osteotomy site. Tseng et al. showed that the procedure was safe and effective compared to metatarsal head resection.

CS-119

Xylazine Associated Wounds: An Emerging Epidemic

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Introduction: Over the past few years, the opioid crisis has seen a new and dangerous additive in the fentanyl community; the veterinary sedative, xylazine, also known as tranq. While the etiology of xylazine-associated skin necrosis is not well understood yet, these wounds are becoming more prevalent in our community and carry increased risk of bacteremia, amputations, and death. As this is a new and distinct wound category, much remains unknown about the best treatment plan for these complex wounds in patients that often have significant barriers to care. Outpatient and inpatient care can be hindered by opioid withdrawal, unmanaged pain, and previous poor experiences in the hospital setting related to feelings of stigmatization. Our goal is to maximize healing opportunities.

Methods: As there is no current standard of care, we describe a prospective treatment modality instituted by our facility. Conservative treatment using a combination of pure hypochlorous acid-based wound cleanser* (pHA) and topical debridement (both enzymatic∞ and autolytic±), has been beneficial prior to surgery, as an alternative to surgical intervention, and as an ongoing treatment to help decrease bioburden, remove necrotic tissue, and maintain a pH that mimics human skin to support epithelialization and angiogenesis.

Results: Eight patients, in their twenties to forties, had extensive Xylazine-associated wounds involving their extremities. These were full thickness involving soft tissue, muscle, tendons, and bone, yet they were successfully managed with pHA combined with topical debridement, promoting healing. This novel approach enabled patients to tolerate wound care with significantly less pain than alternative treatment modalities requiring frequent removal of products, thereby exacerbating the wounds. This treatment allowed for limb salvage in most of these patients. No adverse events, such as bleeding or reactions were noted.

Discussion: These dressing changes are less frequent and less painful, facilitating patient/caregiver trust which encourages patients to remain inpatient longer to promote healing. This wound care regimen is easily taught and can help patients prevent readmissions for grossly infected soft tissue wounds. As more of these patients are seen, continued surveillance will provide more insight into the effectiveness of this treatment modality.

CS-120

Traumatic Degloving Injury: A Case Study

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Introduction: Degloving injuries of the lower extremity refers to deep, penetrating injuries that extend into underlying structures such as muscle, tendon, ligament, bone, and neurovascular tissue structures. These injuries are often a result of shearing forces by sharp objects, high-energy trauma, or accidents that result in a puncture or deep laceration.

Case: A 37-year-old female presented to the emergency department following a crush injury sustained from a forklift at work. Emergency Medical Services (EMS) reported difficulty in locating pedal pulses due to significant laceration. Upon arrival, the patient's vital signs were stable, although she was found to have a posterior occipital hematoma. The trauma team conducted an evaluation and ruled out compartment syndrome. AOx3. The patient has a past medical history notable for obesity and tobacco use. This case study will outline the treatment course, including the utilization of negative pressure wound vacuum therapy, installation of wound vacuum therapy, synthetic grafts, split-thickness skin grafts, and application of external fixation. Collaboration with the plastic surgery team was essential in securing a sufficiently large graft to cover the wound bed, which measured 34 x 45 x 3.5 cm.

Results: NPWT: Promotes the adherence of the skin graft to the underlying tissue by creating a controlled vacuum environment with removes excess fluid and reduces hematoma or seroma formation.

Grafts: A hybrid synthetic fiber matrix allograft was selected initially to provide a scaffold for cellular infiltration and allow for cleansing of the wound without degradation of the material. A STSG was employed to enhance the formation of the skin barrier while achieving a cosmetically superior appearance, as the graft closely resembled the surrounding skin

Plastics: Plastics team recommended use of NPWT before transfer, followed by application of a graft. Given the success of NPWT in addressing the tissue deficit, patient became an appropriate candidate for a STSG, which was performed at our facility with the assistance of our own plastic surgery team.

Discussion: The treatment plan should be ever evolving with the progression and presentation of a clinical outcome. Early recognition of infection and timely surgical interventions, including debridement and the use of NPWT, play a critical role in preventing further complications. The application of NPWT was instrumental in promoting granulation tissue formation and addressing the tissue deficit, facilitating successful wound healing. A multidisciplinary approach is optimal for the management of complex wounds with large areas of tissue loss.

CS-122

Diode Laser Therapy as an Adjunct to Minimally Invasive Therapy for Hidradenitis Suppurativa

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Introduction: Hidradenitis Suppurativa (HS) is a chronic, multifactorial inflammatory skin condition characterized by tissue destruction, painful lesions and frequent recurrences. Surgical resection can help achieve long term remission with traditional surgical interventions like radical excision, deroofing, incision and drainage. Diode laser therapy, a novel therapeutic approach accelerates wound healing by selective ablation and collapse of existing scars . This would translate as a minimally invasive deroofing technique performed over a few sessions based on severity. This combined with minimally invasive techniques for HS (MITHS), represents a promising adjunct for enhancing wound healing and symptom resolution.

Methods: We conducted a retrospective single center, single surgeon study between January 2022 and January 2024 involving 44 HS patients (Hurley stages 2-3) who underwent MITHS with a 1470 nm diode laser

ablation. Hidradenitis tracts were ablated intraoperatively using the lasers. Outcomes were assessed based on symptom resolution: full, partial, or unresolved which was self reported. Patient demographics, prior treatment history, lesion location, and adverse effects were also recorded.

Results: Out of 44 patients, 50 procedures performed were MITHS. 60% (n=27) of procedures led to complete resolution, 40% led to partial resolution (n=18) . After subsequent treatments, the final results were 64% procedures (n=32) with complete and 30% with partial resolution (n=15) respectively. 6% (n=3) of patients were lost to follow up. No patients reported worsening symptoms, and adverse effects were minimal and transient, with two cases of reversible upper extremity nerve palsy. The procedure was performed under local anesthesia and well-tolerated.

Discussion: Diode laser therapy as an adjunct to MITHS demonstrates high efficacy, minimal morbidity, and short recovery times, providing a viable alternative to more invasive surgical approaches for HS. This would serve as a key therapeutic tool to achieve remission or even complete cure in patients with moderate-severe disease. These results highlight the potential for diode laser therapy to address unmet therapeutic needs in this population. Further prospective studies are warranted to validate its role in HS management and to refine its application in multidisciplinary care.

CS-125

Using a Multilayered Leukocyte, Platelet, Fibrin Patch to Cover Exposed Structures in Chronic Wounds

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Introduction: Healing chronic diabetic foot ulcers (DFU) can be incredibly challenging, especially those with exposed structures such as bone, tendon, or ligaments or deep into the hypodermis. The longer these structures remain exposed, the more at risk they become of infection and non-viability. With few tools available to granulate tissue over exposed structures, providers must turn to proven therapies such as the multilayered leukocyte, platelet, and fibrin (MLPF) patch. One RCT, [1] using a 4-week run-in period to demonstrate chronicity, yielded a 58% increase in healing DFUs (some with exposed structures) with the MLPF Patch over standard of care. Within that study, the authors found that of the exposed structure wounds, 41% healed vs. the control of 14%. A second pilot study[2] looked at chronic wounds that probed to bone and found 58% healed using the MLPF patch. With these studies in mind, we compared our outcomes in patients with chronic wounds and wounds with exposed structures to those in the RCT[1] using the MLPF patch.

Methods: We analyzed the results of 12 challenging wounds. 6 had exposed tendon, 3 exposed hypodermis, and 3 were chronic long-standing wounds. Wounds were treated with appropriate standard of care (sharp debridement, infection control, exudate and edema management, offloading, and proper dressing selection) and the MLPF Patch. We analyzed the granulation and closure rates of these wounds.

Results: In the 6 patients with exposed tendons, 4 achieved coverage over the tendon, 1 improved 25% before admission to hospice, and 1 required further surgical debridement. In the 3 with exposed hypodermis, 1 decreased wound size by 92% after 19 applications of the MLPF Patch, while the other 2 healed. Lastly, in the chronic wound group, 1 wound reduced volume by 43%, another healed with compression (mixed diabetic/venous ulcer) and 5 applications of the MLPF Patch, and the last patient (VLU) received compression and 24 applications of the MLPF Patch. This patient is still undergoing therapy.

Discussion: This data shows the efficacy of an autologous MLPF Patch as a viable treatment for chronic wounds, wounds into the hypodermis, and wounds with exposed structures. With zero risk of rejection, it is also a very cost-effective tool. This was a retrospective analysis, and more prospective studies may be beneficial to evaluate the cost factor in greater detail. With appropriate standard of care, the addition of this autologous MLPF patch could expedite the healing time of challenging wounds.

CS-126

Martorell's Hypertensive Ischemic Leg Ulcer: A Case of Mistaken Identity

Mayghen Rains, RN; Frank Aviles, PT; Anil Matta, MD, MPH

Introduction: 45-year-old female presented to the wound care clinic with an atypical wound to the left medial lower extremity. The patient reported trauma at the etiology resulting in a small black bump that gradually worsened. Past medical history is positive for morbid obesity, severe OSA, and Htn. Social history is positive for smoking 1 ppd x 10 years. The wound presented with eschar and extremely painful. The rest of the history was benign.

Methods: Laboratory testing showed elevated inflammatory markers. Imaging was negative. Sharp debridement was performed with a punch biopsy to the margin. Pathology was nonspecific- concern for stasis dermatitis vs PG. The pt was started on high dose steroids. There was worsening pain, size and overall appearance. A wedge biopsy was performed and sent to dermatopathology. Results showed marked hyperplastic media of midsized arterioles with complete occlusion of lumen and calcium deposition, suggestive for Martorell's Hypertensive Ischemic Leg Ulcer.

Results: Steroids were rapidly tapered. The patient was started on calcium channel blockers. Extensive debridement was performed and NPWT and 4-layer compression was utilized until the wound was appropriate for a split thickness skin graft. The wound showed dramatic improvement with the above interventions with eventual healing.

Discussion: This case represents the importance of identifying Martorell's Hypertensive Ischemic Leg Ulcer and differentiating between Pyoderma Gangrenosum and Vasculitis as the treatments are completely divergent.

CS-127

Managing Non-healing Surgical Wounds and Surgical Site Infections with Bacterial Fluorescence Imaging: A Case Series

Rose Raizman, NP, RN-EC, PHCNP, NSWOC, WOCC (C), MSc, MScN

Introduction: Surgical site infection (SSI) is an adverse clinical outcome that significantly drives morbidity resulting in important human and economic burden. This increased burden is associated with prolonged hospitalization, delayed recovery, higher treatment costs, rehospitalization, chronic pain, and disability1-5. Fluorescence imaging has effectively assisted clinicians in detecting high bacterial burden even when not clinically apparent6, supporting timely and objective treatment7-8 of non-healing surgical wounds or superficial SSIs. This case series highlights the impact of a handheld fluorescence device on surgical wound treatment and healing.

Methods: A cohort of 18 patients with non-healing surgical wounds were treated at a specialized outpatient wound care clinic. These wounds resulted from cosmetic surgeries (n=8), c-sections (n=3), pilonidal sinus excision (n=3), cancer resection (n=2), 1 port-a-cath incision, and 1 toe amputation. Fluorescence wound imaging was performed by a single wound care provider during the patient's visit using a hand-held, non-contact device* that detects the presence and location of bacterial loads >104 CFU/gr as red or cyan fluorescence signals. Wound area measurements were used to track wound healing progression. The poster showcases the 6 most prominent cases to illustrate wound management.

Results: Out of the 18 non-healing surgical wounds imaged, 89% displayed fluorescence signals indicative of bacteria/biofilm at their baseline/initial visit. The clinician used this biomarker to guide wound treatment decisions in several ways: 1) fluorescence alerted toward areas not flagged by standard clinical assessment; 2) cleansing/debridement procedures were focused to bacteria-laden areas, avoiding disturbing healthy tissue; 3) the need for further cleansing, debridement or antimicrobials was ascertained post-procedurally. Fluorescence signals fluctuated between visits. By the end of the investigation, complete eradication of fluorescent signals (indicating elevated bioburden) was observed in 100% of cases. Healing was accomplished in 83% of the wounds, and for the 3 wounds that did not heal completely, wound area reduced by 42.2% (average).

Discussion: Fluorescence imaging enabled precise removal of bioburden and supported objective care planning, improving infection management, antimicrobial stewardship, and promoting healing in stalled surgical wounds. This non-invasive, handheld technology had a significantly positive impact on the outcomes of these patients.

CS-130

Case Report - Common Things Can Be Uncommon

poornema ramasamy, MD MBA FACP CWSP

Introduction: Purpose: to highlight the importance of evaluating for arterial insufficiency at bedside in a young female patient with history of smoking and diabetes mellitus.

Case: A 42 year old lady, poorly controlled insulin requiring diabetes mellitus with a recent HemoglobinA1c of 8.2, tobacco smoker, anxiety, fibromyalgia, necrobiosis lipoidica, prior skin grafts came to the wound clinic as a new patient after recent hospital discharge for non-healing bilateral lower extremity wounds for 2 months duration and pain. She was treated as infected venous stasis ulcers in the hospital and was discharged on doxycycline. She reported significant pain and unable to sleep and in tears. Her review of systems was significant for shortness of breath on minimal exertion and pain in her lower extremities. Examination revealed purplish discoloration along with feeling cold in both feet, bilateral pitting pedal edema, several wounds in both legs with areas of black eschar and slough noted in wounds. Femoral pulses were not palpable, but dopplerable with multiphasic signal. Dorsalis Pedis and Posterior Tibial arteries were not palpable and had feeble monophasic signal. Arterial dopplers done from recent hospitalization showed monophasic flow noted throughout both the lower extremity arterial system suggestive of proximal arterial occlusive disease. Patient was admitted to the hospital after consultation with vascular team. CT angiogram pelvis with run off was done which showed focal high-grade narrowing of the infrarenal abdominal aorta without occlusion. Endograft to aorta was placed with immediate restoration of color to the extremities.

Discussion: Infrarenal abdominal aortic stenosis is a rare phenomenon that can occur in young women with h/o smoking and hyperlipidemia. In our case, patient's h/o necrobiosis lipoidica was misleading. ABI and bedside Dopplers are valuable tools. As shown earlier, the study pointed us towards proximal block.

References

Spyridon Monastiriotis, Shang Loh, Apostolos Tassiopoulos, Nicos Labropoulos,- Clinical characteristics and outcome of isolated infrarenal aortic stenosis in young patients,
Journal of Vascular Surgery, Volume 67, Issue 4, 2018, Pages 1143-1149, ISSN 0741-5214,
https://doi.org/10.1016/j.jvs.2017.07.136.
(https://www.sciencedirect.com/science/article/pii/S0741521417320864)

CS-131

Polylactic Acid Dermal Matrices: A Novel Solution for Accelerating Wound Healing in Complex Soft Tissue Defects

Jose L. Ramirez-Garcialuna, MD, PhD; Victor Loza-Gonzalez, MD, MSc; Lorena Novoa-Moreno, MD; Mario Martinez-Jimenez, MD, PhD

Introduction: Complex soft tissue defects (CSTDs) represent a significant challenge in wound management due to substantial tissue loss, infection, poor vascularization, or anatomically difficult locations where primary closure, including skin grafts or flap coverage, is not feasible in a single step. These defects are most commonly caused by trauma but can also arise from infection, surgery, or tumour excision. This study evaluates the use of a novel polylactic acid (PLA) dermal matrix to treat CSTDs and facilitate wound closure.

Methods: We present a cohort of 10 patients with CSTDs caused by trauma. Among them, 5 had open fractures, 2 had burns with deep partial and full-thickness injuries, 1 experienced soft tissue loss from a dog bite, and 2 presented with necrotizing fasciitis. All wounds underwent extensive debridement, fixation of hard tissues, and soft tissue repair in a two-stage process. A PLA dermal matrix was applied to promote the formation of a granulating tissue bed, followed by skin grafting within 14–21 days.

Results: All cases achieved successful skin graft integration without complications, including infection, tissue loss, or mortality. Histological analysis demonstrated increased collagen deposition (Masson's trichrome staining) and enhanced vascularization with increased CD31-positive blood vessel density in the treated tissues. Applying the PLA matrix enabled rapid wound bed preparation, allowing for early grafting and patient discharge.

Discussion: The use of PLA dermal matrices is an effective strategy for managing CSTDs. This approach accelerates wound bed preparation, facilitates successful skin grafting, and shortens hospital length of stay. These features suggest that PLA matrices offer a cost-effective solution for treating complex soft tissue defects, improving patient outcomes, and reducing healthcare burden. Further studies are warranted to validate these findings in larger cohorts.

CS-132

Can Non Bandaging Be an Option for Treatment of Venous Leg Ulcer : A Case Study

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Introduction: Traditional wound care techniques, although widely utilized, present specific limitations that can impact clinical outcomes. Conventional, wound care systems, which typically rely on gauze and two-layer bandage, often apply inconsistent, inaccurate, and non-measurable pressure. The methods to apply this standard compression are time-consuming, and necessitates specialized training of clinical staff, patients, and caregivers. To address these limitations, a novel compression therapy system has been developed, using an innovative bandage-free design that involves an inelastic air-inflated leg wrap to apply measurable, adjustable, and maintainable compression. Additionally, it incorporates a highly absorbent gel-fiber dressing for advanced exudate management. Together these garments optimize provider efficiency, and support improved wound healing.

Methods: The purpose of this case study was to evaluate the effectiveness of this new wound care system indicated for use with patients who have venous leg ulcers and lower extremity edema. This evaluation involved 30 patients with either acute or chronic non-healing venous ulcers. The patient cohort had a mean age of 64 years, with 63% presenting with lymphedema and 25.8% exhibiting venous insufficiency requiring closure of the great or small saphenous veins. The patients were being treated weekly; ulcer size and healing progression were recorded using standard dimensions.

Results: Results upon examination revealed that 74% of the patient sample showed complete wound healing within 14 weeks. These results indicate that the novel garment system is effective in promoting wound healing without the use of traditional multilayered dressing.

Discussion: The completed case study provides evidence that the novel compression therapy system offers a practical alternative to conventional wound care methods. It demonstrated significant potential in improving wound healing outcomes for patients with venous ulcers and lower extremity edema. This compression garment offers an adequate treatment option, reducing complications regarding application and increasing patient compliance. These findings support the broader clinical adoption of this system and suggest a need for further research to validate its long-term applicability.

CS-133

Effects of Human Cryopreserved Adipose Tissue Allograft Implantation on Tissue Oxygenation in Diabetic Neuropathic Patents with Plantar Ulcers: Insights from Multispectral Near-infrared Spectroscopy Imaging

Matthew Regulski, DPM, FFPM RCPS (Glasg), ABMSP, FASPM

Introduction: Plantar ulcers, common in diabetic neuropathic individuals with fat pad atrophy, account for nearly half of all foot ulcers and are a leading cause of limb amputations, with rates exceeding 80%. High plantar pressure due to fat pad loss plays a key role in ulcer formation, poor healing, and recurrence. Human cryopreserved adipose tissue allograft (hCAT) has emerged as a promising approach for managing fat pad atrophy. This study evaluates the impact of hCAT implantation on tissue oxygenation in diabetic neuropathic patients with plantar ulcers.

Methods: This retrospective case series included 3 patients (2 males, 1 female) with multiple comorbidities, including diabetes, and plantar ulcers that failed to respond to previous treatments. The ulcers varied in size (0.6–3.4 cm^2). A comprehensive wound management approach included the application of 3.0 mL of hCAT to address fat pad defects. Tissue oxygenation and visual light images were captured using a mobile near-infrared spectroscopy imaging device**. Imaging was performed at various time points, from 7 to 108 days prior to hCAT implantation, continuing up to 181 days post-implantation. Follow-up intervals were tailored to individual cases. The primary outcomes included the rate of wound closure and kinetics of tissue oxygenation after hCAT implantation.

Results: Pre-implantation peri-wound oxygenation was 85% ± 16% and wound oxygenation was 67% ± 24%. Following hCAT implantation, a drop in oxygenation occurred, with peri-wound oxygenation decreasing to 72% ± 20% and wound oxygenation to 54% ± 20%. Over the next 18–64 days, oxygenation improved, with peri-wound oxygenation reaching 84% ± 15% and wound oxygenation 78% ± 15%. Improvements in oxygenation correlated with reductions in wound surface area: Case 1 showed a 66% wound area reduction by 181 days, Case 2 closed by Day 63, and Case 3 showed over 50% reduction by Day 49. Longer-term follow-up is ongoing.

Discussion: This is the first study to measure tissue oxygenation after hCAT implantation in diabetic neuropathic patients with plantar ulcers. Our findings highlight hCAT's potential in plantar ulcer management, with larger studies needed to validate these results and optimize treatment protocols.

CS-134

Efficacy of a Novel Biomimetic Matrix in Chronic Wounds by Tissue Regrowth and Revascularization: Monitoring Progress with Multispectral NIRS Imaging

Matthew Regulski, DPM, FFPM RCPS (Glasg), ABMSP, FASPM

Introduction: Chronic wounds, which affect millions globally, substantially reduce the patients' quality of life and place significant burdens on healthcare systems. Effective management of chronic lower extremity wounds requires strategies that enhance tissue regrowth and revascularization. This study evaluates the performance of a polypeptide biomimetic matrix (BMM) designed to support chronic wound healing via an extracellular matrix-like scaffold with antibacterial protection, using multispectral near-infrared spectroscopy (NIRS) imaging.

Methods: Five patients with multiple comorbidities presenting chronic wounds that failed to respond to previous treatments - diabetic foot ulcers, pressure ulcers, venous leg ulcers - were treated with an FDA-approved flowable BMM*. Multispectral NIRS, infrared (IR) thermal, and digital imaging were captured using a handheld mobile device**. Tissue oxygen saturation (StO_2) was assessed at baseline and continuously monitored during following visits.

Results: All patients responded positively to BMM treatment, showing ischemic area [defined as StO_2 < 39%] reduction and wound healing progression. Complete closure was achieved in all cases. In two cases, rapid ischemic area reduction (>65% reduction after 2-4 applications) was observed, achieving >99% ischemic area reduction within 3 to 5 applications and full wound closure within 7 to 8 applications. In two other cases, slower ischemic area reduction was noted (>65% reduction after up to 9 applications), achieving full wound closure within 10-16 applications. In one case, while there was no marked reduction in wound surface area within the first 8 applications, a substantial wound depth reduction with granulation tissue formation was observed and accompanied by 86% reduction in ischemic area. In all five cases, an increase in tissue oxygenation was observed with BMM treatment and predicted healing, suggesting healthy tissue regrowth and revascularization, which ultimately resulted in complete wound closure.

Discussion: This case series highlights the potential of BMM in treating chronic, unresponsive wounds by fostering an environment that promotes tissue regrowth and neovascularization. NIRS imaging provided an objective, non-invasive measure of oxygenation, helpful in predicting ulcer healing trajectory and treatment effectiveness. The reduction in ischemic area emerged as a potential marker for assessing tissue regeneration and revascularization. Further studies are needed to validate these findings.

CS-135

Peptide-based Biomimetic Matrix Moves Chronic Wound from Failed Skin Substitute Therapy to Rapid Closure

Matthew Regulski, DPM, FFPM RCPS (Glasg), ABMSP, FASPM

Introduction: Squamous Cell Carcinoma (SCC) is the second most common type of skin cancer1. It presents as a superficial, non-healing chronic rash or an invasive red papule, nodule, or plaque. Wounds after SCC resection and chemo/radiotherapies are not uncommon and often require supportive, multifaceted wound care2.This case report describes the use of a novel biomimetic matrix (BMM)* in managing a chronic wound post-SCC resection that failed to progress after repeated skin substitute therapy in a patient with several risk factors for impaired healing and wound recurrence. BMM is an FDA-approved polypeptide 3D scaffold designed to support tissue regrowth and prevent infection while providing intimate contact with the wound.

Methods: The patient was a 78-year-old female with a medical history of diabetes, venous disease, Parkinson's disease (and reduced mobility), lymphedema, psoriasis, skin fibrosis, and previous skin cancer. She developed a chronic wound in the right anterior leg, mid-tibia, post-excision of a large squamous cell carcinoma. Despite appropriate standard of care and repeated applications of a fish-derived skin substitute, the ulcer remained chronic. After 10 weeks of failed treatment with fish skin grafts, the patient was switched to BMM, applied topically per manufacturer instructions, alongside continued standard of care including multilayer compression. Wound measurements were recorded at baseline and during each visit. Wound healing progression, peri-wound skin condition, and adverse events were monitored throughout the study.

Results: Despite previous failure of fish-derived skin substitutes over 10 weeks of treatment, rapid improvement in wound healing was observed with BMM. Significant reductions in wound size and depth were noted after a single BMM application. Remarkably, complete wound closure was achieved within five BMM applications, and no recurrence was noted during the follow-up period. Moreover, peri-wound skin appearance improved substantially. No product-related adverse events were observed.

Discussion: BMM successfully facilitated healing of a chronic, non-responsive wound in a patient with numerous comorbidities, achieving complete wound closure with just five applications. These findings highlight BMM's potential for rapid healing progression in chronic wounds unresponsive to traditional skin substitutes and advanced wound care products, which could signify a change in clinical practice. Further studies are necessary to confirm these results and determine BMM's efficacy in a larger patient population.

CS-136

Pressure Ulcer with Exposed Tendon Heals After Five Applications of a Novel Biomimetic Matrix: A Case Study

Matthew Regulski, DPM, FFPM RCPS (Glasg), ABMSP, FASPM

Introduction: Wounds with exposed structures are challenging due to slow healing and high rates of infection and complications. Treatment of complex lower-extremity wounds requires a multifaceted approach including aggressive debridement, moist wound care, blood flow optimization, bioburden reduction, and often flap reconstruction1. Given that flap reconstruction is implausible in high-risk patients, it is critical to find

alternative modalities that encourage rapid granulation over the exposed structures and achieve wound closure1. This case report describes the use of a novel biomimetic matrix (BMM) to treat a pressure ulcer with exposed tendon in a patient with numerous comorbidities. BMM is designed to support healing of complex wounds by providing an acellular 3D scaffold for tissue regrowth, with antibacterial protection, delivered via a syringe-based system for precise placement and dead space elimination.

Methods: The patient was an 82-year-old female with uncontrolled diabetes (HbA1c: 11%), vascular disease, severe rheumatoid arthritis, and reduced mobility. She developed a deep pressure ulcer with exposed tendon in the anterior ankle. BMM* was applied topically per the manufacturer's instructions. Wound measurements were recorded at baseline and at each following visit. Tissue oxygen saturation (StO_2) was assessed using a multispectral near-infrared spectroscopy (NIRS) imaging device**. Adverse events were monitored throughout the study.

Results: BMM treatment resulted in rapid wound healing progression and ischemic area [defined as StO_2 < 39%] reduction. After a single application, there was substantial wound depth reduction with healthy granulation tissue covering the tendon, accompanied by 23% wound area reduction and 86% ischemic area reduction. Within 4 BMM applications, 82% wound surface area reduction and >99% ischemic area reduction was achieved, resulting in complete wound closure after 5 applications. No adverse events were observed during the study period.

Discussion: BMM successfully facilitated healing of a complex ulcer with exposed tendon in a patient with several risk factors, achieving complete wound closure with just five applications. These findings highlight BMM's potential for rapid healing progression in complex wounds with exposed structures, suggesting an advanced alternative modality. Further studies are necessary to confirm these results and evaluate BMM's performance in a larger patient population.

CS-137

Peptide-based Biomimetic Matrix Achieves Rapid Closure of Chronic Venous Leg Ulcers

Matthew Regulski, DPM, FFPM RCPS (Glasg), ABMSP, FASPM

Introduction: Venous Leg Ulcers (VLUs) are challenging wounds associated with healthcare costs estimated at >$32 billion annually1, given the delayed healing and high recurrence rates, with only 60% closing by 12 weeks and 75% reappearing within 3 weeks2. Despite the severity of the issue and the recent advancements in wound care, VLUs remain an unmet clinical need requiring novel approaches. The objective of this study was to evaluate the safety and performance of an innovative Biomimetic Matrix (BMM) in chronic VLU management. Designed to promote tissue regrowth and prevent infection, BMM is a synthetic extracellular matrix (ECM)-like scaffold made of antibacterial self-assembling peptides that completely conforms to irregular, deep, and hard-to-access wounds.

Methods: Patients with multiple comorbidities [including peripheral vascular disease, diabetes, rheumatoid arthritis, limited mobility, lymphedema] presenting chronic VLUs were selected to receive an FDA-approved peptide-based BMM*. BMM was used after proper wound bed preparation per the manufacturer's instructions. Wound size measurements were captured at baseline and at each following visit using an artificial intelligence (AI) based imaging software. Clinical observations were recorded at each visit, including wound and peri-wound skin appearance.

Results: All VLUs in this case series responded positively to BMM treatment, showing fast healing progression. Complete wound closure was achieved within the study period in all five ulcers. In two cases, approximately 50% surface area reduction was observed after a single application with full wound closure achieved within five applications of BMM. In three other cases, while the first application did not result in such a marked surface wound area reduction (percent area reduction ranging between 7% and 38%), full closure was still achieved within three to five BMM applications. A substantial decrease in wound depth was also observed. In all five cases, early formation of healthy granulation tissue and an improvement in peri-wound skin appearance were noted with BMM treatment. No adverse events were observed.

Discussion: This small case series establishes the potential of BMM in treating chronic VLUs by promoting early granulation tissue formation and rapid wound closure. Future studies in a larger population are needed to validate and expand these findings.

CS-138

The Use of Multiple Modalities for Limb Salvage Due to Severely Infected Wounds: A Case Study

Jessica T. Reid, MS; Laurel Adams, BS; Abigail Chaffin, MD, FACS, CWSP, MAPWCA; Joshua Dickerson, MD; Molly Gaffney, BS

Introduction: Lower limb venous ulcerations in patients with multiple comorbidities present a multifactorial clinical challenge, often unfortunately progressing to amputation. This is particularly problematic in diabetic patients, where impaired wound healing and systemic complications due to reduced mobility exacerbate outcomes. Exhausting all therapeutic interventions before amputation is crucial, highlighting the need for a multidisciplinary approach to preserve limb functionality and optimize outcomes. This case report explores the use of plastic surgical and wound management strategies to avoid amputation in complex wound cases.

Methods: A 62-year-old female with diabetes and hypertension presented with a severely infected circumferential venous ulceration to the right leg. Prior treatment at another outpatient facility included dressing changes with collagenase as she was intolerant to sharp debridement due to pain. On presentation, she exhibited severe cellulitis and edema. Cardiology evaluated her for nSTEMI and additionally evaluated her right leg and advised amputation due to the severity of the venous ulceration and the infection. However, plastic surgery proposed an attempted limb salvage, as her foot was sensate with adequate arterial inflow. She underwent surgical and ultrasonic debridement with HOCl wound irrigation solution, followed by NPWT with instill-and-dwell set for 18 cc soaks with HOCl wound solution every 2 hours for 5 days. Subsequent OR debridement revealed excellent granulation, allowing wound reconstruction with autologous STSG and morselized OFM grafting to enhance wound bed healing.

Results: At 2 weeks post-op, the skin graft achieved 95% take with remaining areas healing well with wound management. The patient, now admitted to LTAC, continues treatment with NPWT, HOCl irrigation, and compression wraps, with full resolution of cellulitis and edema. Daily intensive wound management will ensure optimal healing.

Discussion: Amputation in severe lower limb infections, particularly in diabetic patients, poses significant risks due to systemic complications. The 5-year mortality rate for below-knee amputations (BKA) in diabetic patients is 40–70%, markedly higher than the 30–50% seen in the general population. This underscores the systemic impact of diabetes and the critical need for multidisciplinary, multimodal strategies for limb threatening wounds to promote effective wound healing and avoid amputation.

CS-139

The Use of Near-infrared Spectroscopy in Assessment of Viability and Monitoring of Healing Trajectories in Traumatic Flaps

Homer-Christian Reiter, BSc; Charles Andersen, MD, FACS, MAPWCA

Introduction: Reliable methods of assessing flap viability beyond visual inspection would conserve tissue flaps and improve outcomes. Near-infrared spectroscopy is a non-invasive, non-contact way of assessing oxygenation and perfusion status of superficial tissue. The objectives of this study were to: 1) determine the viable cross-sectional flap area in jeopardized flaps using near-infrared spectroscopy, and 2) determine the average time to heal with conserved flaps compared to historical data.

Methods: This was a single center prospective cohort study performed at Madigan Army Medical Center between June 2023 and July 2024. Tissue flaps were assessed for viability using near-infrared spectroscopy to conserve cross sectional area instead of discarding the whole flap. Tissue exhibiting deoxyhemoglobin values equal to or exceeding 0.5 were deemed non-viable and sharply debrided to prevent infection risk. Any

tissue exhibiting StO2 values equal to or exceeding 50% were deemed viable and were approximated to normal anatomical position to continue monitoring at subsequent visits. Reductions in wound sizes and time to heal were recorded.

Results: The median wound cross-sectional area without the preserved flap (9.1 [4.2, 11.7] cm2) was larger than with the preserved flap (1.6 [0.9, 2.9] cm2; P = 0.0001). The median time to heal with preserved flaps was 22 [21, 41] days compared to 28-42 days in the literature (P = 0.82).

Discussion: Preservation of traumatic flaps significantly reduced cross-sectional wound areas while protecting against infection, providing tensile strength, and reducing the amount of re-epithelialization required for wound closure. Times to heal were reduced by ~1 week when preserved flaps were used compared to average times to heal within the literature. Near-infrared spectroscopy was a significant aid in determining viability of flap tissue that allowed the preservation of tissue and reduced healing times. Clinical standards should be updated to utilize NIRS or other modalities to assess tissue viability and thereby preserve tissue and reduce time to heal in patients with wounds.

CS-140

Case Study: A Novel Silicone Foam Dressing* for Stage 3 Pressure Injury

Kelsey Resler, AGNP, CWCN

Introduction: This case study describes the successful closure of a stage 3 pressure injury to the right below-the-knee amputation secondary to prosthesis rubbing using a novel silicone foam dressing.* The patient had previously trialed eight topical treatments in combination with weekly sharp debridement and avoiding prosthesis use. While compliant with treatment, the patient was unable to walk for over a year due to a lack of wound closure. The patient had a history of diabetes, anemia, gout, hypertension, and high cholesterol.

Methods: The patient was transitioned to a novel silicone foam dressing* with continuation of standard of care (weekly sharp debridement in the office and thorough cleansing of wound beds during dressing changes). The silicone foam dressing* was applied directly to the wound bed without a primary filler dressing, and the patient changed the dressing 1-2x weekly for up to 41 days.

Results: After 22 days, complete closure of the wound bed was observed (Figure 1). The exudate was controlled, the silicone foam dressing* filled in the wound depth entirely, and there was no breakdown or moisture to the peri-wound with continued use. The patient noted that the dressing was easy for them to change at home.

Discussion: This case study demonstrates that the novel silicone foam dressing* is simple for patients and office staff since it does not require complex or advanced instructions. As the silicone foam dressing* did not need a primary filler dressing, this method likely reduced the overall cost of care.

CS-141

Bacterial Species and Antimicrobial Resistance Patterns in Infected Wounds

Kelsey Resler, AGNP, CWCN

Introduction: Infection is one of the leading causes of delayed healing in chronic wounds. If left undiagnosed, wounds can remain stagnant for weeks, months, and even years. The goal of this retrospective study was to identify both the most prevalent high growth bacteria responsible for chronic wound infections as well as the antimicrobial resistance genes most commonly found within these bacteria. By identifying these, practitioners can implement targeted treatment plans to improve patient outcomes.

Methods: In this retroactive study, PCR wound cultures were collected from October 2023 to November 2024 from a suburban-based outpatient wound clinic. Out of all samples collected, 75 grew high loads of bacteria which were the only samples used in this study. Samples were obtained utilizing a "Z" pattern across the entire surface of the wound for ~ 15 seconds after sharp debridement and thorough cleansing of the wound bed.

Results: After isolating the high growth cultures, 16 species were identified and then analyzed for their susceptibility patterns to antimicrobials. The 5 most prevalent bacteria were a mixture of gram positive and negative bacteria with Staphylococcus aureus being the most prevalent bacteria. Of the samples, 42% had high growth of Staphylococcus aureus, 18% had high growth of Pseudomonas aeruginosa, 18% had high growth of Enterococcus faecalis, 14% had high growth of Escherichia coli, and 10% had high growth of Enterobacter cloacae. Out of these 5 most prevalent bacteria, each had 3 significant gene resistances to Tetracycline, Methicillin, and Macrolide-Lincosamide-Streptogram B; 80% carried Tetracycline resistance genes, 68% carried Methicillin resistance genes, and 66% carried Macrolide-Lincosamide-Streptogram B resistance genes. Overall, this data represents that a large amount of commonly prescribed antibiotics may not be appropriate for wound infection treatment due to most often occurring bacterial infections being resistant.

Discussion: By isolating not only the most common bacteria that are causing infections in chronic wounds but also their antibiotic resistance genes, providers can better understand how to guide their treatment for these antibiotic-resistant infections. This will produce better patient outcomes for infection resolution, wound healing, and overall health as well as to decrease healthcare costs, hospital admissions, and follow-up care.

CS-142

Minimally Invasive Metatarsal Osteotomy as an Alternative to Transmetatarsal Amputation

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Introduction: Patients with diabetes are at an increased risk of amputation, especially if they have previously undergone amputation or ablative surgery on the ipsilateral foot. Minimally invasive surgical (MIS) procedures, like metatarsal osteotomies, are promising for reducing plantar pressures, treating neuropathic ulcers, promoting wound healing and potentially preventing further amputations. This study aims to demonstrate MIS lesser metatarsal osteotomies as an alternative to more invasive procedures, such as transmetatarsal amputations, in healing neuropathic ulcers, preventing recurrence, and avoiding partial foot amputation.

Methods: Six diabetic patients with neuropathy and foot infections requiring ablative procedures were included in this study. Each underwent a MIS metatarsal osteotomy to offload plantar wounds. Data were collected through chart reviews, interviews, and follow-up visits, focusing on reulceration rates, wound healing time, and ulcer remission duration.

Results: The average time for complete wound healing was 63.5 days, with an ulcer remission period averaging 320.67 days. The follow-up period averaged 384.17 days, during which no reulcerations required further operations.

Discussion: Diabetic foot wounds, especially in the forefoot, are challenging due to factors like neuropathy and impaired immune response. MIS metatarsal osteotomies offer significant benefits in promoting faster healing and maintaining foot biomechanics, reducing the risks associated with larger surgical incisions, and providing effective pressure offloading. The results suggest that MIS procedures are a safe and effective option for managing diabetic foot ulcers.

CS-143

Transformative Impact of Vaporous Hyperoxia Therapy on Complex Wound Healing

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Introduction: Chronic wounds impact nearly 7 million Americans, including 2 million individuals suffering from diabetic foot ulcers. Without timely, effective intervention, these wounds often lead to infections, hospitalizations, and amputations, contributing to an estimated $50

billion annual burden on Medicare (Cho et al., 2022). The rising prevalence of obesity, diabetes, and cardiovascular disease further exacerbates the problem, underscoring the urgent need for innovative treatment solutions. Vaporous Hyperoxia Therapy (VHT) is a promising wound care modality that alternates cycles of hydrating vapor and concentrated oxygen to accelerate tissue healing. This adjunctive therapy presents a novel approach to improving outcomes in chronic wound management.

Methods: This case series assessed the outcomes of four patients with chronic lower extremity wounds treated using a multimodal protocol that incorporated VHT*. Patients received 2–3 VHT sessions per week. Near-Infrared Spectroscopy (NIRS) and thermography imaging** were utilized pre- and post- VHT and debridement sessions to monitor changes in tissue oxygenation and temperature. Clinical outcomes, including wound size reduction, granulation tissue formation, and improvements in tissue oxygenation, were tracked over a follow-up period of up to 12 weeks.

Results: The integration of VHT into the treatment protocol resulted in significant clinical improvements. All four patients experienced pain reduction within 12 weeks. Wound surface areas decreased over the 12-week period too. Peri-wound tissue oxygenation showed marked improvement after each VHT session, with an increase of over 10% after four sessions. Oxygenation within the wound bed improved more gradually but also exhibited positive healing trends, supporting favorable wound healing trajectories.

Discussion: This study demonstrates the transformative potential of VHT as an adjunctive treatment for complex wounds. The combination of VHT with advanced imaging technologies enables precise, data-driven therapeutic adjustments, facilitating personalized care. These findings provide compelling evidence for the broader clinical adoption of VHT and its integration into advanced wound care protocols.

CS-144

Efficacy of Axolotl-derived Xenograft in Chronic Comorbidities Population: Wound Closure with up to Four Weekly Applications – a Case Series

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Introduction: Chronic wounds pose a persistent healthcare challenge, often necessitating advanced therapies for effective resolution. Axolotl-derived xenografts, fabricated from dermal extracellular matrix and sterilized via gamma irradiation, provide a biocompatible and immunogenicity-free solution for wound management. This case series assesses the efficacy of these xenografts in achieving complete closure across diverse chronic wound types within four weekly applications.

Methods: Seven patients (aged 50–97) with at least one chronic comorbidity (T2DM = 4, 57%; HTN = 7, 100%; CKD = 2, 29%; CAD = 1, 14%; AFib = 3, 43%; HLD = 5, 71%) were included. Wound types treated included diabetic foot ulcers (DFUs = 14%), surgical wounds (14%), traumatic wounds (14%), pressure ulcers (14%), perianal abscesses (14%), and skin tears (14%), with sizes ranging from 0.48 cm^2 to 8.47 cm^2. Weekly xenograft applications were conducted, and outcomes were evaluated through wound area reduction, Bates-Jensen scores, and time to closure using automated wound apps* for precision. Previous treatments included advanced dressings, debridement, antibiotics, and compression therapy. Care was delivered in patients' homes or assisted living facilities by advanced practice providers. No adverse effects, including allergic reactions or infection, were reported or observed during treatment.

Results: All wounds achieved complete closure within four weeks of treatment, demonstrating consistent efficacy. Closure times ranged from 1 to 4 weeks. A 97-year-old female with a 0.64 cm^2 skin tear achieved closure in 1 week, illustrating the matrix's suitability for fragile skin. A 66-year-old male with a 3.14 cm^2 diabetic foot ulcer achieved closure in 4 weeks. Rapid wound area reduction and improved Bates-Jensen scores were observed within the first application. No adverse effects, including allergic reactions or infection, were reported or observed during treatment.

Discussion: Axolotl-derived xenografts show promise in addressing chronic wound challenges, supporting rapid closure in wounds resistant to conventional treatments. Their biocompatibility, effectiveness, and reduced healing times suggest potential as a first-line treatment, lowering costs and aligning with advancements in extracellular matrix-based scaffolds that support tissue formation. Expanding the scope to include randomized trials and larger cohorts will validate these findings and provide comparative data against existing therapies.

CS-145

Increasing Health Care Equity for Patients in Remote Rural California: How Topical Oxygen Therapy Improves Access and Saves Limbs

Richard Schneider, MSN/MBA AGACNP-BC CWON

Introduction: Chronic wounds, including diabetic foot ulcers (DFUs), venous leg ulcers (VLUs), and arterial wounds, pose significant challenges to healing, particularly for patients in remote or rural areas. Inadequate tissue perfusion is a key factor in most chronic wounds, due to disruption of the microvasculature, inflammation, edema, increased metabolic demand, and underlying chronic conditions. While traditional hyperbaric oxygen (HBO) is an established modality for improving wound healing, it is not covered by insurance for most wounds, and its accessibility remains a barrier for patients in remote settings. A unique, portable, multi-modality topical oxygen therapy (TOT) device*, which concurrently delivers both intermittent compression and pressurized topical oxygen therapy, presents a home-based alternative that may address these challenges.

Methods: This case series examines four patients with chronic wounds, who were treated with multi-modality TOT in rural California. Patients received multi-modality TOT in their homes, and outcomes such as wound healing progression, treatment compliance, and overall limb salvage were assessed.

Results: Four multi-morbid patients with 5 wounds (2 DFU, 1 mixed arterial/venous/DFU, and 2 DFU s/p amputation due to osteomyelitis) were treated with multi-modality TOT. Four wounds healed completely, and one wound achieved 95% closure in an average of 3 months.

Discussion: Multi-modality TOT enabled improved access to oxygen therapy for patients in remote areas. All patients experienced accelerated wound healing, with reduced time to closure and improved quality of healed scars. Multi-modality TOT demonstrated effectiveness in managing difficult chronic wounds and provided additional benefits such as mitigating chronic lymphedema and resolving postoperative surgical site dehiscence. The portability and home-based application of multi-modality TOT enhanced patient compliance, contributing to positive outcomes.

CS-146

A Novel Mechanism Using Highly Charged Fibers (HCF) for Debriding Wounds Intolerant to Sharps Debridement: Establishing Equity of Successful Wound Debridement for Rural Patients

Richard Schneider, MSN/MBA AGACNP-BC CWON; Debashish Chakravarthy, Phd

Introduction: Patients have wounds that are too painful to have sharps debridement, or may have wound types that are not indicated for sharp debridement, such as pyoderma gangrenosum wounds. Many patients cannot afford the expense of drugs that debride wounds non surgically, and rural patients in particular cannot always access a provider for a sharp wound debridement. Accessible, effective, and pain free debridement methods are highly desirable, and we tested a new entrant in the debridement supportive space. This dressing uses Highly Charged Fibers (HCF) to electrostatically eliminate slough from the wound bed in a gentle fashion.

Methods: We identified patients who needed debridement but were intolerant to sharp debridement. They were treated with a HCF dressing every 48 hours. The dressing was applied in clinic 1 x week, ordered from DME and used at home every 48 – 72 hours based on drainage amount. For patients in rural locations without the ability to drive to clinic/get home care, but with insurance, dressings were ordered from DME and patient or caregiver performed dressing changes

Results: Three types of wounds that are not suited/not accessible for sharp debridement were cleansed of wound slough/debris with the Highly Charged Fiber (HCF) dressing. Pyoderma, squamous cell carcinoma, and burn wounds were successfully treated and debrided.

Discussion: Easy access, Medicare support, and gentle patient experience are associated with the new Highly Charger Fiber (HCF) dressings, and it appears to provide a viable, new choice in the difficult area of wound debridement for highly vulnerable and locationally difficult to reach by clinicians.

CS-147

Evaluating the Impact of a Thermovisual Home Monitoring Solution to Detect Diabetic Foot Risk Factors for Early Intervention

Ronald Scott, MD; Chris Sandroussi, BA; Chris Murphy, MSc; Maria Ryan, MSc

Introduction: The diabetic foot remains a critical challenge in diabetes management, with diabetic foot ulcers (DFUs) posing significant risks to patient health and quality of life (1,2). Continuous monitoring can support early detection of complications, fostering more effective interventions. This poster examines the use of a "smart scale" device for at-home foot health monitoring. The device captures daily visual images and temperature data, identifying risk factors associated with DFUs and aiding clinicians in proactive diabetic foot care.

Methods: This analysis incorporates real-world data from a subset of patients enrolled in a remote monitoring program. Patients performed daily scans with the smart scale, and their data was reviewed by a Monitoring Service team. Alerts were generated based on early signs of potential foot complications, prompting clinical interventions when necessary. Patient compliance and outcomes were analyzed to evaluate the system's efficacy.

Results: The findings reveal strong patient adherence to the monitoring protocol, with consistent engagement with the Monitoring Service team. Early detection of minor issues led to timely interventions, reducing the severity and frequency of complications. This proactive approach minimized healthcare costs and enhanced overall foot health outcomes in this high-risk population.

Discussion: The integration of a user-friendly, remote monitoring device into daily routines demonstrates potential to improve diabetic foot care. By emphasizing early identification and management of complications, this technology fosters better patient engagement and supports clinicians in optimizing care strategies. This case series highlights the promise of remote monitoring in advancing outcomes for individuals with diabetic foot risk factors.

CS-149

A Novel Silicone Foam Dressing* to Manage Wound Depth in a Non-healing Mastectomy Site

Sabina Shrestha, MSN APRN FNP-C CWOCN

Introduction: This case study illustrates the successful closure of a non-healing mastectomy site using a novel silicone foam dressing.* The patient had undergone mastectomy for a malignant neoplasm. The mastectomy site had been present for eight weeks at the start of treatment. Due to the wound depth, the initial treatment included a primary filler dressing using an alginate dressing topped with a silicone foam dressing. While compliant, the patient expressed pain, discomfort, and a significantly reduced quality of life (QoL) with this approach.

Methods: After 29 days, the patient was transitioned to a novel silicone foam dressing.* The silicone foam dressing* was applied directly to the wound bed without a primary filler dressing. The frequency of dressing was changed to every third day.

Results: After 21 days, complete closure of the wound bed was observed. The silicone foam dressing* successfully managed the wound depth without primary filler. The moderate exudate was well-managed without peri-wound skin maceration or irritation. The patient appreciated the waterproof quality and expressed increased comfort and QoL.

Discussion: This case study demonstrates that the novel silicone foam dressing* was sufficient to manage wound depth without primary filler. It provided straightforward wound care and improved patient satisfaction. As the silicone foam dressing* did not need a primary filler dressing, this method may reduce the overall cost of care.

CS-150

Efficacy of Three-dimensional Acellular Xenograft* in Promoting Healing of Challenging Chronic Diabetic Foot Ulcers Penetrating to Underlying Tissues: Two Case Studies

Robert J. Snyder, DPM

Introduction: Diabetic foot ulcers (DFUs) pose a significant clinical challenge due to their chronic nature, frequent penetration into underlying tissues, and associated comorbidities. A three-dimensional acellular xenograft* derived from porcine liver offers a novel therapeutic approach to enhance healing in complex wounds. This abstract highlights two case studies demonstrating its effectiveness in promoting wound closure in chronic DFUs under challenging conditions.

Cases: The first case involved a 64-year-old African American male with a chronic DFU (15.81 sq. cm) penetrating to underlying tissues, including exposed tendon, on the left foot. The wound, present for 55 days, was treated with weekly three-dimensional acellular xenograft* applications for four weeks, transitioning to biweekly applications. Offloading protocols were maintained throughout treatment. The second case featured a 33-year-old African American male with a 24-week-old DFU (2.24 sq. cm) on the left heel. Challenges included tobacco use and non-adherence to offloading. The three-dimensional acellular xenograft* was applied weekly for the first four weeks. Standard of care, including peri-wound assessments and dressing changes, was maintained. Wound progression was monitored weekly, focusing on changes in length, width, and depth.

Results: In the first case, the wound area reduced by 75.7% by week four, despite the wound's penetration to exposed tendon. This improvement prompted a transition to biweekly applications, leading to a 93.7% percent area reduction (PAR) by week eight, with the wound area decreasing to 1.0 sq. cm. The consistent use of the three-dimensional acellular xenograft*, alongside standard of care and adherence to offloading protocols, played a critical role in achieving substantial wound healing. In the second case, the three-dimensional acellular xenograft* facilitated significant healing despite suboptimal clinical conditions. By week four, the wound area had decreased by 80.4%. Although fluctuations occurred due to maceration and lack of offloading, the wound area reached 0.24 sq. cm by week seven, representing an 89.3% PAR. This second case demonstrated improved peri-wound conditions, including reductions in maceration, while both cases exhibited reductions in exudate over time.

Discussion: These case studies demonstrate the three-dimensional acellular xenograft's* ability to achieve substantial healing in chronic DFUs, even with underlying tissue involvement or challenging conditions. The first case underscored the importance of protocol adherence, while the second showcased the three-dimensional acellular xenograft's* effectiveness under less-than-ideal scenarios. These findings highlight its versatility and effectiveness in managing complex wounds. Further research is needed to validate and optimize its clinical application.

CS-151

Bioactive Glass Skin Substitute – an Accelerating Mediator for Complex Wound Healing

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Introduction: Chronic wounds typically arise secondarily to comorbidities such as diabetes mellitus and cardiovascular conditions. Although many treatment modalities exist for persistent wounds, product efficacy data is often from limited study designs. Here, we investigated how a bioactive glass skin substitute, an advanced wound care product, would affect the rate of healing of chronic/complex wounds in a rural wound care practice setting. The goal was to apply this product to accelerate the rate at which wounds of varying complexities would heal and follow their progression over time. Targeted wounds included pilonidal abscesses, neuropathic ulcers, puncture wounds, venous stasis ulcers, diabetic ulcers, and dehisced amputation sites that have been present for at least three months.

Methods: Twelve patients (6 female, 6 male, 43-78 yo) with a total of 12 distinct wounds were evaluated weekly for wound management, including treatment with and maintenance of the bioactive glass skin substitute, dimension measurements, and appropriate secondary dressing changes. The patients studied ranged in age from 43-78 years old; these patients suffered from the following comorbidities: hypertension, morbid obesity, neuropathy, hyperhomocysteinemia, and Type 2 diabetes mellitus.

Results: All twelve wounds studied achieved 50% wound closure to complete resolution within a range of 3-12 weeks of treatment with the bioactive glass skin substitute. Each patient was evaluated every week; at these visits the graft was examined - either a new graft was applied or the previous graft was resecured with a soft silicone dressing and multilayer compression wrap. The twelve wounds demonstrated significant healing within the first weeks of treatment, including the largest wound (6.02 cm^2) that completely healed by 6 weeks of treatment.

Discussion: This case series studied the use of a bioactive glass skin substitute to promote healing in various chronic wounds. While this graft was reapplied for the majority of the total wound care duration, at some of the follow-up appointments the matrix that was placed at the previous visit only needed to be resecured with a soft silicone dressing and multilayer compression wrap. This study supports the fact that this graft accelerates wound healing rates in cases where other advanced wound care methods and products have failed to produce results.

CS-152

Don't Overlook Non Diagnosed Radiation Injury

Kayla Staton, NP; William Wheeler, MD, FACS, DABS – Staff Physician, Surgery/Wound Care, Prisma Health

Introduction: How not to miss wounds that wound benefit for HBO therapy

Methods: Extensive review of all past medical conditions and treatments

Results: Patient was discovered to have had radiation to an area adjacent to the non-healing wound

Discussion: Everyone needs to be thorough in obtaining a complete history of medical conditions and all treatment modalities for those conditions.

CS-153

The Use of Autologous Multilayered Leukocyte, Platelet, and Fibrin Patch as a First-line Defense: Why Wait?

Michael Stempel, DPM; Jason Garrison, MD – Medical Director, Riverside Advanced Wound Care Center

Introduction: In a wound care center, conservative treatment is often the first option to treat diabetic wounds before considering advanced modalities. When those conservative treatments fail, then advanced therapies are considered. With the autologous multilayered leukocyte, platelet, and fibrin (MLPF) patch, there is no need to use conservative treatments initially. Instead, the MLPF patch can be started as a first-line defense, thus healing patients quicker, offering the patient's own cells to eliminate risk of rejection, optimizing healing outcomes, potentially saving limbs, while saving valuable dollars on the wrong treatment.

Methods: In three separate wound care centers, the MLPF patch was considered immediately to treat chronic diabetic wounds. This allowed faster wound healing and dramatically decreased the potential for the development of complications, such as infection or subsequent surgical procedures. Data collected included chronicity of wounds, previous tried and failed therapies, as well as wound dimensions.

Results: One patient had a history of a right BKA and impaired vascular status. The patient presented with a left 2nd toe infection and underwent amputation of 2nd and 3rd toe due to osteomyelitis. Due to failed revascularization, the patient was referred to a limb salvage center for a potential BKA. The patient declined and sought treatment at our wound center. The MLPF patch was initiated on 7/5/24 and the wound achieved full closure after 7 MLPF patches. No further amputation was required. Another patient with diabetes presented with burn wounds to the lower leg which failed initial split thickness skin grafts. The patient was referred to the wound center where the MLPF patch was initiated at his 2nd visit; the wound decreased from 96 cm2 to 60 cm2 after just 4 applications and the patient is still undergoing therapy. One final patient had a surgical debridement on 3/21/23 of an infected plantar ulceration and subsequently had a 1-month nursing facility stay for IV antibiotics of underlying osteomyelitis. The patient achieved full closure after 5 applications of the MLPF patch without further complication.

Discussion: A recent study by Musuuza, et. al. documented that "nearly 2 million Americans develop a diabetic foot ulcer each year; within 5 years of ulceration, 5% will undergo major amputation." The MLPF patch has been shown to dramatically decrease the risk of major amputation and decrease morbidity in patients with chronic diabetic wounds and should be considered as a first-line treatment in the efforts to save diabetic limbs.

CS-154

1 Year Retrospective Case Series: Synergy of Preserved Hypochlorous Acid (pHA) Wound Solution* in Conjunction with Ovine Forestomach Matrix Grafting** in Complex Plastic Surgery Wound Reconstruction Procedures

Katarina Stephanos, MS; Jared Rosbrugh, MS – MS2, Tulane School of Medicine; Kristen Rizzuto, MS – MS2, Tulane School of Medicine; Jessica Reid, MS – MS1, Tulane School of Medicine; Laurel Adams, BS – MA, Plastics Division, Tulane School of Medicine; Abigail Chaffin, MD, FACS, CWSP, MAPWCA – Chief - Division of Plastic and Reconstructive Surgery, Surgery, Tulane School of Medicine

Introduction: Wound healing requires a complex physiological process to restore skin integrity following injury. Despite advancements in wound care, effective surgical management of complex wounds remains challenging. This study explores the combined use of pure hypochlorous acid (pHA) solution* and ovine forestomach matrix (OFM) grafting** in plastic surgery wound reconstruction as synergistic therapeutic approaches. pHA helps prepare complex wounds for reconstruction through germ removal and enhancement of mechanical debridement properties, promoting healing with low cytotoxicity. OFM grafting provides a biologically derived scaffold that supports cell migration, proliferation, and enhanced tissue vascularization.1,2 This case series explores the proposed synergy between pHA's unique germ and necrotic tissue removal effects and OFM's structural benefits, with a goal of improved surgical wound healing outcomes.

Methods: At one academic hospital from June 2023 to June 2024, data was collected by retrospective review of all patients who underwent OFM grafting in conjunction with pHA wound bed irrigation by a single plastic surgeon. Perioperative techniques and protocols were examined. In addition, patients' demographics, comorbidities, and operative cultures were reviewed. Outcomes were assessed in the outpatient wound center based on post-operative complications and healing outcomes.

Results: 24 patients with varying acute and chronic wounds requir-

ing plastic surgical reconstruction were included in the analysis. All patients received intraoperative pHA irrigation and OFM grafting. Patients had wound preparation preoperatively with pHA and/or inpatient post-surgical graft and donor site management with pHA. 15 patients healed without reoperation. 3 had prolonged healing courses. 1 patient experienced minor wound dehiscence which resolved with local wound care. 3 patients required reoperation. 5 patients were lost to follow-up but upon discharge had no known wound complications. Cultures were sent from all patients revealing growth of various pathogens.

Discussion: This study demonstrates the potential benefit of combining pHA solution with OFM grafting for improving healing outcomes in patients with complex wounds. The results reveal high rates of successful healing. A majority of patients achieved wound closure without reoperation. While some patients experienced minor complications, overall outcomes suggest the synergy of pHA and OFM may enhance healing by promoting antimicrobial effects and providing a supportive scaffold for tissue regeneration.

CS-155

3 Year Retrospective Case Series with Reconstruction of Necrotizing Fasciitis Utilizing Preserved Hypochlorous Acid (pHA) Preserved Wound Solution*

Katarina Stephanos, MS; Dylan Wolff, MD – PGY-4 General Surgery Resident, Surgery, Tulane School of Medicine; Samantha Morin, BS – MS3, Tulane School of Medicine; Abigail Chaffin, MD, FACS, CWSP, MAPWCA – Chief, Residency Program Director - Division of Plastic and Reconstructive Surgery, Surgery, Tulane School of Medicine

Introduction: Necrotizing fasciitis is an accelerated deteriorating subgroup of necrotizing soft-tissue infections (NSTI) resulting in necrosis of the fascia, muscle, and subcutaneous tissue.1,2 Necrotizing fasciitis poses significant complications and results in high rates of sepsis and mortality. When infection of this nature affects the genitals and perineum, it is called Fournier's gangrene. Early diagnosis, aggressive surgical resection, and adequate antimicrobial therapy have been shown to reduce mortality secondary to necrotizing fasciitis. We demonstrate a comprehensive treatment plan utilizing preserved hypochlorous acid (pHA) solution* in cases of necrotizing fasciitis followed by varied reconstructive surgical techniques.

Methods: Data was collected by retrospective review of patients with necrotizing soft-tissue infection, including Fournier's gangrene, treated with surgical excision and plastic surgical complex closure and flap techniques at one academic hospital from May 2021 to May 2024. 7 patients were recognized by these criteria. Operative techniques and perioperative protocols were examined. In addition, patients' demographics, comorbidities, and operative cultures were reviewed. Outcomes were assessed in the outpatient wound center based on post-operative complications and healing outcomes of the surgical sites.

Results: 7 patients with necrotizing fasciitis requiring surgical excision and plastic surgical wound closure were examined. Dilutehypochlorous acid preserved solution* irrigation was used intraoperatively to decrease biofilm burden and optimize the wound bed prior to reconstruction. The most common reconstructive techniques were local advancement flaps complex closure, and skin grafts. 2 patient underwent reoperation for wound dehiscence. 2 patients healed from their necrotizing fasciitis excision and reconstruction without reoperation. 2 patient experienced minor (5%) wound dehiscence treated with local wound care. 1 patients were lost to outpatient follow-up but were discharged without known wound complications. Cultures were sent from all patients which revealed growth of various pathogens.

Discussion: Necrotizing fasciitis excision, irrigation with pure hypochlorous acid (pHA) preserved solution* irrigation, and perioperative care were standard for all patients but reconstructive procedure selection remained variable. High surgical success rates were seen with this integrated protocol. Wound bed preparation with pHA is an effective technique for improving outcomes after plastic surgical excision of necrotizing fasciitis and reconstruction.

CS-156

1 Year Retrospective Case Series: Wound Outcomes Utilizing Novel Hydro-desloughing Wound Dressing*

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Introduction: Wound healing, a complex process, often requires debridement to remove dead or infected tissue. Debridement methods include autolytic, enzymatic, mechanical, and surgical, chosen based on wound type. Autolytic debridement, a non-invasive method, uses the body's enzymes and moisture to liquefy non-viable tissue, promoting repair and regeneration. Hydro-desloughing dressings* enhance this process by bonding to slough and disrupting necrotic tissue. The dressing combines antimicrobial properties with autolytic benefits, offering a multifaceted approach to wound care.

Methods: Data was collected through a retrospective review of patients with various wound types, treated with hydro-desloughing dressings* as primary care or preoperative preparation to surgical management. Six qualifying patients at a single academic hospital from April-October 2024 were analyzed. Demographics, comorbidities, cultures, operative techniques, and perioperative protocols were documented. Outcomes included postoperative complications and wound healing progress.

Results: Six patients had diverse wound types: surgical wound dehiscence, pyoderma gangrenosum, partial-thickness burn, and an open wound after skin cancer excision with exposed bone and osteomyelitis. The hydro-desloughing dressing* proved especially effective for two surgical dehiscence cases, the open skin cancer-related wound, and the partial-thickness burn. Two patients with pyoderma gangrenosum showed reduced bacterial colonization on bedside fluorescence imaging. One pyoderma patient achieved full epithelialization and wound healing. The other, with a distal lower extremity wound and exposed tendon, did not. The hydro-desloughing dressing* was too drying for the wound's location and etiology.

Discussion: This case series highlights hydro-desloughing dressings* as an effective adjunct to wound care in both clinical and perioperative settings. In the latter, it proved beneficial in treating and preparing slough-covered wounds for reconstructive surgery, supporting more efficient interventions and reducing postoperative complications. Proper dressing selection based on wound characteristics, such as slough and moisture, is crucial. Honey-based dressings may be better for minimally sloughed or dry wounds, as they promote a moist environment without excessive dryness. Conversely, wounds with significant slough benefit from absorbent dressings*, which remove devitalized tissue, reduce bacterial colonization, and manage exudate, resulting in a cleaner wound bed. Tailoring dressing selection to moisture and slough levels optimizes the wound environment, enhances healing, and patient outcomes.

CS-157

Fish Skin Xenograft for the Treatment of Bilateral Buttock Burns in an Aged Patient

Mark D. Suski, MD. FACS, CWSP

Introduction: Aging is a risk factor for burn injury due to cognitive and sensory impairment, attenuated mobility, slow reaction times, and medications associated with morbidity. Evidence suggests that patients ≥ 60 years of age represent 14% of burn center admissions. Arguably, morphological age-related changes, including impaired immunological response, augment morbidity and mortality in the aging burn victim, with evidence

suggesting that older burn victims have a two times higher mortality rate compared to their younger counterparts. As such, treatment options that can mitigate age-related complications and augment healing may reduce morbidity and mortality. Acellular fish skin graft has been shown to expedite healing in chronic and acute wounds. This investigation aimed to examine acellular fish skin graft in an elderly patient who suffered bilateral full-thickness thermal burns.

Methods: An 82-year-old female was admitted with infected bilateral buttock full-thickness thermal burns. The patient fell on her hot driveway for more than thirty minutes. She initially refused treatment and ultimately presented one week later with draining wounds. Past medical history was significant for obesity, hypertension, hyperlipidemia, atrial fibrillation, and aortic stenosis. The initial wound presentation consisted of 20 by 12 cm on the left and 14 by 12 cm on the right buttocks post debridement. Operative cultures revealed polymicrobial flora. The treatment plan consisted of culture specific IV antibiotics, fish skin xenograft, and negative pressure therapy

Results: The patient refused staged reconstruction. Conservative wound care was performed in a skilled nursing facility. The patient went on to heal in two months with only one application of fish skin graft and targeted IV antibiotics.

Discussion: Aging represents a population at risk of morbidity and mortality associated with burn injury, and prognostic measures and advanced treatments need to be understood. In our experience, fish skin graft and target IV antibiotics attenuated morbidity. Inferences to the clinical efficacy in our case are made from current data that suggests that the microstructure of fish skin grafts mimics that of the human dermis, allowing for coordinated and rapid cellular integration downstream. Further, polyunsaturated fatty acids and their downstream metabolites have been shown to have immunomodulatory effects, transform the structural dynamics of skin, and defend against microbial pathogens. Lastly, Smolle et al. (2023) report a favorable outcome using fish skin graft and targeted IV antibiotics in a burn patient with known gram-negative bacteria. Further extensive prospective studies should determine the clinical efficacy of treating burns in aging.

CS-158

Successful Staged Limb Salvage in a Poorly Controlled Diverse Diabetic Cohort Utilizing Fish Skin Xenografts– a Case Series

Mark D. Suski, MD. FACS, CWSP

Introduction: Diabetes contributes to poor wound healing through impaired cytokine function, angiogenesis and cellular migration/proliferation. End stage renal disease impairs wound healing through delayed rates of granulation and decreased keratinization kinetics with an ultimate higher rate of disruption.1,2 Wounds overlying the Achilles region can rapidly progress to tendon exposure secondary to an unreliable vascular supply coupled with a paucity of subcutaneous tissue.3 Traumatic injuries in the postoperative period increases post-operative complications in the orthopedic arthroplasty population.4 The mainstay of treatment of this diverse reconstructive population has been with flaps. Not all patients however are candidates secondary to their underling co-morbidities, chiefly diabetes. This case series highlights the clinical efficacy of fish skin xenografts in this subset of challenging patients.

Methods: The current cohort included diverse wound etiologies to include a traumatic lower extremity wound with exposed bone status post recent knee arthroplasty, a stage 4 pressure ulcer with exposed Achilles tendon devoid of peritenon and a dorsal foot wound secondary to venous access complication in an end stage renal patient. All three patients were longstanding uncontrolled diabetics with hemoglobin A1c's between 7.5 and 10.1. All wounds were necrotic with cellulitis at initial presentation. (range in size from 3 to 8cm) Each underwent operative debridement, a course of culture specific intravenous antibiotics and application of fish skin xenografts placed at weekly or biweekly intervals with compression provided by negative pressure wound therapy. (range from 1 to 6 applications). Ultimately all wounds robustly granulated and staged reconstruction was successfully performed with split thickness skin grafts. Long term follow up has confirmed stable and pliable grafts with full range of motion.

Results: Hemoglobin A1c reflects glycemia over 2-3 months and is the standard measure utilized to monitor glycemic control in diabetic patients. For every 1.0% point increase, the daily wound area healing decreases by 0.028cm2/day.5 To avoid amputation in these high risk patients, the use of advanced wound care products to include CAMPS (Cellular, acellular and matrix – like products) have been recommended.

Discussion: Fish skin xenografts are FDA approved for treating most chronic and acute wounds. The product is an acellular dermal matrix sustainably harvested from Icelandic cod with a porous microstructure similar to human skin. Characteristics of the xenograft include bacterial resistance, cellular migration/proliferation , angiogenesis an inflammatory cytokine mitigation.

CS-159

Successful Fish Skin Xenograft Reconstruction of a Complex Scalp Wound with Exposed Cranium Secondary to Gorlin Syndrome

Mark D. Suski, MD. FACS, CWSP

Introduction: Gorlin syndrome or Nevoid Basal Cell Carcinoma syndrome is an autosomal dominant familial cancer syndrome which may cause hundreds of basal cells over a patient's lifetime. It is characterized by a triad of manifestations to include multiple basal cell cancers, odontogenic keratocysts and skeletal deformities. Palmar and plantar skin pitting is also common. Prevalence is estimated at 1 per 40,000-60,000. The disease affects men and women equally. Patients can develop basal cell cancers as early as infancy with the median age being 20 years. It is caused by a mutation in patched 1 (PTCH), a tumor suppressor gene located on chromosome 9q. This gene encodes a transmembrane receptor protein that recognizes signaling proteins of the sonic hedgehog family. Activation of this mutated gene leads to tumorgenicity.1,2,3 This case report highlights the clinical efficacy of fish skin xenografts in this unique subset of rare patients.

Methods: A 70-year-old White female with Gorlin syndrome, initially diagnosed at age twenty, presented to our wound care center status post Moh's excision of a large basal cell cancer of her midline scalp. The resultant wound measured 10 by 4 cm with exposed cranium anteriorly of 4 by 4 cm. She had failed outpatient conservative wound management by her dermatologist for greater than 6 weeks. Her past medical history was significant for non-insulin dependent diabetes mellitus, atrial fibrillation, hypertension and hyperlipidemia. She was being actively treated with vismodegib, a selective hedgehog pathway inhibitor. Her father, brother and niece have also been diagnosed with Gorlin syndrome. She has undergone greater than 50 basal cell excisions primarily involving her head and neck with extensive resultant periwound scarring.

Results: The treatment plan consisted of operative bone burring and placement of both particulate and sheet fish skin xenografts followed by one additional application of the sheet product 2 weeks later. Her exposed bone was fully granulated at 4 weeks postoperatively and she underwent successful staged split thickness skin graft reconstruction. Long term follow up has confirmed stable and pliable graft coverage.

Discussion: Fish skin xenografts are FDA approved for treating most chronic and acute wounds. The product is an acellular dermal matrix sustainably harvested from Icelandic cod with a porous microstructure similar to human skin. Characteristics of the xenograft include bacterial resistance, cellular migration/proliferation, angiogenesis and inflammatory cytokine mitigation.4 To our knowledge this is the first case report of successful fish skin xenograft reconstruction in a Gorlin syndrome patient.

CS-160

Concurrent Use of a GV/MB PVA Wide-cell Antibacterial

Foam with Negative Pressure Wound Therapy

Laura Swoboda, DNP, APNP, FNP-C, FNP-BC, CWOCN-AP, WOCNF

Introduction: Problem: 51-year-old female with history of Type 1 bipolar disorder, status-post elective abdominoplasty. Following multiple emergency department presentations, the patient reportedly took at a minimum 4 zolpidem then removed their surgical drains and abdominal binder at home. Subsequently they developed a large seroma leading to total abdominal incision dehiscence, and a large gaping dehisced abdominal wound with significant undermining (68.4sqcm; undermining 5cm), necrotic tissue present. Significance: Prior treatment included hydrogel and gauze. Upon wound center arrival, the patient was converted to negative pressure wound therapy (NPWT) at 125mmHg intermittent setting in addition to standard wound hygiene protocol and non-contact low frequency ultrasound. Case complicated by patient pain, stress, and psychological burden including turning the machine off intermittently and refusing to remove dressing and place gauze between clinic appointments leading to pain, erythema, induration, and lack of wound progression.

Methods: The patient was then transitioned to concurrent use of a methylene blue and gentian violet, polyvinyl alcohol, wide-cell, antibacterial foam (GV/MB wide cell PVA) in contact with the wound bed, and NPWT changed three times weekly.

Results: At four weeks the wound had decreased in size by 66% (23.49 sqcm). Clinical improvement noted: pain reduction, elimination of signs of inflammation, improved granulation tissue quality. At six weeks, wound dimensions had reduced by 75% (17.5 Sqcm) from presentation with wound edges attached and migrating and 100% bright red granulation tissue. At this point, NPWT was discontinued by patient request and they transitioned to a GV/MB bordered, poly urethane foam.

Discussion: Concurrent use of GV/MB wide cell PVA with NPWT resulted in safe and effective complex wound management. The wide-cell antimicrobial foam displayed the desirable function of a wound dressing when NPWT was not functioning. This innovative case exemplifies the potential for both augmenting and expanding clinical treatment with NPWT for patients.

CS-161

Scleroderma Skin Ulcers: Ovine Extracellular Matrix with Hyaluronic Acid Xenograft, a Promising Approach to an Orphan Disease

William H. Tettelbach, MD, FACP, FIDSA, FUHM, MAPWCA; Michelle Moore, RN – Kaleidoscope Clinical Consulting; Katrina-Anne Palu, Podiatrist – Vaiola Hospital; Nya Akoteu, RN – Vaiola Hospital

Introduction: Systemic sclerosis (SSc), commonly referred to as scleroderma, is a chronic autoimmune rheumatic disease affecting multiple systems. Excessive fibrosis, blood vessel abnormalities, and immune system disruptions mark this rare condition. When SSc impacts only the skin, it is categorized as "localized" scleroderma. The aim was to observe the response of a hard-to-heal scleroderma skin ulcer on the right fourth finger of a 54-year-old diabetic female after initiating the routine application of a xenograft composed of a layer of glycosaminoglycans (hyaluronic acid) between sheets of ovine forestomach-derived extracellular matrix (ECM).

Methods: The setting of this case report was a hospital-based outpatient diabetic wound care clinic at Vaiola Hospital, Nuku'alofa, the main hospital in the Kingdom of Tonga. In Tonga, there is limited availability of chemotherapy or immunotherapy for treating systemic sclerosis. After remaining refractory for three months to standard wound care, a cellular, acellular, matrix-like product (CAMP) was added to the patient's wound care treatment regimen. The standard of care techniques was continued while incorporating a xenograft composed of a layer of glycosaminoglycans (hyaluronic acid) between sheets of ovine forestomach-derived extracellular matrix (ECM) (Symphony*, Aroa Biosurgery, Auckland, New Zealand).

Results: The patient was a 54-year-old female with the diagnosis of type 2 diabetes mellitus and scleroderma. She underwent a left below-the-knee (BKA) amputation, followed by a right BKA in 2022. A1C was 11%. She has been mobilizing via a wheelchair since 2014. On 03/01/2024, that patient presented to a satellite non-communicable diseases clinic with an open wound on her right fourth finger that occurred due to crawling on the ground. From 03/26/2024 through 07/19/2024, the lesion remained refractory to a number of available standard topical therapies, such as iodine gauze, moistened alginate dressings and selective debridement. A total of six applications of the ovine ECM graft containing a layer of hyaluronic acid were applied until the closure of the scleroderma skin ulcer was achieved. On average, the xenografts were placed every 5.3 days.

Discussion: Routine applications of an ovine ECM with hyaluronic acid were observed to reinitiate the trajectory towards closure with reductions in wound size and observed an increase in granulation tissue despite the underlying commodities of poorly controlled diabetes and systemic sclerosis. The results suggest a potential novel treatment option for hard-to-heal wounds in patients with scleroderma. Ovine ECM xenografts with hyaluronic acid treatment should be formally evaluated as an adjunct treatment for refractory scleroderma ulcers.

CS-162

A Novel Approach to Treating a Diabetic Lower Extremity Ulcer Utilizing a Combination of a Topical Dehydrating Chemical Agent & Ovine ECM Grafts containing a Layer of Hyaluronic Acid

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Introduction: Lower extremity diabetic ulcers (LEDUs) are a common and highly morbid complication of diabetes. Infections in LEDUs are a leading cause of hospitalizations and emergency department visits. The aim of this case report was to observe the response of a hard-to-heal LEDU on the medial aspect of the left foot in a 57-year-old female with poorly-controlled diabetes after initiating wound bed preparation via chemical debridement with an active gel containing methane sulfonic acid, which has rapid desiccating (hygroscopic) properties followed by the routine application of a xenograft composed of a layer of glycosaminoglycans (hyaluronic acid) between sheets of ovine forestomach-derived extracellular matrix (ECM).

Methods: The setting of this case report was a hospital-based outpatient diabetic wound care clinic at Vaiola Hospital in the Kingdom of Tonga. Her A1c was 13%. The patient's left diabetic foot ulcer (DFU) was treated with standard dressings, including alginate dressings and hypochlorous acid gel, along with selective sharp debridement for 38 days. However, there was no significant improvement. On 07/19/2024, a topical dehydrating agent was applied to prepare the wound bed. On 07/21/2024, the patient developed a deep tissue injury after wearing tight-fitting shoes to church. An offloading boot was provided on 7/24/2024. On 7/25/2024, an ovine ECM graft containing a layer of hyaluronic acid was added to her treatment regimen.

Results: On 7/19/2024, the patients left LEDU was treated with more aggressive sharp debridement followed by the application of a topical dehydrating agent to effectively reduce biofilm. The wound base had the expected caramelized appearance after removal of the dehydrating gel. The standard of care techniques were continued while on 7/25/2024 an ovine ECM graft containing a layer of hyaluronic acid was added to her treatment regimen. Ninety-six days after the initial chemical debridement using a topical dehydrating agent, the left LEDU reduced in area by 88%. Between 07/25/2024 to 09/21/2024, a total of five applications of the ovine ECM graft containing a layer of hyaluronic acid were applied. On average, the xenografts were placed every 12 days.

Discussion: This case report introduces the use of chemical debridement with a topical dehydrating agent, which effectively reduces bioburden and is subsequently followed by routine applications of an ovine ECM combined with hyaluronic acid to facilitate a trajectory toward closure. This approach resulted in a significant reduction in wound size,

even in a patient with poorly controlled diabetes.

CS-163

Effective Use of Bioactive Glass in the Treatment of Pilonidal Cysts

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Introduction: Pilonidal cysts and the resultant post-cystectomy wounds often present unique treatment challenges for both clinicians and patients. Due to these challenges, it is frequently necessary to employ a combination of different techniques, modalities, and products to effectively treat pilonidal cysts. Skin substitutes are a category of advanced wound care products used in the management of difficult wounds. Bioactive glass wound matrix (BGWM) represents a novel category of skin substitutes, consisting of a water-soluble matrix of fibers and microspheres that readily adhere to wound surfaces. The porous structure of BGWM absorbs wound exudate to maintain moisture balance and serves as a scaffold to support wound healing. The objective of this case series is to describe our experience with BGWM application in five patients after pilonidal cyst removal.

Methods: Five patients status post pilonidal cyst removal received BGWM applications as determined by medical necessity. Each patient received between one and seven applications of BGWM during the course of wound therapy. The patients were three males and two females, aged 15 to 78 years old. Wound debridement was performed as needed prior to each BGWM application. No additional dressings or therapies were utilized after initiation of BGWM other than basic cover dressings and debridement when warranted. De-identified data was collected after obtaining informed patient consent and stored in accordance with federal regulations.

Results: BGWM was utilized to effectively treat pilonidal cystectomy wounds, resulting in positive healing outcomes in all five cases. All patients exhibited either complete healing or significant improvement in wound size and condition during the study period.

Discussion: BGWM application has yielded successful outcomes in the treatment of wounds post-pilonidal cystectomy. These cases are consistent with chronic and refractory conditions managed with BGWM. Notably, BGWM has shown effectiveness in a 40-patient randomized controlled trial for diabetic foot ulcers (DFUs) and has enabled the closure of long-standing refractory wounds. A significant reduction in complications associated with wound infections has been a common outcome reported in these studies following BGWM application. This case series supports these findings, demonstrating similar positive results in pilonidal cystectomy.

CS-164

Complete Closure of Chronic Ankle Ulcerations in the Presence of Lymphedema with Use of Adipose Stem Cell Injectable Allograft

Orlexia Thomas, DPM; Lady Paula DeJesus, DPM; Francois Lokenye, DPM; Jasmine Shaikh, MS2

Introduction: Chronic heel ulcerations present substantial challenges to wound healing, particularly in patients with lymphedema. Lymphedema results in impaired lymphatic drainage, chronic inflammation, and tissue breakdown, complicating the healing process. This case report investigates the use of adipose stem cell injectable allograft as an advanced therapy to achieve complete wound closure in a paraplegic patient suffering with bilateral chronic posterior ankle ulcers further complicated by lymphedema and fat pad atrophy.

Methods: The patient initially presented with bilateral posterior heel wounds for two years that were treated using antimicrobial dressings, bilayered wound matrix, compression therapy, and offloading devices. These treatments failed. As a result, advanced management was introduced by sharp wide excisional debridement with application of adipose-derived stem cell injectable allograft, thereby promoting optimal healing conditions. Concurrently, lymphedema therapy was controlled with use of compression pumps and compression garments.

Results: Complete closure of bilateral ulcers following the application of adipose stem cell allografts occurred in 9 months. Effective swelling control, achieved through compression pumps and compression garments, proved essential in maintaining the healing progression and preventing the recurrence of ulcers. There has been no recurrence of ulceration for one year.

Discussion: This case illustrates the potential of adipose stem cell injectable allografts as a transformative treatment for complex wounds associated with lymphedema. It highlights that a combination of advanced wound care strategies and diligent edema management can result in successful healing outcomes, even in patients with significant comorbidities. Further research is necessary to explore the broader applicability of this innovative approach, which could lead to enhanced protocols and outcomes in managing challenging wound care cases.

CS-166

Challenges in Cadaveric Skin Graft Survival in Transplant Recipients on Immunosuppressive Regimens

Carolyn Tsung – WashU Medicine

Introduction: Wound management in transplant recipients presents significant challenges, as immunosuppressive regimens can impair wound healing. While cadaveric skin grafts are widely used for temporary coverage, immune rejection often limits their effectiveness. Although limited case series have reported prolonged allograft survival in patients on immunosuppressive therapy, the reproducibility and long-term viability of this approach remain uncertain. This case series explores two organ transplant recipients who experienced delayed skin graft failure despite immunosuppressive therapy, highlighting the emerging interest in cellular, acellular, and matrix-like products approaches over standard autologous split-thickness skin grafting (STSG) to reduce the need for repeated operations.

Methods: This article highlights two distinct cases, a 59-year-old and 62-year-old male with history of organ transplant requiring chronic immunosuppression who presented to our institution with injuries requiring skin graft placement. Cadaveric skin was used for grafting and although both grafts appeared to take up front, the grafts eventually failed.

Results: A 59-year-old male with end-stage renal (ESRD) and liver disease (ESLD), chronic anemia, atrial fibrillation, hypertension, and liver/kidney transplantation 3 months prior presented with a large hematoma with overlying skin necrosis. Following debridement, a 25 x 9 cm cadaveric skin graft was applied to the lower left extremity wound with concurrent negative pressure wound therapy. Postoperatively, the patient's immunosuppressive therapy was continued. The allograft demonstrated initial adherence but ultimately failed within 19 weeks. The patient was offered an elective STSG but preferred to continue with local wound care. A 62-year-old male with a history of ESLD , ESRD secondary to diabetes/hypertension, and combined liver/kidney transplant 6 years prior presented with a left leg necrotizing soft tissue infection. After serial debridements, he received a 24 x 10 cm cadaveric skin graft and was continued on an appropriate immunosuppression regimen postoperatively. The graft initially adhered successfully but ultimately failed after 11 weeks. The patient was offered an elective STSG but declined in favor of local wound care.

Discussion: Our limited case series demonstrates how unreliable the use of cadaveric skin in transplant patients receiving immunosuppressive therapy can be over long-term follow-up. These cases underscore the need for extended follow-up, the development of new techniques to promote durable wound healing in immunosuppressed patients, and alternatives to traditional reoperative treatments, which many patients ultimately decline. Future research should focus on optimizing immunosuppressive protocols, exploring adjunctive therapies, and identifying predictive factors for allograft success to improve wound healing outcomes in this patient population.

CS-167

Treating Chronic Pyoderma Gangrenosum with Vaporous Hyperoxia Therapy: A Case Report

Lince Varughese, MD

Introduction: Pyoderma gangrenosum (PG) is a rare, chronic inflammatory skin condition characterized by painful, non-healing ulcers. Standard management often includes systemic immunosuppressants and topical therapies; however, many cases remain refractory to treatment. This study highlights the successful resolution of chronic PG in a 62-year-old female using Vaporous Hyperoxia Therapy (VHT®) as an adjunct to standard care.

Methods: The patient presented with a five-year history of intermittent, non-healing ulcers on the ankle, initially diagnosed as PG. Despite long-term management with systemic immunosuppressants (CellCept) and daily topical tacrolimus, which had been the most beneficial treatment thus far, the ulcer persisted. Exacerbation was noted following sharp debridement early in her treatment course, though the wound later tolerated very light debridement during weekly to biweekly visits. Management also included topical antibiotics, a variety of dressings, and skin substitutes at various points, with limited success. A biopsy on May 19, 2023, ruled out malignancy. VHT®, a novel treatment combining ultrasonic vapor and hyperbaric oxygen, was introduced alongside existing therapies. The patient underwent six VHT® sessions over four weeks.

Results: At the start of VHT® (Day 0), the wound measured 0.2 x 0.2 x 0.1 cm. The wound dressing remained intact at Day 3, with measurements unchanged. By Day 5, the wound had decreased in size to 0.1 x 0.1 x 0.1 cm, reflecting significant progress over just five days. Following six VHT® sessions, full epithelialization and complete wound closure were achieved, with significant analgesic effects. As the wound healed, the patient reported decreased pain and soreness, as well as the development of higher-quality epithelial tissue likely to withstand future breakdown. The wound has remained resolved for three months. No adverse events were reported during the treatment period.

Discussion: This case illustrates the potential of VHT® to resolve chronic wounds refractory to standard care. By enhancing cellular repair and tissue regeneration, VHT® effectively complemented the immunomodulatory effects of existing therapies, leading to complete healing in this patient. Its analgesic effects and ability to facilitate the development of durable epithelial tissue further highlights its utility in managing chronic wounds. VHT® successfully resolved a chronic PG wound that had been resistant to conventional therapies, underscoring its value as an advanced wound care modality. Further research is warranted to explore the broader clinical applications of VHT® in managing complex and chronic wounds.

CS-168

Evaluating the Utility and Application of an All-in-one, Peel and Place Dressing for Negative Pressure Wound Therapy: Initial Experience in Lower Extremity Wounds

Dot Weir, RN, CWON, CWS

Introduction: Negative pressure wound therapy (NPWT) using reticulated open-cell foam (ROCF) dressings has been in use for 3 decades demonstrating reduced dressing changes, improved granulation tissue and perfusion, periwound edema reduction and enhanced wound contraction. The current devices utilizing reticulated open cell foam (ROCF) can be time consuming to apply and guidelines recommend three times a week dressing changes. Additionally, prolonged wear of ROCF dressings is subject to tissue ingrowth and potential pain during removal.

Methods: A novel, all-in-one, peel and place NPWT dressing with an extended wear time and a perforated non-adherent layer3 designed to improve ease of application and to help reduce risk of tissue ingrowth was evaluated in patients with complex wounds.

Results: Patients with lower extremity wounds were assessed. Wounds were appropriately debrided, assessed for infection and antibiotics prescribed as needed. Wounds were measured (at presentation and dressing changes) and any undermining was noted. The peel and place dressing* was applied over the wound. NPWT† setting was adjusted up to -150 mmHg as required. Peel and place dressings were worn for up to 7 days before changing.

Discussion: Four patients (2 female and 2 male patients; mean age = 62.0±17.9 years) with lower extremity wounds presented for care. Three patients were multimorbid and one patient had no remarkable medical history. Treated wounds included a hematoma post avulsive injury, an open wound over the Achilles, a deep tissue trauma wound, and a high above-knee amputation stump. Patients' prior treatments included gelling fiber and foam dressing, NPWT using ROCF, collagenase, and/or non-adhering dressings. Wounds managed with NPWT using the peel and place dressing exhibited granulation tissue formation, reduction in wound dimension, and re-epithelialization. In these 4 patients with lower extremity wounds, the peel and place dressing afforded improved healing outcomes within the continuum of wound management. The peel and place dressing was well tolerated with patients noting significant improvement in pain to minimal to no pain. Extended wear and ease of dressing placement also addressed other challenges in using NPWT such as reduction/elimination of home care visits, patient transportation issues and clinic scheduling.

CS-169

An Expanded Evaluation of a Dressing with Negatively Charged Fibers in an Outpatient Wound Center

Dot Weir, RN, CWON, CWS

Introduction: Two well understood and documented components of wound bed preparation (WBP) include removal of devitalized tissue and management of surface bioburden. A new absorbent fiber dressing incorporating negatively charged fibers* combined with silver salts has reports of interesting attraction to positively charged slough, particularly following cleansing/soaks with a pure hypochlorous acid preserved cleanser to enhance the positive charge.

Methods: We were evaluating this new dressing technology for continuous debridement of visually apparent slough in a variety of wounds. We then further expanded our use to other wounds stalled for a variety of reasons including poor tolerance of maintenance debridement, atypical wounds with concerns for pathergy, and hypergranulation tissue. We also experimented with application techniques including application of an appropriate size as the primary dressing, cutting the dressing to fit in wounds with depth and bolstering with a secondary absorbent dressing, as well as fenestrating the dressing followed by a secondary superabsorbent for heavily draining wounds.

Results: We found interesting and consistent results with liquefaction of slough and learned that education on expected visual results was important for the patient and other caregivers. We also noted improvement in wounds stalled for other reasons with suspicion of increased bacterial loads in the absence of signs and symptoms of infection leading to increased exudate and hypergranulation tissue. Five patient cases illustrating outcomes will be presented.

Discussion: The early successful results led us to expand our usage to wounds not necessarily thought to be necrotic but requiring improvement in WBP. The ease of use for both clinic staff and patient self-application has been noted. Of significance is the ability to leave the dressing in place for debridement versus daily dressing changes and the cost savings versus topical enzymatic ointments. An additional bonus is that we were already utilizing a pure hypochlorous acid preserved cleanser which newer evidence suggests enhances the effectiveness of the dressing technology.

CS-170

The Use of Hypochlorous Acid Based Cleansers to Remove Debris from the Peri Wound Skin in Venous Ulcers

Dot Weir, RN, CWON, CWS

Introduction: The use of pure hypochlorous (pHA) acid based cleansers to cleanse wounds is well documented, and evidence based. The

ability of stabilized pHA cleanser to remove wound debris via the simple act of soaking for 5-10 minutes in soaked gauze is well known. Less well known is the ability of pHA to soften and enhance the removal of debris, crusts and scales from the periwound skin. The presence of such debris is typical of venous wounds, which tend to be associated with skin of poor health around the wound, sometimes over extensive areas. We report some cases and techniques of debris removal from periwound skin with pHA as compared to a commercial skin cleanser or saline cleansing.

Methods: We chose six patients whose legs had visible scales and crusts around the wound. All of the legs were either soaked with saline or cleansed with a foaming skin cleanser, where lack of success led us to immediately switch to the use of pHA soaking to remove the debris.

Results: Through case examples we show the improved cleansing and softening and removal of crusts and scales with pHA compared to the other cleansers to pHA. The methodology is augmented via the use of fluorescence imaging to illustrate that bacteria removal from periwound skin also occurred.

Discussion: Through the use of fluorescence imaging, we have identified significant bacterial contamination of the periwound skin of patients with venous ulcers who are managed with compression wraps. When this skin is also dried, crusted and scaled these bacteria persist and are more difficult to remove through conventional means. We have learned that soaking with pHA softens and enhances removal of the debris and enables easier removal, which reduces the trapped bacteria, and in some cases reduces itching, and enables any addition of topical treatments or moisturizers to treat the skin more effectively versus coating the scales.

CS-171

Textile Technology: A New Era in Positive Pressure Wound Therapy (PPWT**): A Case Series

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Introduction: This case series suggests that elastic textile compression delivers mechano transduction effective to heal wounds. Caroline Fife published polaroids of her first Negative Pressure Wound Therapy (NPWT) case, a large abdominal dehiscence treated in 1997 with dramatic results. Fife reminisces "... the entire field of wound care had changed ... had been running wound center for 7 years ... could do little more than Ambroise Paré, 'I dress the wounds and God heals them.'" (Fife 2019). Louis Argenta published dramatic NPWT results, like Pare, he could only speculate on the physiology at work. (Argenta. L, 1997). In our reading of Orgill's seminal work on the cell physiology of NPWT, open cell polymer foam acts as a physiologic mandril to deliver sub atmospheric pressure, aka static mechanical force, to wound tissue creating tissue mechano transduction signals that upregulate gene expression, dramatically increasing protein synthesis and healing. (Orgill, D 2013). Fuzzy Wale Elastic Compression Stockinet (FWEC)*, (Sibbald 2022) delivers Wound Bed Preparation that rivals NPWT - what's going on?

Methods: Wound photos document details of wound bed preparation in 5 patients with refractory lower extremity wounds, using fuzzy wale elastic compression stockinet (FWEC)* as the wound contact layer.***

Results: Clear photos document: (1) Early resolution of peri wound edema, lymphorrhea, stasis dermatitis. (2) Early clearing of wound edge epiboly. (3) Robust wound bed progression to complete healing.

Discussion: Fuzzy longitudinal wales of FWEC* stockinet as a wound contact layer delivers robust 'wound bed preparation' (Schultz G 2003) similar to that seen with NPWT. Wales may act as an effective mandril to deliver static physiologic force, mechano transduction signals sent to cell nuclei upregulate protein synthesis. (Winkler 2023) Ehmann has coined the term Positive Pressure Wound Therapy (PPWT)** to describe the findings we are reporting--future research has exciting implications.*** (Ehmann S., Ostler M. 2022)

CS-172

Effective Closure of Refractory Wounds Utilizing Bioactive Glass Fiber Matrix: A Case Series

Lindsay Wolf, APRN, ACNP-BC, WCC, WCS-C, EDS-C

Introduction: Refractory wounds, characterized by resistance to standard therapies, lead to increased morbidity, diminished quality of life, and limb loss. Bioactive glass fiber matrices have emerged as innovative solutions, promoting angiogenesis, granulation tissue formation, and epithelialization. This case series evaluates the effectiveness of bioactive glass fiber matrix in treating five refractory wounds across three patients.

Methods: Three patients (average age 68) presented with five refractory wounds: two pressure injuries, one post-surgical wound, one trauma wound, and one venous leg ulcer. The average wound size was 9.0 cm × 2.5 cm × 0.2 cm. All wounds had failed standard treatments, moist wound healing, debridement, negative pressure wound therapy (NPWT), and compression therapy. Bioactive glass fiber matrix was applied as the primary dressing, secured with a non-adherent dressing, fixated and covered with a secondary dressing to manage wound exudate. Weekly assessments measured wound dimensions, tissue quality, and exudate levels.

Results: All five wounds achieved complete closure. Slough reduction and granulation tissue formation were evident early in treatment. Wound size decreased significantly over the course of treatment, with vascular granulation tissue and re-epithelization noted in all cases. No adverse effects or infections occurred.

Discussion: Bioactive glass fiber matrix effectively treated and closed wounds of diverse etiologies, including pressure injuries, surgical wounds, trauma wounds, and venous leg ulcers. Its bioactive properties facilitated angiogenesis, collagen deposition, and epithelial migration, creating an optimal healing environment. These results align with existing evidence supporting the efficacy of bioactive glass in refractory wound management, offering a versatile and effective solution for challenging wound care cases.

CS-173

A Multifunctional Dressing for Best Practices

Mary Wolphagen, BSN, RN, CWCN

Introduction: Wound care programs (WCP) are key for best practices. The Conway Medical Center (CMC) wound care leader evaluated possible improvements in the CMC wound care practices. Goal: improve WCP practices. The CMC outpatient WCP managed wounds with Polymeric Membrane Dressings* (PMDs) with positive outcomes. For continuity of care, the author evaluated PMDs for an inpatient WCP. Example case studies reported here: Patient 1, Skin Tears (STs) left knee/forearm; Patient 2, right/left shoulder stage 2 pressure injuries (PIs); Patient 3, stage 2, 3 sacral PIs; Patient 4, unstageable PI left hip,100% slough; Patient 5 painful stage 2 sacral PI, Periwound skin swelling, erythema, discoloration. Patient 6, ST left forearm. Periwound skin discoloration; Patient 7, slow healing painful stage 2 sacral PI. Periwound skin maceration, erythema; Patient 8, sacral deep tissue pressure injury (DTPI).

Methods: Patient 1: PMD with silicone adhesive dressing; pain with initial wound cleanse. Patient's 2-8: PMD non adhesive dressing. Patient 3,5,7,8: PMD dressing changed daily, as needed due to soiling. Patients 1,2,4,6 PMD dressing changed every 3 days per calendar schedule. All wounds initial cleanse with normal saline. No further cleansing as per manufacturer instructions.

Results: Several patients are inpatient for short time. It was observed wounds with PMDs were either near closure or closed when discharged. Patient 1: 4-day discharge, wound almost at closure with PMDs, no pain after initial cleanse. Patient 2: Patient wounds reached closure before 15-day discharge. Patient 3: Sacral PI closed before 25-day discharge. Patient 4: In 13 days PMDs autolytically debrided 80% slough. Patient 5: Wound almost at closure, patient 7-day discharge with no complaints of pain after 1 – 2 days. Patient 6: 3-day discharge, ST closed day 2. Patient 7: new epithelial growth after 1 dressing change, pain improved. Patient discharged before wound closure. Patient 8: DTPI resolving by time of discharge 3 days later, peri-wound skin healed.

Discussion: PMDs provided: consistent faster wound healing, decreased pain, cleaner wound bed, decreased frequency of dressing changes, atraumatic, ease of use. PMDs are a multifunctional dressing and best practice wound care to implement in the inpatient wound care

program at this facility.

CS-174

Reatment of Morganella Morganii-associated Non-healing Diabetic Foot Ulcer with Vaporous Hyperoxia Therapy: A Case Report

Zhi Yu, MD, PhD

Introduction: Diabetic foot ulcers represent a significant complication of diabetes mellitus, characterized by mechanical changes of bony architecture often leading to chronic wounds with increased risk of infection and impaired healing.

Methods: Morganella morganii, a Gram-negative bacterium, is one of the pathogens found in infected diabetic foot ulcers. It is a human gastrointestinal commensal organism that may cause widespread deadly infections. This report discusses the case of a 76-year-old male with diabetes mellitus who presented with M. morganii diabetic foot ulcer to an in-patient rehabilitation facility.

Results: Despite conventional wound care and antibiotic therapy, the ulcer failed to improve. The management approach for this patient consisted of a rehabilitation modality called Vaporox, a machine that utilizes vaporous hyperoxia therapy (VHT), as it combines ultrasonic mist and high concentration of oxygen to fasten revascularization and healing.

Discussion: This case highlights the potential efficacy of VHT as an adjunctive therapy for the management of diabetic foot ulcers, particularly those complicated by pathogens, such as M. morganii.

CS-175

Chronic Venous Ulcerations with Assistance by Home Care with Novel Use of a Silicone Contact Layer

Catherine R. Yun, DPM; Rebecca Salerno, BS, DPM – PGY-2; Pranav Phadtare, DPM – PGY-3; Julius Nadarajah, BS, MBS, DPM – PGY-3; Robin Varghese, DPM – PGY-2; Girish Nair, DPM – Attending

Introduction: Chronic venous ulcerations present challenges in wound care management due to their clinical presentation of excessive drainage, frequent dressing changes, and considerable patient discomfort. This study examines a silicone-based wound contact layer (WCL) that protects the wound, promotes healing, and allows fluid exchange to the secondary dressing without disturbing the underlying wound surface. Over a three-month period, we followed three cases of chronic venous ulcerations, in different settings, demonstrating WCL's potential to improve patient outcomes and wound healing in the home with assistance by home nursing.

Methods: Patients with non-improving chronic venous ulcerations, that were seen every one to two weeks at the wound center and additionally had assistance by home care nurses, were selected for the study with complex wounds that require multiple dressing changes per week. We selected three patients for this study. We saw them every one to two weeks for assessments and management. Everytime we applied dressings to their wounds we ensured it included the silicone WCL. In the interim, visiting nurses were changing the secondary dressing every other day, and not removing the WCL. Silicone layer was only removed once a week. Pictures of the wounds were taken every visit, and we followed the progression of these wounds for three months.

Results: All three patients from different initial causes (surgery, trauma, and medical management) clinically improved, as their wound sizes decreased over the course of three months duration.

Discussion: Chronic venous ulcerations can be a long and tough battle for patients. Varied skills and consistency with assistance by home care may at times impede wound healing. However, our research of using an one-sided open mesh transparent non-adherent silicone WCL weekly allows visiting nurses the ability to observe and change the secondary dressing every other day without removing the WCL. This minimizes disturbance, pain, and trauma to the actual wound bed, which has facilitated faster healing for our three patients over the course of three months. It is difficult for patients to come into the wound center frequently due to factors such as economical reasons, and the use of the silicone WCL along with home care allow treatments to be carried out safely while enabling wound healing.

EVIDENCE-BASED PRACTICE

EBP-001

Effectiveness of Negative Pressure Wound Therapy with Instillation and Dwell in Removing Nonviable Tissue, Promoting Granulation Tissue, and Reducing Surgical Debridements: A Systematic Literature Review

Julie Acosta, RN, BSN, MBA; Lydia Galarza, RN, BSN; Margaret Marsh, MA; Ashley Collinsworth, MPH, ScD – Solventum

Introduction: Surgical debridement is a common treatment for complex wounds but can present risks for patients. Negative pressure wound therapy with instillation and dwell (NPWTi-d) using reticulated open cell foam dressings with 10 x 8 mm holes (ROCF-CC) provides hydromechanical wound cleaning and preparation. This systematic literature review examined the effectiveness of NPWTi-d with ROCF-CC in removing nonviable tissue and infectious material, promoting granulation tissue, and reducing surgical debridements.

Methods: A systematic search was conducted utilizing PubMed, Embase, and ClinicalTrials.gov to identify studies conducted from January 1, 2015 – August 31, 2022. Study outcomes related to nonviable tissue, granulation tissue, and debridement were summarized and analyzed using descriptive statistics.

Results: Twenty-one studies including 178 patients who received NPWTi-d with ROCF-CC were included. Evidence of reduction in necrotic and infected tissue following treatment was observed in 97.9% of wounds across 17 studies. Formation of granulation tissue after NPWTi-d with ROCF-CC was reported in 99.2% of wounds across 14 studies. Over 63% of patients avoided surgical debridements in 8 studies, and a statistically significant decrease in surgical debridements was noted in 2 comparative studies.

Discussion: This systematic review provides real-world evidence demonstrating the effectiveness of NPWTi-d with ROCF-CC in the hydromechanical removal of infectious materials, non-viable tissue, and wound debris, reduction of surgical debridements, and promotion of granulation tissue. NPWTi-d with ROCF-CC may eliminate the need for or reduce the frequency and extent of surgical debridement when required or provide an alternative treatment when the procedure is unavailable or not tolerated by the patient.

EBP-002

External Validation of Late-stage Pressure Injury Surgical Treatment Algorithm Utilizing Ovine Forestomach Matrix: An Interim Analysis

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Introduction: The management of late-stage pressure injuries (PI) remains a substantial problem. 2016 Medicare data suggested an annual cost of $22 billion and about 59% of these costs are disproportionately attributable to a small rate of Stages 3 and 4 full-thickness PI. Additionally, the average 6-month post operative healing rates for a stage IV PI is 31-34% and the post operative complication rate after flap reconstruction is reported to be 58.7%. Approaches to the surgical closure of late-stage PIs are varied and suffer from relatively high complication rates. As such, an algorithm for the reconstructive and non-reconstructive intervention for late-stage PIs was developed by an interdisciplinary panel and published to review the current state of the art and propose a treatment plan. This study evaluates the safety, efficacy, and reproducibility of this surgical algorithm utilizing a biologic graft as part of two distinct surgical pathways to optimize outcomes in these challenging defects.

Methods: This IRB-approved retrospective case series included

n=44 Stage IV PIs across 32 patients. Intervention proceeded according to the published surgical algorithm (reconstructive pathway and non-reconstructive pathway). In each case, a biologic graft comprising ovine forestomach matrix* (OFM) was included as part of the surgical intervention. Patients were followed and monitored for complications such as surgical wound dehiscence, hematoma, seroma, flap necrosis or infection.

Results: Sixteen patients (n=16) had undergone reconstructive closure (tissue flap-based closure) and twenty-eight patients (n=28) had been managed with non-reconstructive closure. All of the reconstructive cases went on to closure with no recurrences at last follow-up. Of the non-reconstructive cases, 21/28 (75%) cases achieved more than 50% granulation tissue infill and showed improved measurements, wound bed quality, or achieved full epithelialization. The remaining seven (n=7) patients were either lost to follow-up, transitioned to palliative care, or were deceased of unrelated causes shortly after the index procedure. There were no wound-related complications reported.

Discussion: This interim analysis exemplifies the previously published PI surgical algorithm utilizing advanced biologic technology, such as OFM, as a reproducible, safe, and clinically effective treatment pathway to improve outcomes of challenging late-stage pressure injuries and potentially lower post-operative complication rates.

EBP-005

Augmented Assessment Protocol for darker Skin Tones to Improve Pressure Injury Risk and Identification

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Introduction: Deep tissue pressure injury (DTI) and Stage 1 pressure injury identification in darker skin tones continues to be a challenge. The hallmark signs of non-blanchable redness (Stage 1) and maroon, purple skin (DTI) in skin are harder to see or do not present as the expected colors in dark skin tones. This reduces early identification and treatment in care settings that lead to poorer outcomes in at risk darker skin toned patients that develop pressure injuries. The Acute Care Services department which includes the Wound Ostomy Continence Nurse team, Intensive care units, medical surgical and intermediate care units undertook an initiative to improve pressure injury identification in darker skin tones.

Methods: After literature review and previous year root cause analyses, a new initiative that included education on darker skin tone assessment pearls, and the "shine the light" protocol were instituted. These were added to the skin assessment and 2RN skin protocol of the hospital. It highlighted the critical need for augmented assessment of darker skin tones to include the use of alternative light source, pain assessment, importance of palpation and temperature assessment. Other tools and interventions were leadership rounding, Braden scale, Plan-Do- Check-Act and Root cause analyses.

Results: This intervention and adopted process led to a decreased hospital acquired pressure injury rate from 1.06 in 2023 to 0.52 in 2024 (per 1000 patient days). Our compliance with the shine light protocol is 85%. We had an increased identification of DTIs and Stage 1 pressure injuries. Decrease in advance staged DTIs Some key factors that contributed to the success of the project include specific customized staff education; closed loop communication; WOC Nurse open door policy; unit leadership engagement and monthly reports to quality

Discussion: This initiative led to more accurate skin assessment across skin tones for equitable care. Accurate skin assessment leads to early identification of skin changes and pressure injuries for early intervention which improves patient care quality and increases the impact we make to care for at-risk patients.

EBP-007

Evidence-based Strategies for Managing Post-cranioplasty Infections: A Literature Review

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Introduction: Cranioplasty, the surgical repair of the skull, is one of the oldest procedures in medicine. Despite advancements in surgical planning, the use of synthetic materials, and custom-printed implants, complication rates remain high, previously reported at 31.3%. Among these complications, surgical site infection (SSI) remains one of the most problematic, often requiring reoperation. Reoperation increases surgical risks, raises cranioplasty costs, and prolongs recovery time. In this literature review, we summarize recent advancements and techniques in caring for SSI after cranioplasty to determine areas of focus for future research.

Methods: Three electronic databases were utilized, and relevant articles pertaining to the management of post-cranioplasty SSIs were identified. Two independent screeners screened abstracts, full-length papers, and extracted relevant information. Studies were excluded if the primary focus was implant composition (e.g. comparing autologous bone versus polyetheretherketone), or if they did not outline the steps to treat postoperative infection.

Results: A total of nine papers were included in the review. Staphylococcus species were the most mentioned infection, discussed in 88.9% of papers, followed by Cutibacterium acnes, discussed in 77.8% of the papers. Early-stage infections were successfully managed by empirical antibiotics, while late-stage infections almost always required explantation. It was found that debridement combined with antibiotics can resolve infection to avoid reoperation in select cases. While most authors pointed to removing the cranioplasty, treating the infection, and subsequent reoperation, some authors advocated for research into prophylactic measures to reduce infection.

Discussion: Despite the variety of techniques to treat postoperative infections, removal of the implant was required in most cases of late-stage infection. While antibiotics and surgical debridement can treat early-stage and select infections, there is still no thorough way to avoid reoperation in SSIs following cranioplasty. Overall, research should focus on prevention and early treatment of infections to reduce the number of cases requiring reoperation. Research on antibiotic-impregnated cranioplasty implants, early detection and treatment of infections, and standardized aseptic techniques is necessary to improve outcomes by reducing infections following cranioplasty.

EBP-008

Take a Bite out of Hospital-acquired Pressure Injuries with Bite-sized Microlearning for Cardiothoracic Nurses

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Introduction: Cardiothoracic acute care patients are at an increased risk for deep tissue injury (DTI) development due to prolonged surgery times, poor perfusion, hemodynamic instability, altered nutritional status, and co-morbidities. The nursing staff's knowledge of pressure injury (PI) identification and prevention is essential to reducing the incidence of hospital-acquired DTIs in this patient population. Daily rounding by the wound care nurse team (WCNT) revealed that PI prevention interventions were inconsistently utilized, and that the nursing staff frequently failed to identify DTIs on patients with darker pigmented skin. The purpose was to identify three learning opportunities that our cardiothoracic nurses had regarding PI identification and prevention and to provide micro-learning experiences to increase DTI identification and nurses' knowledge of evidence-based interventions.

Methods: The WCNT conducted pre- and post-intervention surveys following a "1-2-3 Pressure Injury Free" micro-learning approach in which we focused on bite-sized learning opportunities. Learning opportunities included: (1) In-person vendor fair and the creation of a virtual PI prevention library of the vendors demonstrating their products. (2) Two PI prevention influences (WCNT) to round on at-risk patients and provide guidance on PI identification and interventions. The activities included daily at-risk Bra-

den score checks, PI Tip Tuesdays to highlight the intervention of the week. and QR-code linked videos to PI prevention. (3) Skin champion team to promote PI interventions during their huddles and skin rounds. Interactive road shows included: PI Jeopardy, Wheel of PI preventions, Brownies for Braden Scores, and Staging PIs with Fruit and Berries.

Results: For identification of DTIs on darker pigmented skin, our results remained at 67% to 68%. For the definition of a stage 1 PI, our results went from 50% to 54%. For frequency of patient repositioning when in the recliner, our results increased from 45% to 71%.

Discussion: While our micro-learning educational offerings modestly increased staff awareness on PI staging, they did significantly increase nurses understanding that patients need to be repositioned more frequently when up in the recliner. On-going work remains with the continued use of bite-sized, interactive educational offerings with post-interventions surveys planned for 4-months and 6-months.

EBP-009 (RPT-002)

Reducing Endotracheal Tube Securement Medical Device-related Pressure Injuries in Critical Care Through Multidisciplinary Approach

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Introduction: Medical device-related pressure injuries (MDRPIs) caused by endotracheal tube (ETT) securement devices are a significant concern in critical care, leading to patient discomfort, prolonged hospital stays, and increased healthcare costs. In July and August 2024, the MDRPI rate was 0.40% per 1,000 patient days, highlighting the need for targeted interventions to reduce these injuries.

Methods: Multidisciplinary team collaborated with respiratory therapy in August 2024 to evaluate current practices, securement devices, and care gaps. Key issues identified included improper adherence of securement devices, slippage causing friction injuries, poor fit for diverse patient anatomies, and improper removal techniques contributing to skin trauma. In September 2024, a multidisciplinary intervention was launched. This included tailored education from vendor on device application and removal, updated protocols emphasizing patient-specific securement practices, and regular audits to ensure compliance and address ongoing challenges.

Results: Before the intervention, securement devices frequently slid down the face, causing friction injuries, and did not adequately fit pediatric or bariatric patients. Following the intervention, MDRPI rates dropped to zero in September, October, and November 2024, representing a significant improvement. Ongoing audits confirmed consistent adherence to updated practices and competency in securement practices by the multidisciplinary team.

Discussion: This initiative highlights the value of a multidisciplinary approach in addressing MDRPIs associated with ETT securement devices. Collaboration between the multidisciplinary team, coupled with targeted education and competency-based training, resulted in a measurable reduction in MDRPIs.

A proactive, patient-centered strategy that integrates multidisciplinary collaboration, education, and regular compliance monitoring can effectively reduce MDRPIs in critical care settings. The sustained reduction in MDRPIs underscores the importance of collaboration, targeted interventions, and ongoing education in improving patient outcomes and care quality.

EBP-010

Towards Robot-assisted Wound Care: An Ethnographic Study of Nursing Practices and Robotic Design Reccomendations

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Introduction: Chronic wounds impact nearly 8 million people in the United States, costing approximately $21.4 billion annually. These wounds place considerable demand on the healthcare system, already burdened by severe nursing shortages. Robotics can provide assistance and help meet wound care demand, reduce nurses' time spent on wound care, lower their physical task load, deliver time-sensitive solutions, and remain cost-efficient. However, research in nursing robotics for wound care is limited. Typically, healthcare stakeholders' input is only used as an evaluation metric after robotic systems have been developed. Research in nursing robotics for wound care remains nascent, and there is a need to involve nurses as key stakeholders early in the design process to ensure that robotic solutions align with the practical needs of wound care before technologies are developed.

Methods: We approached this challenge through a nursing-centered ethnographic study. We observed nurses performing wound care, and documented the process to understand wound care and potential opportunities for robotic assistance. We collected data by observing care for 86 wounds in two locations: a hospital and an assisted living facility. Through a robotics framework, we used thematic analysis to code our observations, and created a taxonomy of wound care interactions associated with wound care tasks. Through this analysis, we also provided design recommendations for developing robot-assisted wound care solutions that aim to support healthcare professionals and improve patient outcomes.

Results: We found wound dressing was the most common and time-consuming care task. Based on these results, we implemented our design recommendations to develop a specialized wound dressing robotic system. This system can perform key wound dressing steps: picking up a gauze pad, placing it over a wound, and securing it by pressing adhesive tape along each edge of the gauze.

Discussion: Our study led to the creation of a taxonomy that describes nurse interaction and wound care tasks. Our iterative process further informed design recommendations for these tasks, and a prototype of a wound dressing robot.This is the first study that seeks to understand how nurses conduct wound care under a robotics framework, and also provides the first design recommendations for various wound care task robotic systems. The collaboration of key stakeholders was integral in translating assistive robotic frameworks into a viable prototype. This approach helps bridge the gap between the current state of wound care and the potential benefits of using robotics to improve the efficiency, effectiveness, and standardization of the process.

EBP-011

Prevention of Diabetic Foot Ulcer Recurrence

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Introduction: A large population seen in the outpatient wound care space are those with diabetic foot ulcers (DFU). One third of those admitting to the wound care center for DFU were readmits who had been seen previously in the center. It is widely recognized in the literature that healing DFUs and preventing their recurrence can be difficult especially in those with lower socioeconomic status. This evidence-based practice project was performed to determine best practice implementations for nurses in the outpatient wound care center.

Methods: The Plan-Do-Study-Act model for quality improvement was used. Literature was appraised for best practice guidelines in nursing to promote prevention of recurrence of DFUs. Interventions included providing patients with education packets and automatic referrals to nutrition, diabetic self-management, vascular surgery, and endocrine providers. All discharging patients were referred back to podiatry for routine follow-up and orders placed for customized footwear. Readmission rates were evaluated after 6 months pre and post intervention.

Results: All readmitted patients with DFUs in the outpatient setting were captured. Patients were offered education packets with the exception of 7.5% who refused. While 100% of patients were referred to vascular, nutrition, endocrine, and diabetic management education at the beginning of their course of care, only 32% were confirmed as having followed up with vascular, 20% for nutrition, 5% for diabetic management education, and 2.5% in endocrine. The beginning readmission rate for DFU was 31%, which decreased to 28% after the intervention, with an overall reduction rate of 8.3%.

Discussion: Further work is needed to determine how best practice standards in nursing education translate into specific demographics within the wound care setting. Education packets were limited for non-English speakers, and transportation and socioeconomic status had a large impact on whether patients remained adherent to their plans of care regardless of education. While education is needed to further DFU prevention, investigation into the social aspect to better support the ability to remain adherent is crucial as patients with lower socioeconomic status are disproportionately at higher risk for amputation related to DFU.

EBP-012

Optimizing Complex Wound Healing: A Case-based Application of the 7-steps of Wound Management Framework

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Introduction: The "7-Steps of Wound Management" is an evidence-based framework designed to enhance outcomes in managing hard-to-heal wounds. These steps involve assessing circulation, infection, debridement, offloading, nutritional support, moisture management, and advanced therapies such as CAMPs or hyperbaric oxygen (HBO2) therapy. This framework aims to promote healing, reduce complications, conserve medical resources, and improve quality of life. The objective of highlighting this case-based application of the 7-Steps of Wound Management Framework was to: evaluate the application of the 7-Steps of Wound Management framework in treating complex wounds through case studies; highlight the usefulness of advanced therapies, like CAMPs, when standard care fails in chronic wound healing; and demonstrate the impact of individualized, patient-centered care on improving healing outcomes and quality of life.

Methods: Patients were treated using the 7-step framework, which included evaluating circulation with ABIs or Doppler ultrasound, wound cultures as needed, and regular sharp debridement. Nutritional needs were addressed, off-loading was implemented when necessary, and dressing choices were tailored to wound characteristics. For wounds not reducing by 50% after

four-weeks of standard care, advanced therapies like CAMPs or HBO2 were deployed. Treatment protocols emphasized adaptability based on individual patient needs.

Results: Patient 1: A 58-year-old diabetic male with amputations and peripheral neuropathy developed diabetic foot ulcers. After stagnation with silver dressings, advanced therapy with PuraPly was implemented, achieving complete closure in 33 days despite a 28-day gap in follow-up. Patient 2: An 80-year-old male with PAD underwent revascularization and TMA for ischemia and necrosis. NPWT, dietary counseling, PuraPly AM, and Apligraf CAMPs were utilized. Complete closure occurred within four months (Fig 3).

Discussion: These cases illustrate the importance of the 7-Steps framework in overcoming challenges like missed follow-ups and chronic wounds. Advanced therapies like CAMPs proved critical when standard care alone failed to achieve closure. The approach aligns with literature advocating systematic wound management and individualized care. The "7-Steps of Wound Management" offers a comprehensive foundation for optimizing chronic wound care. Consistent, patient-centered application leads to improved healing, reduced complications, and enhanced quality of life.

EBP-013

Nutrition Management Protocol for Short Bowel Syndrome: Strategies for Fluid Retention, Dietary Interventions, and Fistula Pouching Techniques

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Introduction: Short bowel syndrome and intestinal fistulas can lead to significant fluid and electrolyte losses, complicating patient care. This abstract aims to outline management strategies for secretory and osmotic fistulas, emphasizing dietary interventions and pouching techniques for patients with compromised intestinal function. Effective management includes tailored nutrition protocols, oral rehydration solutions, and the use of antimotility medications to optimize fluid retention and minimize output.

Methods: A comprehensive review of nutrition management protocols for short bowel syndrome was conducted. The protocol focused on maximizing gut utilization, increasing nutrient and fluid retention, controlling gastric acid hypersecretion, and treating bacterial overgrowth. Patients were assessed based on their anatomy and stool/ostomy output. Management strategies included dietary modifications, oral rehydration solutions, antimotility medications, vitamin supplementation, and specific pouching techniques for effective fistula management. A comprehensive patient education program was initiated

Results: The study revealed that dietary interventions should be tailored based on whether patients have a colon. Those with a colon benefited from a low-fat, high-carbohydrate diet rich in soluble fiber, while patients without a colon required a high-fat, high-carbohydrate diet. Oral rehydration solutions and broth-based recipes effectively managed fluid losses, while antimotility medications like loperamide and lomotil helped slow intestinal transit and reduce output. Additionally, pouching techniques were implemented to effectively manage ostomy output, ensuring skin protection and minimizing complications.

Discussion: The management of secretory and osmotic fistulas requires a multifaceted approach. Dietary modifications and oral rehydration solutions play a vital role in maintaining fluid and electrolyte balance. Antimotility medications can significantly reduce fistula output when administered on a scheduled basis. The inclusion of effective pouching techniques is essential for accurate measurement and management of ostomy output. Future research should focus on developing standardized pouching protocols for patients with high-output fistulas to improve quality of life and reduce complications

EBP-014

A Multi-national Survey of Healthcare Professionals' Experiences of Gelling Fiber Wound Dressings for Different Wound Types

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Introduction: Gelling fiber dressings are widely used to absorb and retain excess exudate. Real-world usage characteristics, product performance, and strengths/weaknesses (e.g., one piece removal) vary across products. We, therefore, aimed to assess real-world healthcare professional (HCP) clinical experiences in terms of usability and product performance of a gelling fiber dressing* made from highly absorbent polyvinyl alcohol fibers, as well as its silver-containing form.

Methods: Between April and July 2024, HCPs were provided with a QR code to access the survey questionnaire on a secure survey platform. Only HCPs with a minimum of 3 months' experience of using the dressings were eligible. Survey translations were provided in several languages.

HCPs were asked to answer 12 questions for each dressing: 10 focused on dressing usage in different clinical scenarios, one focused on overall dressing rating, and one asked participants if they would recommend the dressings to colleagues. At survey closure, data were extracted by a blinded statistician for analysis.

Results: 572 HCPs across >10 countries provided responses relating to the gelling fiber dressing and 243 relating to its silver-containing form. HCPs indicated their use of these products was highest for leg and foot ulcers, closely followed by pressure injuries, with additional use on surgical wounds, partial thickness burns, donor sites, and malignant wounds. 82% of HCPs indicated that the dressings are extremely effective in terms of one piece removal, 70-78% indicated that they are extremely effective at absorbing, retaining, and transferring exudate; and 70-75% indicated that they are extremely effective at facilitating patient comfort during wear. 76% of HCPs rated their overall impression of the dressings as being extremely effective.

Discussion: The findings demonstrate the clinical utility and performance of the evaluated gelling fiber dressings in the management of chronic wounds.

EBP-015

Breaking the Cycle: Long Term Care's New Pressure Injury Prevention Paradigm

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Introduction: Pressure injury (PI) development in long-term care (LTC) facilities remains a significant and costly issue in the United States, disproportionately impacting a vulnerable population. Despite being identified by the Centers for Medicare and Medicaid Services (CMS) as largely preventable and a key indicator of quality care, the prevalence of PIs remains unacceptably high. While many LTC facilities implement some preventive measures, the consistent application of comprehensive, up-to-date evidence-based guidelines is lacking in this care setting.

Methods: A nurse practitioner-led quality improvement (QI) project was implemented to address pressure injury (PI) prevention using evidence-based interventions and new technology for early and accurate risk assessment. At a skilled long-term care (LTC) facility, newly admitted patients underwent visual skin inspection (VSI), Braden Scale risk assessment, and sub-epidermal moisture (SEM) scanning. A nurse-driven clinical decision tree guided additional interventions for at-risk patients, including successive SEM scanning, VSI, and risk assessments over four weeks. Evidence-based interventions included applying five-layer silicone foam dressings to bony prominences and implementing patient-specific pressure-reduction strategies.

Results: The project included 54 new patient admissions over a total duration of 18 weeks, with 108 active screening days during the implementation phase. Results demonstrated a statistically significant improvement in nurses' ability to identify newly admitted patients at risk for pressure injuries, along with increased utilization of evidence-based pressure-reduction strategies.

Discussion: Project analysis revealed a strong correlation between a multi-faceted assessment approach, a nurse-driven clinical decision tree, and a reduction in new pressure injuries among newly admitted patients. This approach demonstrates potential for successful implementation in similar settings. However, project limitations included a small sample size, time constraints, and a lack of prior studies on sub-epidermal moisture (SEM) scanning in long-term care settings.

EBP-016

Evaluating the Efficacy of a Hybrid Approach for Wound Management and Risk Prevention Utilizing a Comprehensive Wound Management Solution in a 236-bed Long Term Acute Hospital (LTACH)

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Introduction: The facility, a large LTACH with a high degree of acuity, has effectively combined centralized clinical expertise with decentralized care team access to a comprehensive wound management solution that helps the facility not only foster and sustain a culture of transparency, accountability, and performance improvement, but also helps reinforce the hospital's culture of patient safety. The wound management solution provides the technology foundation for the hospital's wound and skin integrity processes and protocols, unifying the facility's care teams around easily accessible documentation, wound reporting such as tracking and trending, and also dashboards displaying patients' risk drivers for potential harm.

Methods: This study shows the advantages for the care team and significant clinical outcomes achieved through the integration of the hospital's culture of patient safety with the utilization of a wound management solution to streamline and automate wound management processes over eight years. The author(s) analyzed the wound management solution 2017-2024 data set of the facility's incidence of hospital acquired pressure injuries (HAPIs) in the context of the facility risk data, which demonstrated significant prevention outcomes gains in the context of a higher risk patient census. The authors further annotated the facility's wound and Braden risk data with the chronology of patient safety-focused protocols the facility implemented over the measured period.

Results: The facility's full thickness HAPI rate improved by 70.18% from the four year baseline period to the last four years, and by 78.95% in the most recent two years. The facility's distribution of patients skew to the high risk side of the Braden Scale, as 49% of the 236-patient census fall into the highest three risk categories using the Braden Scale for Predicting Pressure Sore Risk.

Discussion: Facility staff and care teams have effectively elevated their standards and quality of patient care and significantly improved patient wound outcomes by comprehensively integrating its culture of patient safety and tested nursing protocols, with a wound management system which empowers its care teams to maintain wound care and skin integrity excellence.

EBP-017

Efficacy of Bromelain-based Debridement (BBD) in Diabetic Foot Ulcers: A Post Hoc Analysis

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Introduction: Chronic wounds affect millions annually in the U.S., incurring significant healthcare costs. Effective debridement is critical for initiating tissue repair. Bromelain-based debridement (BBD) has shown efficacy and safety in various wounds, including burns and venous leg ulcers (VLU). This post hoc analysis evaluates BBD's efficacy in diabetic foot ulcers (DFUs) using data from a multicenter, assessor-blinded, randomized controlled trial.

Methods: Seventy-three patients with chronic lower extremity ulcers (venous leg ulcers [VLU], diabetic foot ulcers [DFU], or traumatic ulcers) were randomized 2:1 to receive bromelain-based debridement (BBD) 5% or a gel vehicle (GV) control. Treatments were applied daily for up to 10 sessions of 4 hours (up to 2 weeks), followed by weekly assessments for 12 weeks. This post hoc analysis focuses on 19 patients with DFUs (12 BBD, 7 GV). Complete debridement was assessed clinically and defined as ≥90% removal of non-viable tissue within two weeks daily treatment or 100% removal anytime. Granulation tissue was assessed clinically. Wound bed preparation (WBP) was defined as 100% removal of non-viable tissue with ≥75% granulation. Wound closure was defined as complete epithelialization without drainage or dressing use for two weeks.This subgroup analysis was not powered to detect statistically significant differences.

Results: Baseline characteristics were comparable between the BBD and the GV groups (mean age: 64 vs. 61 years; wound size: 22 vs. 24 cm^2; wound duration: 11 vs. 23 weeks). Complete debridement was achieved in 58% (BBD) vs. 14% (GV), during the 2 weeks daily treatment, and granulation tissue ≥75% was observed in 42% vs. 17%.WBP anytime during the study occurred in 75% (BBD) vs. 43% (GV) and wound closure in 57% vs. 25%. The median time to complete debridement, anytime, was 23 vs. 128 days (BBD vs. GV), and median time to WBP was 23.5 days vs. not reached.

Discussion: These results suggest that BBD has clinically meaningful advantages over GV in debridement, granulation tissue promotion, and wound closure for DFUs, achieving WBP faster than GV. The findings support further phase II/III studies to validate BBD for DFU management.

EBP-018

Evaluating the Impact of Telehealth on Person-centered Wound Care in the Home Settting

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Introduction: Telehealth has emerged as a promising tool to enhance wound care delivery, particularly for patients with complex needs. However, the potential of telehealth to optimize person-centered care requires exploration. This project aimed to investigate how telehealth enhances person-centered wound care practices while also promoting caregiver satisfaction and engagement.

Methods: To explore the experiences of healthcare providers and patients involved in a hybrid telehealth wound model, semi-structured interviews were conducted with a purposive sample of wound care nurses, physicians, and patients who had utilized hybrid telehealth for wound care coordination. Thematic analysis was used to identify key themes related to the impact of telehealth on person-centered care. Objective data reviewed included sequential quality-of-life assessments, patient satisfaction, and engagement questionnaires.

Results: The telehealth components provided included: a bilingual care coordinator conducted structured DME follow-up for patients as prescribed; medication management to confirm patients were taking medications, refilling prescriptions, and understanding side effects; wound care education on how to perform dressing changes, monitoring for suspicious signs/symptoms to report, modulation of health-related behaviors. Patients also received chronic disease assessment, dietary assessment, and education. Follow-up appointments were scheduled, attended, or performed via telehealth. Physical therapy and rehabilitation were encouraged if indicated, and attendance of therapy sessions and performance of home exercises were encouraged. The analysis revealed several key themes: enhanced patient engagement, improved patient education; strengthened patient-provider relationships; individualized care plans. Challenges and Opportunities: While telehealth offers numerous benefits, technical difficulties, privacy concerns, and limited surgical intervention capabilities were identified. However, hybridizing treatment to include in-person visits can mitigate these challenges.

Discussion: Telehealth optimizes person-centered wound care by enhancing patient engagement, education, and clinician-patient relationships. Factors like socioeconomic status, access to transportation, and social support can significantly impact a patient's ability to manage post-discharge tasks. By addressing the identified challenges and leveraging emerging technologies, telehealth can revolutionize wound care delivery and improve patient outcomes. Future research should focus on developing standardized guidelines for telehealth wound care, evaluating cost-effectiveness of telehealth interventions, and exploring long-term impact of telehealth on patient quality of life, satisfaction and clinical outcomes.

EBP-019

Camps Standard of Care Optimization: Increasing Care Standard Compliance Through a Hybrid Telehealth Wound Management Model

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Introduction: Cellular tissue products (CTPs) are effective in promoting wound healing. However, compliance with use requires wound bed optimization, patient education, and adherence to care instructions. Telehealth offers a promising approach to enhance appropriate CTP use utilizing organized patient preparation, education, and support. This pilot evaluated the feasibility and effectiveness of telehealth-based interventions to prepare patients for CTP therapy.

Methods: All patients received an elevated standard of care with a hybrid model of in-person and telehealth wound care coordination evaluated with a SOC checklist indicating graft readiness and trending patient adherence to plan of care. These patients received chronic disease management. Routine documentation was formulated to include essential components for insurance coverage of CTPs so that when wound bed preparation and status indicate to the provider that CTPs are medically necessary, they can be initiated without treatment delay. Model: standard care, including wound hygiene and bed preparation, in-person education and counseling + hybrid telehealth intervention including: pre-procedure education via video conferencing; post-procedure follow-up and wound assessment; and remote monitoring of wound healing progress and qualification status. Primary outcomes included standardized implementation of a CTP patient & wound preparation checklist. Secondary outcomes included patient satisfaction, CTP therapy knowledge, and care instructions adherence.

Results: Both patients and providers in this hybrid telehealth intervention group reported high satisfaction levels with the support provided. Chart audits of patients receiving CTP therapy confirm appropriate, compliant use of the products. Patients also demonstrated significantly better knowledge of CTP therapy and adherence to care instructions.

Discussion: This pilot demonstrates the feasibility and potential benefits of a telehealth-based intervention to prepare patients for skin substitute therapy. By providing timely and personalized education and support, telehealth can improve patient satisfaction, knowledge, and adherence, ultimately leading to better wound-healing outcomes. Future research should explore the optimal frequency and duration of telehealth interventions, the impact of different telehealth platforms, and the cost-effectiveness of this approach. By leveraging the power of telehealth, we can not only compliantly utilize CTPs but optimize their use to improve the overall care of patients with complex wounds in the post-acute setting.

EBP-020

BIOMES: A Screening Tool to Recognize Wound Severity for Early Intervention and Referral to a Specialist

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Introduction: Current best practices of wound care focus on healing as early as possible which includes making a correct diagnosis, recognizing the red flags that impede wound healing, and initiating early intervention acknowledging that chronicity is not time dependent. Initial wound evaluations are often performed first by urgent care, emergency responders, or primary care professionals who are skilled in their field but are not chronic wound specialists. These medical providers are often unfamiliar with current wound care scoring systems that aid in determining wound severity, guiding early interventions, and identifying the need for specialized care based on patients' overall medical condition and the wound status. A referral to a wound specialist has the potential to expedite healing, reduce overall cost of care, alleviate patient suffering, and ultimately save a limb or life.

Methods: The BIOMES scoring scale is a tool that serves as a method to quickly assess wounds as moderate to high risk for being hard-to-heal. The acronym BIOMES provides the front-line clinicians who perform initial patient assessments with succinct direction in the early identification of barriers to healing of moderate- to high-risk wounds. Each letter guides the clinician to evaluate a part of the patient's medical history or wound presentation that may affect the healing trajectory.

Results: BIOMES is a generic acronym that can be used by any provider

to quickly identify if a patient should be referred to a specialist by classifying the wound as low, moderate, or high risk for delayed healing. Blood Flow, Infection/Bioburden, Offloading/Overloading, Metabolic/Morbidities, Exudate/Edema, and Social/Economic barriers are assessed, and one point is assigned to each barrier that can be identified as a red flag with the potential to affect the healing trajectory of a patient's wound. Wounds are classified as follows: Low risk: No BIOMES; Moderate risk: 1 of the BIOMES; High risk: 2 or more BIOMES. Any patient identified as moderate or high risk should be referred to a wound specialist for earlier, more aggressive management resulting in wound healing rather than traditional wound management.

Discussion: The proposed BIOMES approach introduces a novel simplified acronym that emphasizes early identification of wound risk factors, thus becoming an early intervention strategy that creates a bridge between non-specialist medical teams and wound specialists. The subsequent phase in BIOMES expansion, implementation of the pilot study, is underway to test the reliability and validity in the field.

HEALTH ECONOMICS

HE-001

Economic Evaluation of Multilayer Polyurethane Foam Dressings for Preventing Pressure Ulcers in Hospitalized Patients in the United States

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Introduction: Hospital-acquired pressure ulcers (HAPUs) represent a significant challenge for patients and healthcare systems, resulting in adverse clinical outcomes and increased costs. The incidence of HAPUs continues to rise, along with the likelihood of associated complications. This economic evaluation assessed the cost-effectiveness of adding a sacral multilayer silicone-adhesive polyurethane foam* dressing with standard prevention (SP) when compared to SP alone in hospitalized patients at-risk of HAPUs. SP included a pressure ulcer risk assessment, skin evaluation, regular repositioning, use of active support surfaces, and incontinence care.

Methods: A decision-analytic model, stratified by HAPU stage, was developed to estimate the incremental cost and effectiveness of using a foam dressing as an adjunct to SP. The analysis was conducted from the perspective of a United States (U.S.) healthcare payor. HAPU incidence rates and treatment impacts were derived from a meta-analysis of existing studies, and 2024 cost estimates were obtained from published literature. Sensitivity analyses included one-way and probabilistic sensitivity analysis (PSA) with 10,000 simulations to address uncertainty in model inputs.

Results: The addition of a foam dressing to SP was found to be both cost-saving and more effective compared to SP alone from a U.S. payor perspective. Base case analysis showed a 77% reduction in Stage I HAPUs and a 32% reduction in Stage ≥II HAPUs, resulting in an overall reduction in pressure ulcers of 62% across all stages. This translated to a cost per patient of $880 for SP and $567 for SP with a foam dressing, resulting in cost savings of $313 per patient. Sensitivity analyses confirmed the robustness of these findings, with the addition of a foam dressing consistently emerging as the dominant strategy. PSA demonstrated that adding a foam dressing was cost-saving in 98.7% of simulations.

Discussion: Adding a multilayer polyurethane foam dressing to SP is a cost-effective strategy for preventing pressure ulcers in at-risk hospitalized patients. When clinically appropriate, this approach may be considered to improve patient outcomes and reduce healthcare costs.

HE-002

Evaluating the Health Economic Value of Implementing an All-in-one, Extended-wear Negative Pressure Wound Therapy (NPWT) Dressing

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Introduction: An all-in-one negative pressure wound therapy (NPWT) dressing* integrates foam and drape for easy application and is designed for extended wear of up to seven days. This research study aimed to determine the economic value, based on time and cost savings, associated with introducing the all-in-one dressing into the acute care or home health care settings in the US.

Methods: Budget Impact Assessments were developed for 1) acute care and 2) home health settings, evaluating the impact of implementing the all-in-one dressing (1x/week applied, @$106.95) to replace existing dressings. In the acute care setting, usage, cost, and application time assumptions included 100 advanced wound care dressings (AWD; changed 4x/week, @$20, 27 sec) and 100 traditional NPWT dressings† (changed 3x/week, @$49.87, 4 min 40 sec). This model included a $5 cost for consumables per dressing change and a nursing hourly rate of $41.38. For home health, the assumption was care for 10 patients using AWD (2 visits/week @$20) and 10 patients using traditional NPWT dressings (3 visits/week) per month, with a monthly mean reimbursement of $2989 per patient and a mean cost per wound care visit of $168.40.

Results: Implementing the all-in-one dressing in acute care settings could save 42 (72%) hours of nursing time and $3,201 (30.8%) in dressing change costs, including material and nursing time. In home health care, switching 10 patients from traditional NPWT dressings to AWD could result in 129 (61.8%) fewer visits and $23,400 (60%) savings. The frequency of dressing changes is key to obtaining cost benefits. The break-even point for a cost-neutral exchange of traditional NPWT dressings in acute care settings is reached when the mean wear time is 5 days.

Discussion: The cost-benefit in acute care settings is mainly dependent on nursing time savings, while in home health care, it is the reduced frequency of visits.

HE-003 (RPT-009)

Over-the-counter Is Over! the Cost of Wound Care for Patients in the Era of Online Shopping in the United States

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Introduction: In the past, surgeons prescribed dressings required for healing. These supplies were expensive and unavailable at common brick-and-mortar shops. The out-of-pocket cost of supplies fell to the patient, regardless of insurance status. Today, online retailers offer an expansive array of products without prescription. Providers may be unfamiliar with online options and evolving insurance coverage. The purpose of this investigation is to perform a cost analysis of commonly used dressing materials that are available online.

Methods: We surveyed the wound care team informally at an academic medical center in 2024 to identify commonly used retail providers of dressing materials and methods of payment. We identified four retailers: two retail pharmacy chains, one mass-market supercenter, and one major e-commerce retailer. We surveyed the website of each company to identify the cost of commonly employed dressing materials used in our clinic, including wraps, covers, cleansers, packings, and adhesives. Patients employed cash, partial insurance coverage, and complete insurance coverage to pay for materials.

Results: Fourteen commonly used dressing materials were identified. These products were available at brick-and-mortar and online retailers. A slim majority of these selected products were the cheapest by unit price on the e-commerce website. However, among the other three retailers who offered both freestanding stores for walk-in service and online purchasing (retail pharmacies and the mass-market supercenter), the cost of supplies varied widely by product.

Discussion: The concept of wound care products being "by prescription" is obsolete; each of these commonly used products were available without prescription, over the counter, or online. Some insurance providers have embraced the digital age by expanding Flexible Spending

Account (FSA) and Health Savings Account (HSA) coverage for wound care products purchased online. For cost efficiency, we recommend online purchasing when possible. Independent dressing suppliers may offer mail-order supplies that are partially or entirely covered by insurance and should be considered as well.

HE-004

Use of Two Different Drapes for Negative Pressure Wound Therapy in Patients with Chronic or Traumatic Wounds: Evaluation of Patient and Clinician Satisfaction

Leah Griffin, MS; Boris Zelle, MD; MBA

Introduction: The use of negative pressure wound therapy (NPWT) dressings with two different adhesive drapes (traditional acrylic adhesive drape* and silicone-acrylic adhesive hybrid drape†) was evaluated. The aim of the study was to compare patient and clinician satisfaction between the two drapes.

Methods: In this exploratory prospective study, patients with chronic or traumatic wounds treated with NPWT using either traditional or hybrid drape were assessed. Only patients that required a minimum of 2 NPWT dressing changes at the bedside were eligible for inclusion. Patients received at least 1 dressing application with each drape. Pain at dressing removal was graded by the patient on a visual analogue scale ranging from 0 (no pain) to 10 (maximum pain). Clinician ease of use was graded at each dressing change on a five-item Likert scale from 0 (strongly disagree) to 5 (strongly agree).

Results: Twenty-nine patients were enrolled. The mean pain score at dressing removal was 3.3 ± 3.5 and 5.2 ± 3.6 for the hybrid and traditional drapes, respectively. Therefore, patient reported pain scores at drape removal were significantly lower for the hybrid drape (-1.8 ± 3.4, p=0.0065). Clinician reported satisfaction was significantly higher with the hybrid drape (76.9% versus 48.3% for rating 5=strongly agree, p=0.0304). Negative pressure leaks were reported in 2 patients (6.9%) with the hybrid drape compared to no patients with the traditional drape, though this difference was not significant.

Discussion: In these patients, reduced patient reported pain at drape removal and increased clinician reported ease of use was observed with the hybrid drape.

HE-005

Use Assessment of an Interactive Patient Mobile Application to Support Negative Pressure Wound Therapy

Leah Griffin, MS; Laura Leyva-Casillas, MBA; MSBA

Introduction: Patients receiving Negative Pressure Wound Therapy (NPWT)* with and without companion mobile app (MWH)† use were compared. Patient demographics, adherence to therapy, wound progression, and therapy days were assessed to characterize the type of patient likely to use MWH and evaluate any differences in NPWT adherence and wound progression.

Methods: MWH was developed for use with an NPWT unit for patients in the homecare setting. Patients undergoing NPWT were invited to download the MWH app to track their wound healing progress, receive NPWT and general wound care education, obtain help using the NPWT device, and order NPWT supplies. From January 2022 to February 2024, 4,917 patients used MWH compared to 261,667 without MWH. Data were summarized as means, counts, and percentages. T-tests and chi-square tests were used to test for differences between cohorts with alpha at 0.05.

Results: MWH users were younger (54 years versus 60 years), had a higher rate of commercial insurance (MWH 38.4% versus non-MWH 25.6%), and had a higher percentage of acute wounds (MWH 77.9% versus non-MWH 69.8%). The average hours of therapy per day was 17.9 for MWH versus 15.4 for non-MWH. The rate of patients maintaining an average of 16 or more hours of therapy per day was higher for the MWH cohort (68.8% versus 54.8%). MWH patients had a larger wound volume decrease at 80.9% versus 76.8% for non-MWH. All findings were statistically significant at p< 0.05.

Discussion: MWH patients were more likely to meet minimum required hours on therapy than non-MWH patients. The increased adherence to therapy may result in a greater decrease in wound volume.

HE-006 (RPT-003)

Healthcare Equity: A Community-based Pilot Study on Repurposing Wound Care Supplies for Underserved Populations

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Introduction: Chronic wounds affect 6.5 million individuals in the United States, contributing significantly to lower limb amputations, with a limb lost to diabetes every 20 seconds globally . These wounds impose a significant financial burden on the healthcare system, particularly for uninsured or homeless populations. For example, San Antonio's homeless population increased by 7% in 2024, complicating wound care management due to limited resources and infrastructure. Many medical schools now incorporate street medicine programs to address these disparities. The Dream Donation pilot project was launched to collect unused wound care supplies from clinics, patients, and pharmaceutical representatives for redistribution to underserved populations.

Methods: A significant yet under-acknowledged issue in wound care is the wastage of supplies, with surplus materials often discarded after wounds heal. Recognizing this, we established a program to repurpose unused supplies, addressing two challenges: reducing environmental waste and providing essential resources to underserved clinics. Supplies were collected from clinics, patients, and pharmaceutical representatives and redistributed to facilities serving uninsured and homeless populations.

Results: Approximately $10,000 worth of supplies were collected and donated to organizations such as Corazon Ministries, Seton Home, SAM Ministries, Yanawana Herbolarios, Bexar Area Harm Reduction Coalition, and UIW's Street Medicine Program.

Discussion: Our pilot study highlights the significant need for wound care supplies among underserved populations and the potential of repurposing unused materials. Scaling this initiative through digital platforms, such as an app to connect donors with clinics, could enhance accessibility and efficiency. Collaboration with organizations like the Amazon Foundation for shipping support may enable global outreach.

HE-007

Evaluating the Impact of a Health Literacy Intervention on Diabetic Foot Wound Complications

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Introduction: Diabetes impacts 11.6% of the US population (1). Management of diabetic foot ulcers (DFUs) is challenging, and approximately 20% of patients with DFUs require amputations (2). To address the barriers health literacy poses to diabetes management, we evaluated a multimedia educational resource platform called Health Literacy + Innovation for Positive Patient Outcomes (HIPPO) for patients with DFUs. Our retrospective study explored if HIPPO reduced risk of unfavorable outcomes among patients with DFUs compared to standard education alone.

Methods: An open-label trial was performed at a wound clinic in a large-city, safety net hospital that serves underserved populations including immigrants. Newly referred adult participants with DFUs were randomly assigned to an intervention group (HIPPO) or control group. The intervention group viewed seven, 3–5-minute multilingual instructional videos and graphic illustrations during 3 separate clinical visits and had access to this material at home. The control group received only standard of care. The participants whose chart reviews were available for

at least 12 months post-initial clinic visit were assessed for amputation, surgical debridement, and recommendation for either procedure. Hazard ratios were calculated.

Results: Seventy-one participants each were assigned to the HIPPO group and control group. Fifty-eight participants met criteria with 31 and 27 in the control and intervention groups, respectively. The 3-month wound healing rates were 68% in HIPPO group and 67% in control group (p=0.97). The HIPPO intervention did not significantly reduce risk of lower extremity amputation, compared to standard education alone (7/27 (25.9%) vs. 6/31 (19.4%), respectively; p=0.18). Surgical debridement was performed in 3 participants (HIPPO) and 2 participants (control). Two participants in the control group declined amputation despite recommendation by surgeons. Wound, Ischemia, and Foot Infection score (p=0.25), highest education level received (p=0.83), internet access (p=0.24), and insurance type (p=1.00) also did not significantly impact risk for amputation.

Discussion: An intervention to increase health literacy did not reduce the risk of lower extremity amputation in patients with DFUs. This result can be explained by a low sample size or an insufficient number of video views in the HIPPO group. A study to provide more interventions within a larger sample of participants is warranted.

HE-008

Cost-analysis of Universal Decolonization with Pure Hypochlorous Acid and Mupirocin to Prevent Infections in Burn Patients

Peter Mallow, PhD; Debashish Chakravarthy, PhD; Kevin Foster, MD

Introduction: Burn patients are particularly susceptible to infections, including Methicillin-resistant Staphylococcus aureus (MRSA). MRSA can originate from their own flora or the environment, and it is a leading cause of morbidity and mortality. Universal decolonization has been shown to reduce infection rates. The objective of this study was to conduct a cost-analysis of pure hypochlorous acid (pHA) and mupirocin for the prevention of MRSA infection in hospitalized burn patients.

Methods: A patient-level microsimulation model was used to conduct a cost-analysis from the US health system perspective. All clinical data was obtained from a retrospective observational trial. [1] The clinical data examined the admitted burn patients for a one-year period prior to the introduction of pHA and mupirocin and one year period post introduction of pHA and mupirocin. The primary outcome variable was the reduction in MRSA infections per 1000 bed days. Cost data were obtained from the publicly available data sources in 2023 USD using a pragmatic literature review. [2,3] Deterministic and probabilistic sensitivity analyses (PSA) were performed to gauge the robustness and reliability of the results.

Results: The clinical data found that burn patients prior to the introduction of pHA were 3.05 times more likely to acquire a MRSA infection. The expected cost to treat solely the MRSA infections in the pre-pHA period was $224,116 per 1000 bed days; whereas, the expected cost in the post-pHA period was $73,465 per 1000 patient bed days. Adding the cost of pHA, the net savings was expected to be $79,650 per 1000 patient bed days or $79.65 per bed day. The sensitivity analyses revealed that these results were robust and reliable to changes in the parameter values.

Discussion: pHA and mupirocin was expected to be a substantial cost-saving strategy for the prevention of infection in burn patients. Larger and more clinically diverse studies are recommended to confirm these findings.

HE-009

Financial Assessment of a Novel Sharp Debridement Device Compared to Traditional Sharp Debridement Instrumentation for Biofilm Management in Chronic Non-healing Wounds

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Introduction: The gold standard in managing chronic wound biofilms is sharp debridement with evidence supporting cost-effective benefits in biofilm suppression and overall wound care costs. While traditional sharp debridement (TSD) is a standard treatment, its limitations include a lack of data on healing trajectories with associated costs. This study investigated a novel sharp debridement device (EZD) versus TDS in comparison of healing trajectories based on the Wu et at model using Alcian Blue and Biofilm Wound (BFW) Categorization along with a cost variable.

Methods: This prospective study enrolled 80 patients with chronic wounds, randomized to either EZD sharp debridement (EZ-Debride, MDM Ventures, San Antonio, TX) or TSD (scalpels/curettes). Biofilm presence and extent were assessed pre- and post-debridement using a modified Alcian Blue wound blotting technique and graded on a 0-3 scale. Wu's model was applied based in increments of 30, 90, and 180 day healing trajectories derived from the post debridement scale. An evidence based wound care daily cost and unit retail cost of EZD and TSD instruments were then analyzed.

Results: EZD resulted in a significantly greater reduction in biofilm (84.97% vs. 34.87%, $p < 0.0001$) and clinical assessment confirmed a higher rate of complete biofilm removal in the EZD group (60% vs. 12.2%). EZD resulted in 60% grade 0 BFW and 40% grade 1 BFW for an average expenditure cost including cost of instruments at $34,053.12. TSD resulted in 12.2% grade 0 BFW, 60% grade 1 BFW, and 25% grade 2 BFW and total of 14 wounds (35%) resulted in no biofilm removal in 8 wounds (20%), and an increase in biofilm in 6 wounds (15%) with a total cost of $55,485.00.

Discussion: This study demonstrates that the novel sharp debridement device, EZD, is a safe and effective tool for biofilm removal in chronic wounds, potentially surpassing TSD methods in the eradication of biofilm. EZD has shown to produce repeatable and reproducible results in this study with a profound impact of wound care cost and better healing trajectories based on biofilm presence. Further research should examine its impact on long-term healing and broader clinical applicability

HE-010

Small Change, Big Difference: The Comprehensive Benefits of a Dressing Innovation

Chrystalbelle Rogers, MSN, RN, CWCN, CENP

Introduction: Home health agencies in 2024 face staffing shortages and financial constraints, limiting their capacity to meet growing demand. Reduced Medicare reimbursements and nurse burnout exacerbate these challenges. Innovations such as superabsorbent polymer (SAP) dressings offer solutions to optimize wound care while addressing operational pressures. These dressings, supported by clinical guidelines, improve wound management efficiency and patient outcomes.

Methods: This evaluation aimed to assess the clinical efficacy of multilayer silicone border SAP dressing and non-silicone SAP dressing in managing moderate to heavily exuding wounds in home health patients. Secondary aims included evaluating cost-effectiveness, nurse workload, and patient outcomes compared to traditional dressings. Over 40 days, 13 patients with 19 wounds received multilayer silicone border SAP dressings or non-silicone SAP dressings in place of silicone border and non-silicone foam dressings. The protocol remained unchanged except for the dressing substitution, and data were collected on wound progression, dressing changes, nurse visits, and staff feedback.

Results: Five wounds closed, and wound area decreased by 51%. Dressing changes reduced by 16%, and nurse visits decreased by 10%, saving operational costs and improving scalability. Nurse feedback highlighted ease of application and satisfaction with reduced workload.

Discussion: Multilayer silicone border SAP dressings and non-silicone SAP dressings demonstrated significant clinical and economic benefits, improving wound healing, reducing nurse visits, and enhancing staff satisfaction. These results support SAP dressings as a viable solution for addressing home health challenges, aligning with findings from other healthcare settings.

This evaluation underscores the potential of multilayer silicone border SAP dressings and non-silicone SAP dressings to alleviate the strain on

home health agencies by improving efficiency and outcomes. As agencies navigate staffing and financial pressures, adopting innovative wound care technologies is critical for sustainable patient care.

HE-011

Comparative Effectiveness of Collagen/oxidized Regenerated Cellulose/silver-orc Dressing* with Cellular Tissue Product versus Cellular Tissue Product Alone in Wound Care

Laura E. Soloway, PhD, MPH; Leah Griffin, MS – Solventum

Introduction: This study was designed to examine the difference in outcomes between wounds treated with collagen/oxidized regenerated cellulose/silver-orc dressing (COSO)* and a cellular tissue product (CTP) and wounds treated with a CTP without COSO.

Methods: Using U.S. Wound Registry data, 1,674 wounds treated with OCSO+CTP were identified. Propensity score matching within each wound type was used to create a cohort of 1,674 control wounds that used CTP alone. Outcomes evaluated included the healing status and change in wound size. Chi-square and t-tests were used to evaluate differences between the two cohorts.

Results: After matching, the two cohorts were balanced on most patient and wound demographics. Those variables that were not fully balanced (wound age, smoking, and vascular disease) indicated that the wounds treated with COSO+CTP were older and on patients who had a higher percentage of risk factors. Significantly more wounds were healed when treated with COSO+CTP compared to CTP alone (49.0% versus 43.8%; p< 0.0001) with an odds ratio of 1.24 (95% Confidence Interval: 1.09, 1.43). When healed wounds were combined with wounds that improved, there continued to be a significant difference in favor of the COSO+CTP cohort (83.3% versus 80.1%; p=0.0158). There were no differences in the change in wound size.

HE-012

Disproving Misconceptions Surrounding Workflow Efficiency in a Hospital-based Wound Center with the Autologous Multilayered Leukocyte, Platelet, and Fibrin Patch

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Introduction: A novel treatment for diabetic foot ulcers (DFUs) is the autologous multilayered leukocyte, platelet, and fibrin patch (MLPF Patch). While a randomized controlled trial1 was conducted to prove its efficacy, providers and program directors may be concerned that the time for this procedure would negatively impact the workflow of the wound center. When reviewing our efficiency, we were curious to determine if the use of the MLPF Patch did alter our workflow and how the time differed from other treatments.

Methods: In this study, we analyzed 30 consecutive patients over 4 months in these categories: Debridement without special procedure, debridement with application of a cellular tissue product, and debridement with application of the MLPF patch. We looked at the accumulative time of a visit, excluding any abnormal variables that would prolong the visit time. Time measured included registration, intake, procedure, the application of a secondary dressing, and discharge.

Results: Our initial findings were as expected; the debridement visit without separate procedure was the quickest, with an average of 42.3 minutes per visit. Interestingly, the MLPF patch only extended the visits an average of ~6 minutes. This was less than the cellular tissue product visit, which was an average of 50.6 minutes, including time spent logging and tracking the product. The misconception that the MLPF patch would take longer did not prove true. Due to the positive outcomes, the automated process, and no logging or tracking requirements, we are more inclined to use the MLPF patch.

Discussion: Even though the MLPF patch requires additional time for venipuncture and the centrifugation process, the time spent in the hospital-based wound center was approximately 4 minutes less than when a cellular tissue product was used. In addition to saving time of logging and tracking needed for CTPs, other benefits of the MLPF patch include no special storage requirements and zero risk of rejection. This data disproves the common misconceptions of slowing workflow and negatively impacting a wound center's efficiency. Therefore, the MLPF patch should be considered as a first line advanced wound care treatment without hesitation. One limitation of our study is that it was conducted in a hospital-based wound center. These results do not represent the complexity and workflow in a physician-office setting where human resources and space may be limited. Also, further replication of this protocol in other centers that use the MLPF patch is needed to affirm these findings.

LABORATORY RESEARCH

LR-003

The Chemical and Antimicrobial Activity Within a Prototype Nitric Oxide-generating Wound Dressing

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Introduction: Hard-to-heal wounds, such as diabetic foot ulcers, are highly prevalent and place a significant burden on patients and healthcare systems. The aim of these studies was to demonstrate the novel chemical properties (defined water activity and pH), and antimicrobial activity from the supplemental generation of nitric oxide (NO), within a novel prototype NO-generating wound dressing*.

Methods: Water activity (relative humidity) of the entire dressing, and for each of the two dressing layers, was measured using a water activity meter. The pH of the dressing was measured using a pH surface probe by challenging dressings with a pH 7.4 buffered solution at 0.4 mL/hour over 48 hours. The antimicrobial activity of the dressing over 48 hours was measured using a direct inoculation method, including a 48-hour preconditioning period, with six bacteria, one yeast, and one mold.

Results: The NO-generating dressing* had a water activity of 0.71 ± 0.014, with 90% of the water activity attributable to the upper absorbent layer. The NO-generating dressing* buffered the alkaline challenge solution immediately and then consistently to pH 5-6 over 48 hours. All challenge microorganisms were rapidly killed by >4 log10 within the NO-generating dressing*.

Discussion: The water activity of the prototype NO-generating dressing* provides high fluid absorption and is inhospitable to absorbed challenge microorganisms. The dressing immediately buffered the alkaline solution back to acidic pH, creating an acidic state that is inhibitory towards microorganisms and conducive to wound healing. This acidic pH also activates the production of NO within the dressing. NO provides additional antimicrobial activity over a minimum of 48 hours, as shown by the eradication of 8 challenge microorganisms. The chemical and antimicrobial activity of the prototype NO-generating dressing* provides a potent antimicrobial environment to potentially support wound healing.

LR-004

Elucidating the Role of sfrp2 in Modulating Organ Fibrosis

Delany Bradford, Delany Bradford, MSBT, MHS; Kim Cooney, Kim Cooney, PhD – Biological Sciences; Sarika Saraswati, Sarika Saraswati, PhD – Primary Investigator, Biological Sciences

Introduction: Fibrosis is the typical response to injury, leading to distorted architecture, pathologic signaling and organ dysfunction. Secreted frizzled-related protein (sFRP2) is a mesenchyme derived factor that partially down-regulates fibrosis. Yet, the molecular mechanism that regulates sFRP2's effect on fibroblasts in modulating tissue fibrosis is incompletely understood. We have generated a transgenic mouse model to temporally and spatially regulate the expression of sFRP2 in injury-induced activated fibroblasts. In two different injury models, cardiac (myocardial infarction;

MI) and kidney (unilateral ureteral obstruction; UUO), sFRP2 induction exerted an anti-fibrotic effect in sFRP2-overexpressing mice compared to control Cre mice. Based on our preliminary observation, we hypothesize that sFRP2 inhibits fibrosis by modulating the pro-fibrotic signaling pathways in post-injury activated myofibroblasts. To test this hypothesis, we analyzed the pro-fibrotic pathways activated in response to injury in sFRP2 and Cre mice at multiple time points following MI and UUO injuries.

Methods: MI induction following left anterior descending artery (LAD) ligation and UUO was performed by the ligation one ureter in sFRP2 and Cre mice. The animals were fed tamoxifen for five consecutive days prior to injury. Following injury, mice were sacrificed at different time points to assess the spatial-temporal activation of sFRP2 and its effect on modulating fibrosis and associated pathways. Tissue samples were collected for RT-PCR, Western blot and Immunofluorescence analysis.

Results: sFRP2 expression was induced post-infarct following tamoxifen treatment in mice expressing sFRP2 under the FSP1 promoter. Transient induction of sFRP2 expression following MI in sFRP2 mice inhibited fibrosis and collagen 1a1 protein expression. Moreover, Masson's trichrome blue staining of UUO injured kidneys show suppression of collagen deposition in sFRP2 mice compared to Cre mice. Temporal inhibition of TGF-β signaling pathways was also observed in MI and UUO models following sFRP2 over-expression. Future work will focus on elucidating the molecular mechanisms that regulate sFRP2 mediated organ fibrosis. This work will allow us to use regulators, like sFRP2, to target myofibroblast specific molecular pathways during fibrosis, inhibiting pathological fibrosis without affecting repair.

Discussion: Post-injury sFRP2 over-expression in mouse FSP1-fibroblasts resulted in a reduction in fibrosis in two different organ injury models. Elucidating the mechanism that modulates sFRP2's antifibrotic role will provide valuable insights on how this protein targets fibrosis and promotes regenerative repair. Identification of sFRP2's role will also provide potential uses for regulators as a way to target specific post-injury fibrotic processes, such as Wnt and TGF-β signaling, and inhibit pathological fibrosis without affecting normal wound healing.

LR-005

Assessment of the Performance Characteristics of a New Multilayer Foam Dressing

Jordyn Bunker, MSc; Donna Kesteven, MChem; Shauna Powell, BSc

Introduction: Effective wound management is essential for promoting healing, preventing complications, and improving patient outcomes. Dressings play a pivotal role in this process, serving as the primary interventions for both exuding and non-exuding wounds, as well as for the prevention of pressure injuries. Given the diverse needs of wound care, the development of an advanced dressing tailored to meet these specific needs is imperative to optimize outcomes and enhance patient comfort and quality of life.

Methods: The performance characteristics of a new multilayer foam dressing, A*, were compared to those of two competitor dressing, B† and C°, in vitro. The speed of absorbency, defined as the rate at which 5ml of saline solution is transmitted through the dressing pores, was assessed for all dressings. The adhesive strength of the dressings was assessed by the force required to peel a sample of the adhesive border of each dressing from a polycarbonate substrate by the Zwick Universal Testing Machine. Seven-day fluid handling, absorbency and retention testing were carried out in line with the principles of BS EN 13726.

Results: Dressing A* resulted in superior 7-day fluid handling capacity (85.69 g/10cm2/7 days) when compared with dressing B† (72.18 g/10cm2/7 days) and C° (66.03 g/10cm2/7 days) (p< 0.05). Dressing A* exhibited statistically significant, superior adhesive strength (3.35N/2.5cm), compared to dressing B† (2.18N/2.5cm) and C° (2.90N/2.5cm) (p< 0.05). In addition, dressing A* resulted in the fastest fluid uptake rate (9.1 seconds), when compared to dressings B† (224.3 seconds) and C° (>300 seconds).

Discussion: The performance characteristics of the new multi-layered foam dressing, A*, supports robust performance to maximise wear time to minimise dressing changes and aid in patient wellbeing. The new multi-layered foam dressing combines fluid management and pressure injury prevention into one effective design.

LR-006

Examining the Relation Between Adhesive Strength and Medical Adhesive-related Skin Injury (MARSI) Risk for a Light-switchable Adhesive for NPWT Applications

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Introduction: Patients who require negative pressure wound therapy (NPWT) represent a cohort at significant risk for medical adhesive-related skin injury (MARSI). NPWT dressings require strong medical adhesives to maintain the dressing seal for effective therapy. Most dressings require frequent changing, typically every three days. Further, patients requiring NPWT often suffer from comorbidities, such as diabetes and vascular disease. Each of these factors increases MARSI risk.1-3 A drape dressing with light-switchable adhesive may offer clinicians a dressing with strong adhesive strength during therapy but gentle release when exposed to near-UV light ("switched"), minimizing the risk of MARSI. This study compares a new, light-switchable adhesive drape to acrylic and hybrid adhesive drapes currently used for NPWT dressings.

Methods: The study used peel strength testing to compare the light-switchable adhesive to three acrylic adhesives and one silicone-acrylic hybrid adhesive drape used in NPWT dressings. The light-switchable adhesive had two groups: unswitched and switched. Researchers randomly adhered 1X2" samples in groups of six on a healthy volunteer's ventral forearm using one inch of the sample and left samples in place for one hour. Researchers then secured the unattached second half with a clamp on a universal testing machine and pulled each sample at a 180° angle and 5 mm per second. The results report the average maximum peel strength (Newtons) and 95% confidence interval (n=8). Statistical analysis used a one-way analysis of variance followed by paired-wise t-tests. Reported p-values underwent adjustment using the Benjamini-Hochberg method for multiple comparisons. A p-value of less than 0.05 indicates a significant difference.

Results: Unswitched adhesive exhibited an average maximum peel strength of 4.45+/-0.56 N compared to Acrylic A 2.74+/-0.78 N, Acrylic B 2.77+/-1.02 N, Acrylic C 4.57+/-1.12 N, and Hybrid 1.77+/-0.43 N. Switched adhesive decreased in average maximum peel strength to 0.60+/-0.21 N. The ANOVA indicated a significant difference (p=7.74E-10). Pairwise testing found that the switched adhesive had a significantly lower peel strength than all other conditions (p-value range: 3.03E-06-0.0063). The Unswitched adhesive and Acrylic C had higher peel strength than the Hybrid (p=9.56E-06 and p=0.002), Acrylic A (p=0.004 and 0.020), and Acrylic B (p=0.021 and 0.036). Acrylic A exhibited increased peel strength compared to the Hybrid (p=0.048).

LR-007

Evaluating the Impact of Exudate Viscosity and Airflow on the Pressure Delivered to a Model Wound During Negative Pressure Wound Therapy

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Introduction: A negative pressure dressing represents a dynamic system constantly changing during negative pressure wound therapy (NPWT). A dressing air leak rate will change over time, increasing or decreasing in leak rate. The patient's wound will change, hopefully improving and reducing in size, but can also experience complications that lead to negative changes such as increased exudate viscosity, for example, changing from serous to thick purulent exudate (or vice versa). Negative pressure wound therapy devices must adapt to these changes to deliver effective pressure to the wound bed.1 Previously, our group demonstrated the importance of airflow in an NPWT dressing, demonstrating that

wound pressure decays in a closed system, leading to inadequate therapy, and that a small controlled air leak allows a single-lumen system to deliver accurate pressure at the wound bed with normal serous exudate.2 This study expands on the initial research to evaluate how exudate viscosity and airflow impact pressure and exudate management in wound models.

Methods: The study evaluates a single-lumen system with air filter technology (SLA), a dual-lumen system with air filter technology (DLA), and a dual-lumen system without air filter technology (DL) using simulated exudate at two viscosities: normal viscosity (1.158 cP)3 and thick viscosity (35.5 cP).4 We primed the systems with 170 mL of simulated exudate followed by a rate of 4 mL/hr, the maximum exudate rate for home use for a minimum of 12 hours, with systems delivering -125 mmHg therapy. Each condition was tested in triplicate. Air pressure sensors connected below the dome monitored pressure at 10Hz. Descriptive statistics and 99.7% (3σ) confidence intervals (CI) were used to compare pressure management between systems.

Results: Under normal exudate viscosity conditions, the air leak technology allowed the two systems to stay within 10 mmHg of the targeted therapy (DLA: 122.89±3.63 mmHg (99.7%); DL: 122.78±14.69 mmHg; SLA: 121.65±6.94 mmHg). The combination of dual lumen and air filter technology allowed DLA to maintain the highest accuracy of pressure at the wound bed with thick viscosity exudate (DLA: 124.36±10.50 mmHg, DL: 123.95±14.16 mmHg; SLA: 115.29±8.65 mmHg). Each system effectively recovered exudate in the canister under all conditions tested.

Discussion: This study demonstrates how exudate viscosity can impact the accuracy of wound pressure at the wound bed. This study also shows how controlled airflow through a dome-incorporated air filter combined with a dual-lumen system can improve pressure management at the wound bed.

LR-008

The Measurement of Negative Charges in a Highly Charged Fiber Dressing That Supports Debridement of Slough

Debashish Chakravarthy, Ph.D; Marielle Bouschbacher, Ph.D; Jean Marc Pernot, Ph.D

Introduction: Fiber dressings are currently used materials for wound contact in the desloughing of chronic wounds, an important step in healing, and are made of different chemical composition fibers, such as carboxymethyl cellulose (CMC, a highly gelling fiber), alginate, polyvinyl alcohol and cellulose ethyl sulfonate. A new category of fiber dressings based on highly charged (negatively) unique polyacrylate technology has been launched. When contacting the wound, electrostatic interactions between the negative charges in these Highly Negatively Charged (HCF) dressings and slough components allowing slough removal via physical forces. Carboxyl and carboxylate groups which are negatively charged, are the source of negative charges in the unique HCF dressing. Negative charges are also also present in some others such as alginates and CMC based dressings. In this work, we measure the carboxyl and carboxylate density of different dressings as that will highly impact desloughing properties.

Methods: The content of carboxylic and carboxylate groups is determined by titrimetric analysis. The dressings are either ground or cut into small pieces before being immersed, under magnetic stirring, in an aqueous sodium chloride solution at 5g/liter. The titration with NaOH begins when the pH is stable. This protocol is repeated on a new sample, but the titration is carried out with HCl. The results of the two titrations are combined to create a titration curve that quantifies the carboxylic and/or carboxylate groups present in the different dressings. The result is expressed in milliequivalent per gram of dressing.

Results: We show a much higher density of negative charges in the unique Highly Charged Fiber dressing based on polyacrylate technology compared to others, including the highly gelling CMC dressing and alginates.

Discussion: The HCF dressing is supported by clinical data in comparative desloughing studies. This probing study explains the most likely reason why it is such a superior product with respect to desloughing compared to other dressings that possess much lower charge levels. Our method clearly allows discrimination between different dressings in terms of the potential of electrostatic interactions of different fibrous materials with the slough which leads to effective desloughing.

LR-009

Comparative Breathability of Various Two Layer Compression Bandages Available in the United States: Does Breathability Differences Exist, and Does It Matter?

Debashish Chakravarthy, Ph.D

Introduction: The definitive treatment of venous ulceration is the use of compression bandages. Predominantly, the use of four layer bandages of the past are being replaced by the use of two layer bandages for the reasons of convenience. Particularly in hot climates, the bandages are worn with low compliance due to patient discomfort and a feeling of occlusiveness/constriction. Quite possibly, breathability of the construct is an important patient compliance factor, impacting healing. We measured breathability under standard conditions of four bandages commercially available in the US, including a Dual Compression System (DCS)* which combines two engineered fabrics, one with printed visual stretch indicators, that is highly evidence based (clinical).

Methods: We included four bandages in our study. We used the method ISO 9237:1995 (Textiles — Determination of the permeability of fabrics to air). It describes a method for measuring the permeability of fabrics to air.

Results: The bandages were tested according to instructions of each product. The results showed wide differences in breathabilities in the units liter/square meter/second. The breathability values ranged from 272 for a popular short stretch bandage product** to 822 for the DCS, an almost threefold difference.

Discussion: Recent launch of the DCS in the US has shown high patient/clinician preference for it within users of other compression systems long established in the USA, such as the one we found possessing the least value of breathability **. The reasons for this preference are not completely understood, though patient comfort and the resulting wear compliance has been stated by clinicians choosing the DCS in favor of other more established bandages. It is possible that this high degree of breathability leads to higher patient comfort, and thus compliance, and therefore clinician adoption. The visual indicators also make application easier and the clinician more confident in application.

LR-010

Topical Treatment with Novel Hydrogel Containing Quaternary Polyethyleneimine (QPEI) Compounds Significantly Accelerates Wound Healing in a Preclinical Diabetic Animal Model

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Introduction: The prevalence of chronic and complex wounds is a significant public health issue requiring novel approaches to improving patient outcomes. Here, we evaluated the potential of newly developed hydrogels containing quaternary polyethyleneimine (QPEI) compounds to promote wound healing directly in a recognized healing-impaired in-vivo model.

Methods: A single full-thickness wound (10 mm × 10 mm) was created on the dorsal flank of each male db/db mouse. Treatment groups received

topical applications of QPEI (2 mg/mL or 4 mg/mL in 0.5% DMSO-H_2O) as a single dose on Day 0 or as repeated applications on Days 0, 4, and 8. Control groups received vehicle treatment (0.5% DMSO-H_2O) following similar schedules. Each wound received 30–40 µL of the designated treatment immediately post-injury. Wounds were digitally photographed on Days 0, 4, 8, 12, 16, and 20 to measure closure rates. To facilitate assessments, dressings (Tegaderm film) were applied post-treatment and replaced on Days 4, 8, and 12. On Day 20, wound tissues were harvested and analyzed for granulation tissue formation, re-epithelialization, and histological abnormalities. Animals received BrdU injections 1 hour prior to tissue harvest to enable immunohistochemical analysis of cellular proliferation. Tissues were processed, embedded, sectioned, and stained with H&E for digital imaging at 20× magnification. Wound closure and histological outcomes were statistically compared between treatment and control groups. Granulation tissue depth and the percentage of re-epithelialization were quantified from scaled digital wound images and histological sections.

Results: Both single application (Day 0) and multiple applications (Days 0, 4 & 8) of QPEI hydrogel showed improved wound healing outcome demonstrated by enhanced wound contraction and re-epithelialization rates, contributing to faster wound closure. QPEI-treated wounds displayed significantly greater contraction and re-epithelialization from the first measurement post-wounding (day 4) onward. These findings were confirmed by histological analysis of wound tissues.

Discussion: While QPEIs are known for their antimicrobial properties, this study is the first to report QPEI-mediated acceleration of wound healing in a preclinical diabetic wound model. Further studies are essential to fully elucidate the QPEI mechanism of action. Here, we show that QPEI compounds demonstrate novel activity to promote wound healing, highlighting their potential to advance wound management and significantly improve patient outcomes.

LR-011

Biological Characterization of a Novel Air-dried Human Amniotic Membrane Allograft (dHAM*) for Wound Healing Applications

Connie Chung, PhD

Introduction: Chronic wounds pose a significant healthcare challenge, with impaired healing attributed to unresolved inflammation, inadequate cellular proliferation, poor vascularization, and fibrotic remodeling. Dehydrated human amniotic membrane (dHAM) allografts have previously demonstrated safety and efficacy in treating chronic wounds, offering a biocompatible matrix comprising bioactive factors. Despite its growing clinical adoption, the biological characterization of dHAM in dermal repair processes is lacking. This study aims to characterize the structural properties and functional effects of air-dried dHAM* on in vitro cellular responses essential to dermal wound healing processes.

Methods: Human amniotic membrane tissue was prepared using a proprietary process* including gentle cleansing, air-drying, and terminal sterilization. Biocompositional analyses were conducted using histological methods and multiplex protein arrays to quantify extracellular matrix (ECM) constituents, growth factors, angiogenic regulators, and cytokines/chemokines present in dHAM. To evaluate in vitro functional treatment effects, proliferation, IL-1β-induced inflammation, and TGF-β1-induced fibrosis assays were conducted using human dermal fibroblasts (HDFs).

Results: The results demonstrate dHAM retains an intact ECM and a wide spectrum of signaling proteins that function to stimulate granulation, angiogenesis, and aid in reducing inflammation and fibrosis. Notably, dHAM treatment inhibits IL-1β-induced inflammatory protein expression, promotes HDF proliferation, and suppresses TGF-β1-induced gene expression.

Discussion: AM's therapeutic benefit in chronic wound care is associated with its ability to deliver soluble regulatory factors released from a biocompatible ECM reservoir to provide a favorable wound microenvironment. This study provides an in vitro characterization of air-dried dHAM, highlighting its multifaceted properties that aid in dermal wound healing mechanisms.

LR-012

In vitro Assessment of a Methylene Blue and Gentian Violet-containing Foam Dressing and an Advanced Silver-containing Gelling Fiber Dressing Against Surface-associated Antibiotic-resistant Bacteria

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Introduction: Microorganisms in surface-associated/aggregated form are implicated in hard-to-heal wounds and comprise communities embedded in extracellular polymeric substance (EPS) matrices. In vitro studies have assessed the antimicrobial efficacy of wound dressings against this phenotype; however, methods vary in robustness and validity. We evaluated two antimicrobial dressings with distinct mechanisms against antibiotic-resistant bacteria using a stringent, challenging in vitro model.

Methods: A carboxymethylcellulose fiber dressing* containing ionic silver, ethylenediaminetetraacetic acid (EDTA) and benzethonium chloride (BEC; 'CISEB') and a polyvinyl alcohol foam dressing† containing methylene blue and gentian violet ('PVA-MBGV') were evaluated. Challenge bacteria (antibiotic-resistant Pseudomonas aeruginosa [RPA] and community-associated methicillin-resistant Staphylococcus aureus [CA-MRSA]) were separately grown on gauze (simulating surface-associated/aggregated phenotype) and transferred to simulated wound assemblies. Test dressings were applied to the colonized gauzes and covered with a transparent film dressing before incubation for ≤120 hours at 35±3°C. A no-dressing control was included. Enumeration of surviving bacteria was performed for each test dressing (n=3).

Results: PVA-MBGV produced an initial ~0.5 log10 reduction in RPA population at 6 hours, which was sustained throughout the 96-hour challenge period. CISEB reduced the RPA population by ~1.5 log10 at 6 hours and by ~6 log10 at 48 hours (million-fold reduction from initial challenge of ~1×1010 colony-forming units [CFU]/gauze). The kill rate was sustained with the population reaching non-detectable levels (< 30 CFU/gauze) by 96 hours (~8.8 log10 reduction). No reduction in CA-MRSA was observed with PVA-MBGV and population levels remained high throughout the 120-hour challenge period. The initial bacterial challenge (~3×109 CFU/gauze) was sustained at 48 hours with levels comparable to the no-dressing control at the remaining timepoints. CISEB reduced the CA-MRSA population by 1 log10 at 6 hours and >5 log10 at 48 hours. The kill rate was sustained and the population reached non-detectable levels by 96 hours (~8.4 log10 reduction) and 120 hours. The no-dressing controls demonstrated challenge organism viability throughout the test periods.

Discussion: CISEB demonstrated superior antimicrobial activity against surface-associated RPA and CA-MRSA compared with PVA-MBGV, reducing populations to non-detectable levels. The observed activity of CISEB may be attributed to EDTA and BEC that can disrupt EPS matrices, potentiating the antimicrobial activity of ionic silver.

LR-013

In-vitro Evaluation of a Novel Silver-containing Super Absorbent Dressing

Caitlin M. Crews-Stowe, PhD, MPH; Marissa Ransdell, MBA

Introduction: Silver is known to have excellent antimicrobial activity, which is useful in the practice of wound care and the prevention of infections. However, above certain thresholds, silver toxicity can occur, particularly to the keratinocytes and fibroblasts, which can affect wound healing. This study looked to evaluate the safety of a novel silver-containing super absorbent dressing (SAP) intended for use in heavy exudate wounds.

Methods: Triplicate samples of the silver SAP and a silver non-super absorbent dressing, which acted as a control, were cut into 25cm2 pieces and were soaked with a simulated body fluid (SBF) for two minutes and then allowed to drip dry. The silver SAP was then placed in a leaching basket and every 24 hours for a 7-day period, 50mL of the SBF was poured

onto the dressings. The dressings were then placed into a release solution and then the solution was examined by atomic absorption spectrophotometer to determine the rate of silver ion release.

Results: The maximum daily amount of silver that was released by the novel silver SAP during the 7-day study period was 117 micrograms. This was comparable to the control silver non-SAP dressing, which released 115 micrograms, and both of these readings occurred on day one. The cumulative dose of silver for the silver SAP was 765 mcg, which again was comparable to the control silver non-SAP, whose cumulative dose was 741 mcg.

Discussion: The silver-containing super absorbent dressing did not significantly increase risk for silver toxicity in non-intact skin, with the daily maximum level that was released was well below the World Health Organization silver toxicity reference dose of 6.5mcg/kg. This study suggests that the silver super absorbent dressing could be a preferable alternative to silver non-super absorbent wound dressings for the prevention of infection in wounds with exudate.

LR-014

Comparative Analysis of Amniotic Membrane Allografts Modulation of Keratinocyte Activity in Vitro

Isioma Enwerem-Lackland, PhD; Sarah Moreno, MS – MIMEDX Group, Inc.; Michelle Massee, BS; John Harper, PhD

Introduction: Re-epithelialization, the process of restoring a protective epithelial barrier over a wound, is driven by cellular mechanisms that depend on regulatory proteins to facilitate keratinocyte migration and proliferation [1]. This is the final phase in the healing cascade and for chronic wounds, wound closure is often facilitated by an advanced intervention like placental-based allografts. This study evaluates the ability of different placental allograft configurations to promote re-epithelialization in vitro. The products assessed included two multi-layer products: a lyophilized human amnion chorion membrane (LHACM*), a dehydrated human amnion chorion membrane (DHACM#), and two single-layer products: a lyophilized single-layer amnion (SA) and a lyophilized single-layer chorion (SC).

Methods: Allografts were prepared using the PURION® process, which includes gentle cleansing, lyophilization or dehydration, and terminal sterilization. Histological analysis using hematoxylin and eosin (H&E) staining and immunofluorescence (IF) characterized structural and compositional differences. Multiplex Luminex assays quantified regulatory proteins related to epithelialization in allograft extracts. Subsequent analysis of the functional activity of these extracts was evaluated in migration and proliferation assays using HaCaT cells, an immortalized human keratinocyte cell line. All comparisons were performed using equivalent surface area to volume ratios to model clinical application.

Results: The structural composition of each allograft was assessed using H&E staining, allowing visualization of the physical differences of each product. Immunofluorescence staining identified collagen I and IV, providing additional information on allograft composition. Luminex assays showed allograft extracts contained factors associated with re-epithelialization. All products promoted cellular migration at the highest concentration tested. At the lowest concentration, only the multi-layered products (LHACM and DHACM) demonstrated accelerated scratch wound closure. Similarly, all products promoted keratinocyte proliferation at the highest concentration, however at the lowest concentration, only LHACM showed a significant effect.

Discussion: The findings from this study suggest that amniotic allografts can activate keratinocytes, promoting both proliferation and migration in vitro. However, the configuration of the tissue allograft does appear to affect the efficacy in this model. This research provides valuable insights into the potential uses of different configurations of amniotic membrane products to support an optimal wound healing environment. By fostering keratinocyte function, these products may play a critical role in supporting re-epithelialization during wound repair.

LR-015

Tri-layer Amniotic Membrane Allografts Promotes Re-epithelialization in Vitro and Ex Vivo

Isioma Enwerem-Lackland, PhD; Sarah Moreno, MS – MIMEDX Group, Inc.; Michelle Massee, BS; John Harper, PhD

Introduction: Re-epithelialization is the process of restoring the skin barrier by forming a new epithelial layer over a wound. This process is regulated by various proteins that coordinate keratinocyte cell migration and proliferation. This study investigates the ability of a tri-layer lyophilized human amnion chorion membrane (LHACM*), composed of the amnion, intermediate, and chorion layers, to enhance re-epithelialization using both an in vitro and ex vivo model.

Methods: LHACM was prepared using the PURION® process, which involves gentle cleansing, followed by lyophilization and terminal sterilization. Multiplex Luminex assays were employed to detect and quantify factors responsible for promoting re-epithelialization in LHACM extract. Effects on cellular proliferation and migration were evaluated in HaCaT cells, an immortalized human keratinocyte cell line. Furthermore, the effects of LHACM on re-epithelialization were evaluated using a human ex vivo skin model. In this model, 11 mm-diameter human skin biopsies were wounded by excising a 2 mm-diameter circle of epidermis. The wounds were treated by overlaying a 4 mm-diameter LHACM graft, with the chorion side facing down.

Results: The LHACM extract contains soluble factors that promote keratinocyte migration and proliferation. Treatment with LHACM extract significantly enhanced HaCaT cell proliferation in vitro and accelerated wound closure, indicating increased cellular migration. In the ex vivo wound model, LHACM grafts facilitated the migration of activated keratinocytes into the wound bed, further supporting its role in re-epithelialization.

Discussion: These findings demonstrate that LHACM stimulates keratinocyte activity, enhancing both proliferation and migration in vitro and promoting keratinocyte migration in an ex vivo model. The results highlight the potential of LHACM to create an optimal wound healing environment by supporting key aspects of re-epithelialization. This study provides valuable insights into the therapeutic applications of LHACM for improving wound healing outcomes.

LR-016

Temporal Regulation of a Cellular Stress Response Transcriptional Program in a Murine Model of Radiation-induced Skin Injury

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Introduction: Radiation-induced skin injury encompasses moderate to severe cutaneous complications of radiation exposure, with an incidence of 90% among patients undergoing radiotherapy and a negative impact on quality of life.

Methods: To elucidate the temporal genomic signature of radiation wounding in the skin, mice were treated with 30Gy radiation delivered in fractionated doses over a 12-day period, with non-irradiated age- and sex-matched mice serving as controls. RNA sequencing was performed on irradiated and control skin at 1 week and 4 weeks post-treatment (n=5 mice per control/irradiated group per time point).

Results: By Ingenuity Pathway Analysis, top enriched pathways post-radiation involved cellular stress responses, including senescence (p=3.4e-12), DNA damage (p=3.6e-7), p53 activation (p=2.57e-4), and sonic hedgehog signaling (p=1.5e-6). Differentially expressed genes belonging to multiple stress response pathways (Brca1, Mybl2, Ptch2, Cdk1, Shh) were selected for further validation by qPCR in an expanded group of mice. Interestingly, these genes were downregulated in the skin 1 week post-irradiation (Mybl2 p=0.024, fold change (FC)=-2.71; Ptch2 p=0.022, FC=-9.7), but then upregulated at Week 4 (Mybl2 p=0.004, FC=+3.6; Brca1 p=0.002, FC=+5.4; Cdk1 p=0.0019, FC=+6.01)), suggesting a biphasic cellular stress response.

Discussion: Further studies are indicated to determine the skin structures and cell types driving this transcriptomic response in the weeks following radiation. Further understanding of the cellular stress wounding

response after radiation can pave the way for early therapeutic interventions to mitigate cutaneous complications and improve clinical outcomes.

LR-017

An in vitro Study Investigating the Impact of Perspiration on the Coefficient of Friction Between Multilayered Wound Dressings and a Skin Substitute

Amit Gefen, PHD; Jordan Fisk, Masters – Convatec

Introduction: A high coefficient of friction (COF) between dressings and skin can increase soft tissue exposure to shear forces, raising the risk of pressure injuries. Many dressings used for pressure injury prevention (PIP) include an adhesive silicone skin-contact layer that transfers frictional forces inward, potentially counteracting their PIP effect. This study compared COFs of two multilayer dressings, one with a silicone skin-contact layer and one with a Hydrofiber skin-contact layer, in an in vitro model which accounted for perspiration.

Methods: COFs were measured using a sled test based on ASTM D1894-14. Dragon skin was cast at 3.5 mm. Dressings were applied to a 63.5x63.5 mm sled weighing 200 g, with an additional 3 kg for silicone dressings due to their high COFs. Simulated perspiration used a water/sodium/calcium ions solution, sprayed at 0.3 g increments. Sled speed was 150 mm/min.

Results: At 5% and 10% dressing saturation, Hydrofiber COFs were 0.52 ± 0.05 and 0.28 ± 0.03 (static), and 0.47 ± 0.05 and 0.25 ± 0.02 (kinetic), showing no statistically significant changes as moisture levels increased. Regardless of dressing saturation level the COF values were significantly higher for silicone, at a 100% dressing saturation the COF values were 2.07 ± 0.20 (static) and 1.47 ± 0.17 (kinetic).

Discussion: A novel multilayer dressing with Hydrofiber skin-contact layer* demonstrated lower COFs compared to silicone, reducing tissue shear exposure. Even in low-sweat areas, natural moisture accumulation could further minimise Hydrofiber COFs, making this beneficial for direct skin contact in a PIP dressing.

LR-018

In Vitro Efficacy of a New Formulation Combining Topical Exosome-loaded Gel with Antibiotic Against Gram Positive and Negative Bacteria

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Introduction: Bacterial resistance to antibiotics is an important problem, especially in non-healing wounds. Two of the most commons pathogens associated with these infections are Staphylococcus aureus and Acinetobacter baumannii. Exosomes are lipid bilayer-delimited particles that are naturally released from almost all types of cells but, unlike a cell, cannot replicate. They serve as a fundamental intercellular communication system and have shown efficacy in tissue repair. In this in vitro study, we examined the use of antibiotic-loaded exosomes formulated with synthetic liposomes to treat and prevent wound infections.

Methods: Fresh cultures of bacterial pathogenic isolate obtained directly from American Type Culture Collection (ATCC), Rockville, Maryland, were used in these studies, specifically Methicillin Resistant Staphylococcus aureus MRSA USA300 (MRSA USA300) and Acinetobacter baumannii ATCC 19606 (AB19606). Prior to evaluating zones of inhibition, minimal inhibitory concentrations (MIC) for each pathogen were determined. A modified Kirby Bauer technique was then used to demonstrate the efficacy of topical exosome-loaded gels containing the antibiotic Moxifloxacin (MOX). Inhibition zones were measured using ImageJ. Results were tabulated, and statistical analysis was performed to demonstrate the differences between treatments.

Results: MIC testing resulted in an inhibitory MOX concentration of 32 mg/ml and 256 mg/ml for AB19606 and MRSA USA300, respectively. MOX alone and in combination with topical exosome-loaded gels resulted in significant ($p \leq 0.05$) zones of inhibition compared to vehicles and untreated controls. Inhibition zone areas against MRSA USA300 and AB19606 ranged between 30-43 cm2.

Discussion: Our results demonstrated that MOX can be loaded into the topical exosome-loaded gels and has significant antimicrobial activity against two common wound pathogens. These results warrant future preclinical and clinical studies to substantiate their use in preventing or treating wound infections.

Acknowledgements: This work was supported by US Army Medical Research and Development Command Contract HT9425-24-P-0035. The views, opinions, and findings are those of the author(s) and should not be construed as official Army or DHA position, policy or decision unless designated by other documentation.

LR-020

Assessing a New in-vitro Wound Model as a Pre-clinical Test for Evaluating the Adherent Properties of Wound Dressings

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Introduction: Premature disruption of the fibrin clot within a wound can cause the patient significant pain and negatively impact the wound healing process leading to delayed/stalled healing, excessive scar tissue formation, and potential infection. Therefore, it's important that the dressings selected to treat wounds should be designed to resist adhesion to the wound bed. Currently, pre-clinical assessments of wound dressings with non-adherent/non-stick technologies are conducted using in-vivo, partial-thickness dermal wound models. Not only are such studies expensive and time consuming, but there has been a recent push by regulatory agencies for the development and adoption of comparable in-vitro assays due to the ethical issues associated with animal testing. In this study, we compared the performance of different non-adherent/non-stick pads using both a new standardized in-vitro fibrin clot adhesion test and a conventional in-vivo wound model to assess the ability of this in-vitro test to replace the in-vivo model.

Methods: Two different non-stick pads and a gauze control were examined for their ability to resist adhesion to a simulated fibrin clot1, prepared by mixing fibrinogen with thrombin in PBS containing BSA at room temperature. The fibrin clots were sandwiched between two pieces of the test article and incubated for 24-hours. A tensile tester measured the average maximum peel force (MPF) exhibited by each test article. Additionally, each test article was examined using a conventional in-vivo partial-thickness, dermal wound model.

Results: The in-vitro model was able to appropriately distinguish the difference in wound adhesion strength of non-stick pads and gauze controls, which exhibited MPF of 0.17-0.29N and 2.77N, respectively. When examined using an in-vivo wound model, all test articles examined exhibited MPF that were consistently 10x greater, which is to be expected given the additional complexity of in-vivo models.

Discussion: This study demonstrates that the in-vitro wound model examined can be utilized to provide invaluable insight into how different "non-stick" dressing technologies/approaches would perform in an in-vivo environment. As such, adoption of this in-vitro model could reduce, or eliminate, problems commonly associated with conducting conventional in-vivo studies (i.e., high costs, long time frames, and ethical concerns regarding the use of animals).

LR-021

Anti-microbial Efficacy of Silicone-based Nitric Oxide-releasing Wound Dressings in a Dermal Porcine Wound Model

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Introduction: Nitric oxide (NO) is a short-lived, diatomic, lipophilic gas with antimicrobial activity. Several in-vitro and in-vivo studies have demonstrated the efficacy of NO in microbial reduction. Recently, NO and its derivatives have been shown to exhibit broad-spectrum antimicrobial activity against bacteria, viruses, and parasites. The objective of this study was to assess the efficacy of various topical PDMS (silicone)-based nitric oxide formulations on microbial reduction and healing using a porcine wound model. A NO donor (SNAP; S-nitroso-N-acetylpenicillamine) was utilized to continually release NO gas from the PDMS film to the wound surface.

Methods: Thirty-three (33) deep reticular dermal wounds (22mm x 22mm x 3mm deep) were made with a specialized electrokeratome in 4 animals. Methicillin Resistant Staphylococcus aureus USA300 (MRSA USA300) or Pseudomonas aeruginosa PA 090-010 (PA: military isolation) were inoculated in 2 animals per organism. After 24 hours, the dressings were removed, and three wounds were recovered for baseline enumeration. Wounds were randomly assigned to one of the following treatment groups: A- NO donor loaded at 10 wt%, B- PDMS Vehicle Control, C- Silver Sulfadiazine Positive Control and D- Untreated Control. Wounds were recovered on days 7 and 12 and assessed for bacterial burden and wound healing.

Results: Significant reductions ($p \leq 0.05$) were observed in wounds treated with NO donor 10 wt% infected either with MRSA USA300 or PA09-010, compared to baseline and untreated control. Wounds treated with the NO donor 10 wt% demonstrated a 99.8% reduction of MRSA compared with untreated wounds. In wounds infected with PA09-010 reductions exhibited values of 93.7% compared to untreated control. In wounds infected with MRSA USA300 and treated with NO donor 10 wt%, significant reductions ($p \leq 0.05$) were also observed against PDMS Vehicle Control and Silver Sulfadiazine. No detrimental effects on wound healing were observed by NO donor loaded PDMS films at 10 wt%.

Discussion: NO rapidly decreased wound bacterial count significantly, suggesting an important advance in the treatment of infected wounds. These studies may have important clinical implications in eradication of bacteria in open wounds with topically applied nitric oxide (NO)-releasing wound dressings.

LR-022

Proteomic Analysis of Adipose Forms Used in 3D Printing Grafts for Healing Chronic Skin Wounds

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Introduction: The application of 3D-printed adipose-derived grafts holds promise for the treatment of chronic skin wounds by promoting enhanced tissue regeneration. This study aims to map the proteomic profile of human adipose tissue at various stages of processing to identify key biomarkers that contribute to wound healing outcomes.

Methods: Using the microarray Q4000 assay, the proteomic content was analyzed across four adipose forms: raw, micronized, gelled, and frozen. The influence of different sterilization methods, including supercritical carbon dioxide ($SrCO_2$) and electron beam (e-beam), on protein integrity was also evaluated. This proteomic mapping provides insight into how processing and sterilization impact the regenerative potential of adipose-derived grafts.

Results: Preliminary findings indicate significant differences in the total protein content and distribution among the different adipose forms, as visualized through colorimetric dye assays and SDS gel electrophoresis. The comparison between $SrCO_2$ and e-beam sterilization demonstrated distinct proteomic patterns, suggesting that sterilization methods may play a critical role in preserving bioactive proteins. Heatmap data analysis revealed unique proteomic signatures at each stage of processing, highlighting variations in biomarker abundance that could impact the graft's effectiveness in chronic wound healing applications.

Discussion: This comprehensive proteomic analysis underscores the importance of manufacturing processes in optimizing adipose-derived grafts for 3D printing applications. By mapping the biomarker profiles through various stages of adipose processing and evaluating the effects of sterilization methods, this study provides valuable insights into the selection of optimal adipose forms for graft fabrication. The findings contribute to the growing body of knowledge in regenerative medicine and offer practical implications for the development of personalized wound healing therapies.

LR-023

The Effect of Copper-iodine Complex Solution on the Killing and Antimicrobial Persistence of Two Candida Species (C. Albicans and C. Auris): An in vitro Model

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Introduction: Yeast infections, such as that produced by Candida spp., are common in chronic wounds and burns. C. albicans-related infection has multiple treatment options, both topical and pharmacological. However, C. auris is an emerging World Health Organization threat with no known pharmacologic treatment course and can lead to morbidity and mortality. The purpose of this in vitro study is to demonstrate the killing effect and antimicrobial persistence of copper iodine irrigation solution (CICS) on two yeast species.

Methods: Each test article (CICS or 1 ppm Lugol's iodine) was inoculated with ~105 CFU/mL of C. albicans or C. auris.

After a 10-minute exposure time (sample 0 mins), samples were neutralized, diluted, and plated. To assess the antimicrobial persistence, the same samples were rechallenged by renoculating~105 CFU/mL of each organism

at 10 mins, 2 hours, 5 hours, and 24 hours and neutralized after a 10-minute exposure time.

Results: High antimicrobial efficacy (>99.999% or 5 log reduction) of CICS was demonstrated when rechallenged by reinoculations over 24 hours for both C. albicans and C. auris. Lugol's iodine showed loss of activity in 2 hours of exposure.

Discussion: Copper-Iodine Complex Solution demonstrated an effective kill rate and antifungal persistence in vitro with both C. albicans and C. auris. This has significant implications for acute and chronic wounds, trauma and burns, especially when there is no present medicinal treatment for C. auris. Further studies are warranted to support these findings.

LR-025

Comparative Analysis of Xenograft ECM Particulates for Wound Management Applications

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Introduction: During wound healing, the extracellular matrix (ECM) is rebuilt to provide a structural framework allowing for cell migration and proliferation to repair the defect. When necessary, an advanced biomaterial may be used to supplement or expedite this process. Naturally-derived scaffolds from animal tissues rely on the inherent composition and organization of the ECM which is largely comprised of macromolecules such as collagen. Collagen-based scaffolds not only trigger essential processes such as cell adhesion, migration, chemotaxis, and tissue development but also offer properties that facilitate the infiltration of cells while being biocompatible, biodegradable, and non-toxic.1 This study compared the in vivo biocompatibility of xenograft ECM scaffolds from bovine*, porcine#, and piscine$ sources.

Methods: Hematoxylin and eosin (H&E) staining was used to visualize the structure of each ECM particulate. The in vivo response was evaluated after subcutaneous implantation of each ECM particulate in athymic nude mice, followed by histological and immunofluorescent assessment of the implant sites at 1, 2, and 4 weeks post-implantation. H&E staining was used for the histopathological assessment to evaluate parameters associated with biocompatibility. Collagen deposition was demonstrated through immunofluorescence analysis.

Results: Histological analysis shows the particulate structure and collagen type I composition with the exception of the piscine product for which a commercially available COL I antibody was unavailable. Following subcutaneous implantation of each ECM particulate, the piscine ECM particulate showed evidence of inflammation associated with early tissue degradation. The bovine and porcine ECM scaffolds elicited minimal inflammation and exhibited matrix remodeling associated with cell infiltration over time. Neovascularization was evident with all ECM scaffolds. Collagen deposition was present at each time point for all products.

Discussion: The study demonstrates the in vivo biocompatibility of xenograft ECM scaffolds. The source material impacted the inflammatory response and rate of tissue degradation. This study highlights the ability of ECM scaffolds to support wound management, particularly in deep wounds where the scaffold can conform to the surface of the wound.

LR-026

In Situ Colorimetric Nanofiber Membrane for Bacterial Detection at Wound Sites: Validation of Accuracy and Visual Feasibility

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Introduction: Detecting infections in wound care remains a significant challenge, particularly in hospitals and home care settings. Current clinical methods, such as swabbing and culturing, are time-intensive, require specialized training, and delay critical intervention. By the time physical symptoms appear, bacterial loads may exceed critical thresholds, increasing the risk of systemic infections. To address this, we developed an in situ colorimetric nanofiber membrane capable of real-time detection of bacteria at concentrations below infection levels. Unlike existing technologies requiring expensive equipment, our membrane offers a cost-effective, user-friendly solution that changes color from yellow to green in response to bacterial lipase, allowing detection with the naked eye.

Methods: The membrane was fabricated using electrospinning, combining a core solution of polyurethane with a shell solution containing polyurethane, polyvinylpyrrolidone, hemicyanine dye, citric acid, and Tween 80. We evaluated its response to bacterial lipase and its specificity by exposing it to solutions of salts (containing Na, Mg, K, Fe) and proteins (bovine serum albumin and fetal bovine serum rich in different enzymes and proteins). To assess usability across various settings, we tested the membrane under different lighting conditions (daylight, cool light, and biosafety cabinet light) and angles (45° and straight). Color changes were quantitatively analyzed using spectrophotometry, recording CIELAB and HEX# values as reference controls.

Results: The biosensor demonstrated high specificity to bacterial lipase, with no false positives observed in the presence of salts or proteins. Bacterial tests confirmed that the color change was easily distinguishable under diverse lighting conditions, with only minor variations between the colors under different light but significant difference to control without bacteria. These findings validate the biosensor's reliability and practicality for real-time bacterial detection.

Discussion: This in situ nanofibrous colorimetric biosensor offers a promising solution for early bacterial detection in wounds, reducing risks and financial burdens on patients and healthcare systems. Its simplicity, accuracy, and adaptability make it suitable for various applications, including hospitals, home care, and battlefield settings, empowering even untrained users to monitor wound infections effectively before its progress to systemic infection or damaging adjunct tissues.

LR-028

Preservation of Fundamental Molecular and Stromal Components via Retention Processing

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Introduction: Growth factors, cytokines, and chemokines are key elements associated with wound treatment modalities. Placental membrane grafts are used as wound coverings providing an optimal wound environment. Previous techniques for producing these grafts show a loss in these beneficial properties by primarily focusing on removal of non-solid matrix components. In an effort to retain as much of the natural matrix as possible and to preserve the beneficial factors, a retention-based method was developed (BioREtain®), utilizing gentle processing. We tested the impact of this processing regime on stromal and molecular content.

Methods: Five separate lots of retention-processed final product tri-layer amnion/chorion grafts (RE-AC) were assessed for structural components and molecular factors. This was achieved by histology, scanning electron microscopy (SEM), and cytokine analysis by enzyme-linked immunosorbent assay (ELISA). Products were reported as amount of factor per cm2.

Results: Data obtained from this study show the retention of structure as well as the preservation of numerous factors in RE-AC placental tissue grafts. It also shows the retention of components compared to the native tissue.

Discussion: This study highlights the hypothesis that retention-based processing demonstrates conservation of structural and molecular components.

LR-029

The Role of Nitric Oxide in the Killing and Prevention of Surface-associated Bacterial Communities by a Prototype Nitric Oxide-generating Wound Dressing

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Introduction: Hard-to-heal wounds, such as diabetic foot ulcers, pose a significant clinical challenge, resulting in poor patient quality of life and

substantial economic burden. The aim of these in vitro studies was to demonstrate the activity of nitric oxide (NO), based on acidified sodium nitrite ($NaNO_2$), within a novel prototype NO-generating wound dressing technology*, against surface-associated bacterial communities.

Methods: Initial prototype test dressings comprised upper absorbent layers plus lower carrier layers (CL) containing varying concentrations of $NaNO_2$. To examine killing effects, surface-associated communities of methicillin-resistant Staphylococcus aureus (MRSA) were grown on nitrocellulose filters for 24 hours, before prototype/control dressings were applied. To assess the prevention of development of surface-associated communities, planktonic MRSA-inoculated filters were immediately covered with prototype/control dressings for 24 hours. The effect of treatment time with a final dressing design* containing a 1M $NaNO_2$ CL was assessed regularly over a 24-hour period to evaluate killing and prevention of surface-associated bacterial communities.

Results: Surface-associated MRSA was reduced by 3 log10 in 24 hours by prototypes with CL containing 0.2M $NaNO_2$, and was eradicated by dressings with CL containing 0.5M $NaNO_2$. Development of surface-associated MRSA communities was not prevented by dressings with CL containing 0.1M $NaNO_2$, but was completely prevented by dressings with CL containing 0.2M $NaNO_2$, after 24 hours. Using final design NO-generating wound dressings* with CL containing 1M $NaNO_2$, surface-associated MRSA was reduced by 3 log10 after 2 hours, by >7 log10 after 4 hours, and completely eradicated after 6 hours. Development of surface-associated MRSA communities was completely prevented after 6 hours by the NO-generating wound dressing*.

Discussion: In vitro models of kill and prevention of surface-associated MRSA communities showed that varying the concentration of $NaNO_2$ used to generate NO, and varying the duration of treatment with the final dressing*, resulted in a dose-response effect on the kill and prevention of surface-associated MRSA communities. The prototype NO-generating dressing* can effectively kill and prevent development of surface-associated bacteria in vitro.

LR-032

Antibiofilm Activity of Novel Silver Complex in Dressings and Gels Against Drug Resistant Microorganisms

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Introduction: Previous studies demonstrated that Ag5IO6 coated onto dressings1 and incorporated into wound gels2 has rapid anti-planktonic activity, broad-spectrum anti-adherence longevity, and efficacy against mature biofilms, including when compared to other commercially available silver wound dressings and gels. This study tested Ag5IO6-coated dressings against C. auris, an emerging antimicrobial-resistant fungus causing a serious global health threat, and various antimicrobial-resistant bacteria.

Methods: Ag5IO6 was coated onto three non-adhesive wound dressings at varying concentrations. Anti-Adherence Testing: Dressings were preconditioned in saline for 0, 1, 7, 14, or 28 days (changes 3x/week) and challenged with methicillin resistant Staphylococcus aureus (MRSA, USA 400), coagulase negative Staphylococcus epidermidis (CoNS, ATCC 35984), vancomycin resistant Enterococcus faecalis (VRE, ATCC 51575), Candida auris (CDC B11903) and Acinetobacter baumannii (ATCC 17978) at 105 CFU/mL in appropriate media in 0.9% saline containing 25% human serum (HS - most strains) or 10 g/L bovine serum albumin (A. baumannii), for 24h (35°C, 110 rpm). Dressings were then placed in neutralizer (supplemented Dey-Engley broth), and sonicated for 30 minutes to dislodge adhered biomass. Challenge media was also neutralized for planktonic organism recovery. Colony forming units (CFU) of both adhered and planktonic microorganisms were enumerated by culture-based methods. Anti-biofilm Testing: Dressings were tested against pre-formed biofilms of the microorganisms listed above using a modification of ASTM E27993. Mature biofilms were challenged with 1-2 dressing discs in appropriate media containing 25% HS for 24h (35°C, 110 rpm), and recovered as above.

Results: All Ag5IO6-coated dressings showed strong anti-adherence and anti-planktonic activity against all microorganisms up to 7 days. At 14-28 days, there was some drop-off in activity with some concentration-microorganism combinations, but many combinations still demonstrated ongoing bactericidal activity up to 28 days. In antibiofilm testing, high-concentration Ag5IO6-coated dressings demonstrated consistent elimination of mature biofilms and surrounding planktonic microorganisms with 1 or 2 discs, with the exception of C. auris biofilms and 1 disc against A. baumannii biofilm. Medium-concentration dressings showed bactericidal activity against some microorganisms, while the lowest concentration did not achieve log 3 reductions.

Discussion: In general, Ag5IO6 coated onto wound dressings demonstrated strong anti-adherence and antibiofilm activity against antibiotic-resistant microorganisms.

LR-034

Upping the Game! Applying Clinically Relevant Laboratory Tests to the Evaluation of an Innovative, Non-bordered Foam Dressing

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Introduction: Wound dressings are designed to create an optimal microenvironment that supports healing, with effective management of wound exudate being a key function. Key properties such as absorption, retention, and vapour permeability enable dressings to maintain moisture balance and prevent complications like maceration. Additionally, dressings must handle exudate of varying compositions under mechanical forces, e.g. compression bandaging or gravitational pull. Recent studies emphasise the need for clinically relevant testing standards to enable objective, standardised comparisons between dressings.

Methods: In vitro methods were used to evaluate the fluid handling capacity (FHC) and fluid retention capacity (FRC) of an innovative, dimpled, soft silicone-coated non-bordered foam dressing* and five other commercially available foam dressings following EN 13726:2023 standards. To better replicate clinical conditions, advanced tests were conducted using the FLUHTE (FLUid Handling Test Equipment) wound simulator with simulated wound fluid (SWF-A) (3), which mimics wound exudate properties. Dressings were positioned vertically on the FLUHTE to simulate the effects of gravity on fluid movement.

Results: The EN 13726:2023 standard methods revealed substantial differences in fluid handling performance among the six non-bordered foam dressings tested. The innovative, dimpled, soft silicone-coated non-bordered foam dressing* outperformed the other five in FHC and/or FRC tests, demonstrating its absorption, retention, and vapour release capabilities. When evaluated using the FLUHTE wound simulator, the innovative dressing* maintained excellent performance even under the additional challenge of compression bandaging. These findings underscore the limitations of the EN 13726:2023 standard and highlight the importance of dynamic methods like FLUHTE for replicating real-world conditions and delivering clinically relevant insights.

Discussion: The innovative, dimpled, soft silicone-coated non-bordered foam dressing* demonstrated unique fluid handling performance, even under mechanical forces such as compression or gravity. These findings support expanding the EN 13726:2023 standard to incorporate dynamic testing methods like FLUHTE. Adopting such advancements would better align dressing performance metrics with the complexities of wound care, ultimately supporting improved clinical outcomes.

LR-036

Mechanochromic Shape Memory Polymers for Chronic Wound Infection Surveillance

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Introduction: Current clinical options for chronic wound biofilm detection and quantification are limited. Our lab developed a segmented polyurethane (PUR) shape memory polymer that changes shape in the presence of bacteria to aid in biofilm detection.[1] To improve surveillance capabilities, this study explored the incorporation of spiropyran (SP) mechanophores into the PUR. These chromogenic compounds reversibly generate optical variations in fluorescence and color due to conversion of the inactivated spiropyran (SP) to the activated merocyanine (MC) form in response to external stimuli, such as force or light, thereby acting as molecular force sensors. We hypothesized that SP-containing PUR (PUR/SP) wound dressings would undergo simultaneous shape and color changes in the presence of bacteria to give a visible biofilm cue.

Methods: Small quantities of the SP were dissolved in solutions of PURs with different hard to soft segment ratios. The PUR/SP films were formed by solvent-casting. Mechanochromic behavior was studied by heating the films, straining, cooling, and imaging using fluorescent microscopy. Dynamic shape and fluorescence change studies were carried out using confocal microscopy and dynamic mechanical analysis. The effect of spiropyran concentration on cytocompatibility was also studied.

Results: Strained samples showed increased fluorescence (up to 56%, $p < 0.05$), which was reversed upon shape recovery. Mechanochromic behavior of the PUR/SP films was affected by the ratio of hard to soft segment of the PUR, SP concentration, and strain amounts. However, these effects were not linear. The observed non-linear mechanochromic behavior may be attributed to the solvatochromism phenomenon. In that case, the solvent and/or the polymer matrix could be responsible for a weak equilibrium between the SP and the MC forms. Samples with the highest SP concentration were cytocompatible (>98% viability).

Discussion: These results conveyed the potential to use SP in our PUR system as a molecular force probe, providing color-based biofilm detection in chronic wounds. Current work is focused on modifying polymer matrix chemistry to achieve more stability in force-linked equilibrium displacement towards the MC and vice versa. In the long-term, this system could be used to provide a visual cue of infection in chronic wounds to improve surveillance efforts.

LR-037

Superior Exudate Managemeng with Antimicrobial Effect - A New Gelling Fiber Dressing and the in Vitro Performance

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Introduction: Modern antimicrobial wound dressing technologies are highly effective in killing bacteria while also ensuring efficient exudate management. This study evaluates the performance of a new gelling fiber A* with a comparator gelling fiber B# key performance parameters such as: absorption under pressure, surface shrinkage, wet strength. Also evaluates antibacterial performance and microbial barrier testing.

Methods: Tests were performed at Coloplast (Denmark): Absorption under pressure; Surface shrinkage upon wetting; Wet strength in weakest direction; Antimicrobial performance (AATCC TM100-2019); Microbial Barrier Testing.

Results: For all technical tests, the mean and SD (Standard Deviation) were based on testing of several dressing samples (n specified in the results section). Technical performance results are presented as mean ± SD. Regarding antimicrobial testing, the observed log reductions demonstrate that the A* product has antimicrobial activity towards both bacteria and fungi with log reductions greater than 4 for all tested microorganisms. Similar performance was observed for gelling fiber #B. On microbial barrier testing, the observed growth patterns support the conclusion that A* and B# have microbial barrier properties.

Discussion: Gelliing Fiber A* mean absorption under pressure is significant higher, $P < 0.0001$. Gelling fiber A* mean surface shrinkage is significantly lower, $P < 0.0001$. Gelling fiber A* mean retention capacity is significant higher, $P < 0.0001$. To conclude, the new gelling fiber A# combines high technical performance with antimicrobial properties. The effective exudate management and minimal shrinkage, reduce exudate pooling and may lead to a reduction in the risk of infection and maceration.

LR-038

Human Cell Lysate-infused Collagen Hydrogel* Shows Increased Wound Healing and Unremarkable Safety in a Porcine Model

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Introduction: Chronic wounds represent a significant burden on both individuals and healthcare systems worldwide. Affecting approximately 6.5 million people in the United States alone, these non-healing wounds impact about 1 in 38 adults annually. The economic toll is staggering, with annual management costs estimated between $28.1 billion and $96.8 billion. In the Medicare population, chronic wounds affect nearly 15% of beneficiaries (8.2 million), costing the program an estimated $28.1 to $31.7 billion annually. Beyond the financial impact, chronic wounds significantly diminish patients' quality of life, affecting physical function, psychological well-being, and social interactions. There is a significant need for efficacious and safe treatment for these patients.

Methods: This study assessed the toxicity and efficacy of a human cell lysate-infused collagen hydrogel* (HCH) for wound healing using Göttingen Minipigs over a 25-day period. The experimental design included three treatment groups: control (saline solution), reference product, and test item (HCH), with wounds monitored at short-term (7 days), mid-term (14 days), and long-term (25 days) intervals. Parameters evaluated included wound healing progression, blood biochemical and hematological profiles, animal welfare, and histopathological analysis of skin and internal organ tissues.

Results: HCH demonstrated significant benefits in wound healing, with faster wound closure and reduced scab formation at mid- and long-term time points compared to controls. Minimal exudate and fewer signs of infection were observed in the HCH-treated wounds. Biochemical and hematological analyses indicated no adverse effects on renal or hepatic biomarkers. Welfare assessments showed that animals maintained good health, with only transient mild discomfort. Necropsy findings revealed no significant abnormalities in treated tissues or internal organs, and histopathological evaluations confirmed improved tissue regeneration in HCH-treated wounds.

Discussion: These results support the safety and efficacy of HCH as a promising therapeutic for wound care and encourage further development toward clinical applications.

LR-039

Human Keratin Matrices Modulate Inflammatory Crosstalk Between Keratinocytes and Macrophages

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Introduction: Keratin biomaterials such as the human keratin matrix (HKM) have shown great promise as a novel wound care product, with recent in vivo and clinical studies demonstrating accelerated chronic wound closure[1,2]. In vitro work suggests this is due in part to the ability of keratin to modulate the inflammatory environment[2], specifically macrophage polarization[3], to a

healing phenotype. However, the inflammatory environment of the wound is quite complex, dependent on crosstalk between immune cells and other cells such as keratinocytes. Here, we studied how keratin-driven changes in macrophage biology influence healing downstream through intercellular communication to promote epidermal keratinocyte activation.

Methods: 264.7 RAW macrophages were grown on HKM-coated or control tissue culture surfaces for 3 days, and conditioned media (CM) was collected and analyzed for 63 targets using a cytokine microarray. Primary epidermal keratinocytes were grown in CM for 3 days, after which cell and media fractions were probed for markers of keratinocyte activation (TGF-β and heparin-binding epidermal growth factor (HB-EGF)) by ELISA. A scratch assay was also performed keratinocytes grown in CM or control media, and scratch closure was measured.

Results: Analysis of CM from HKM- and control-grown macrophages showed differential expression of multiple cytokines. Keratinocytes grown in CM from HKM-grown macrophages showed significantly ($p< 0.05$) reduced scratch sizes compared to those grown in control media at the same timepoints. However, no statistically significantly differences were detected in keratinocyte TGF-β and HB-EGF expression due to CM, though intracellular fractions showed elevated levels of both proteins compared to media.

Discussion: These results suggest HKM polarized macrophages to an M2-alternative state, aligning with past literature[3]. Differential expression of both inflammatory and anti-inflammatory cytokines in CM from HKM-grown macrophages (e.g. the downregulation of both TNFα and IL-10) did not follow traditional expression patterns of M2 anti-inflammatory macrophages, but instead indicate a transitional phase. Increased migration of keratinocytes exposed to HKM-grown macrophage CM without upregulation of TGF-β and HB-EGF suggest an early-activated keratinocyte phenotype, and further study at longer timepoints may be warranted. This data demonstrates HKM-mediated immunomodulation resulting in differential keratinocyte activity, further supporting the benefit of HKM in wound healing.

LR-040

Understanding Kinetics of Rapidly Vascularizing Composite Collagen Dermal Templates (CCDT)

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Introduction: Reconstitution of skin anatomy following full-thickness skin loss can be achieved using dermal regeneration templates (DRTs) in combination with split-thickness skin grafts (STSGs). However, due to the limited rate of cellular infiltration and vascularization of currently available DRTs, reconstruction typically involves a two-step procedure spaced over several weeks. Our group previously demonstrated that a CCDT consisting of a collagen-based 3D structure with a microarchitecture maximizing differential density promotes enhanced cell and vascular invasion, and that a CCDT of 1.5 mm thickness could be placed with a STSG, resulting in a healed wound with reconstituted neodermal layer in a single-step procedure. Here, a follow-up study explores the underlying mechanisms behind these observations.

Methods: CCDTs were prepared using established protocols. Female Yucatan pigs received 3x3 cm full-thickness skin wounds on their dorsum. Wounds were treated with either CCDT or a market-leading DRT (L-DRT), followed by application of standard dressings. Healing was assessed at three time points (3, 7, and 10 days post-wound creation). Wounds (N=5/group/timepoint) were harvested and analyzed.

Results: By day 3 of the study, CCDT-treated wounds demonstrated 100% engraftment efficiency (5/5 templates) versus 0% (0/5 templates) in the L-DRT group. Additionally, the CCDT group presented superior cellular invasion on day 3, relative to the L-DRT (Fig. 1B). Moreover, by day 3, CCDT templates presented clear evidence of CD31+ cells within the templates, whereas the L-DRT demonstrated sparse individual CD31+ cells on the template/wound interface. This resulted in fully vascularized CCDT templates by day 7, while the L-DRT template achieved only 80% vascularization (Fig. 1A). Assessment of the newly formed dermal tissue revealed significantly greater dermal thickness in CCDT-treated wounds on days 3 and 7 as well as day 10 (Fig. 1C).

Discussion: These findings suggest that CCDT facilitates faster, more effective cellular invasion and vascularization of the template, leading to early, reliable deposition of functional neodermal tissue, outperforming the L-DRT. This establishes a clear paradigm for previous studies, supporting CCDT's efficacy in single stage grafting procedures.

LR-042

The Efficacy of a Nitric Oxide-releasing Formulation on a Nasal Isolate of Methicillin Resistant Staphylococcus aureus in Porcine Wound Model

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Introduction: The colonization of Staphylococcus aureus (SA) acquired in nosocomial infections may contribute to acute and chronic infections. As a commensal microorganism with the ability to form a biofilm, SA can dwell on the skin, nostrils, throat, perineum, and axillae of healthy humans. Nitric oxide (NO) is an endogenously produced gaseous molecule with already demonstrated broad-spectrum antimicrobial activity against several groups of microorganisms. Hydrogels have become a commonly used delivery system and in this study, NO was incorporated into a hydrogel to demonstrate the efficacy to reduce a nasal isolate of methicillin-resistant Staphylococcus aureus in porcine wound model.

Methods: Methicillin-Resistant Staphylococcus aureus MRSA BAA1686 isolated from nasal infection was used in a porcine wound infection model. Deep partial-thickness wounds (10mm x 7mm x 0.5mm) were made on three animals using a specialized electrokeratome. All wounds were inoculated and then covered with polyurethane film dressings for biofilm formation. After 48 hours, three wounds were recovered from each animal for baseline enumeration. The remaining wounds were randomly assigned to six treatment groups and treated once daily. The treatment groups are as follows: NO topical ointments concentrations of 0.3, 0.9 and 1.8%, Vehicle Ointment, Mupirocin 2% (positive control), and Untreated Control. Microbiological recoveries were conducted on day 4 and 7.

Results: The greatest efficacy observed from the NO formulations against MRSA BAA1686 was the 1.8% concentration. This agent was able to reduce more than 99% of bacterial counts when compared to Baseline, Vehicle Ointment, and Untreated Control wounds on both assessment days. Mupirocin 2% was the overall best treatment against MRSA BAA1686 on both assessment days, with a significant reduction ($p\leq0.05$) of 4.70±0.13 Log CFU/mL from day 4 to day 7.

Discussion: Overall, the positive control Mupirocin 2% was the most effective in eliminating MRSA BAA1686 throughout the study. This experiment demonstrated a downward trend from the highest concentration of NO topical ointment formulations to the lowest concentrations on both assessment days (0.3% - 1.8%). Out of all NO topical ointments, the highest concentration (1.8%) was the most effective with the potential to be an alternative treatment against a MRSA nasal strain biofilm.

LR-044

A Novel Chlorinated Biocide Against Bacterial and Dermatophyte Infections Evaluated Using a Porcine Wound Infection Model

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Introduction: Staphylococcus aureus and Pseudomonas aeruginosa are the most frequent pathogens isolated from wound infections which can delay wound healing and lead to chronic wounds.1 Trichophyton rubrum is responsible for most dermatophyte infections worldwide with reported antifungal resistance rising2, and as such there is a need for novel antimicrobial that can effectively reduce diverse microbial infections.

Methods: A porcine model was used, and three animals were assigned to either: Methicillin-Resistant S. aureus USA300 (MRSA USA300), P. aeruginosa ATCC 27312 (PA 27312), or T. rubrum ATCC 28188 (TR28188). Forty-five 10 mm full thickness (infected with MRSA USA300 or PA 27312) or deep partial thickness wounds (infected with TR28188) were created on each animal. After biofilm formation3, baseline wounds were recovered for microbiological analysis, then stabilized chlorinated biocide (via liquid, hydrogel, or combination of both), vehicle and untreated controls were applied and covered with polyurethane film dressing. Betadine povidone-iodine solution and polyhexanide-betaine gel were used for MRSA USA300 and PA 27312 and clotrimazole and miconazole were used for TR28188 as positive controls. Wounds were recovered for microbiological analysis on Days 3 and 7. Histological analysis was performed on the TR28188 samples.

Results: The greatest reduction of MRSA USA300 was observed for wounds treated with chlorinated biocide liquid/hydrogel combination, with a greater than 2 Log CFU/g (99%) reduction compared to untreated control on Day 7. Against PA 27312, polyhexanide-betaine gel exhibited the greatest reduction at Day 3, followed by chlorinated biocide hydrogel yielding 97% and 96% reductions, respectively compared to untreated control, while on day 7, chlorinated biocide combination treated wounds exhibited the lowest PA 27312 counts. Chlorinated biocide combination had the greatest efficacy against TR28188 on Days 3 and 7 compared to untreated control (97% and 98% reduction, respectively). Chlorinated biocide did not exhibit any detriment to wound healing at both time points.

Discussion: The novel chlorinated biocide evaluated in this study demonstrated considerable efficacy against the frequently isolated bacterial pathogens S. aureus and P. aeruginosa as well as the dermatophyte T. rubrum. The broad antimicrobial efficacy observed for this this therapy makes it a promising alternative to current antiseptics or antimicrobials.

LR-045

Smart Solutions for Wound Care: Technology with Hybrid Printed Electronics

Shavini Stuart - TNO

Introduction: Chronic and infected wounds that fail to heal are emerging as a silent epidemic in the healthcare system. Historically, wound management has progressed at a slow pace, with significant advancements occurring only every few decades. This slow pace of innovation must accelerate to address growing challenges. With a projected decline in experienced medical practitioners by 2030 and a rise in populations vulnerable to chronic wounds, the need for standardized, scalable wound monitoring is more critical than ever. Digital tools present a transformative opportunity with the use of Hybrid printed electronics (HPE) which enables flexible, cost-effective and scalable, sustainable wound management solutions through seamless integration within current dressings. Challenges remain however for bridging the gap between technology and healthcare with sensors required to deliver reliable functionality while ensuring wearability and comfort over extended periods. This study investigated the integration of physical temperature sensing and chemical pH sensing to assess their impact on sensor performance and overall dressing functionality.

Methods: Hybrid printed electronics (HPE) was used to fabricate two sensor modalities; a temperature sensor matrix using negative temperature coefficient thermistors (NTC's) and a potentiometric PH electronic components. The use advanced wound dressing material in the form of hydrocolloid or super absorptive foam was used within a laboratory set-up using a hot-plate with heated PH solutions.

Results: The findings highlighted that dressing material properties—such as insulation and the ingress of wound exudate—significantly influence sensor sensitivity and accuracy. The impact of refresh rate for chemical sensors, sensor drift and interference molecules showed high impact for chemical sensors. While for temperature sensors, the placement of the sensors within the material showed a high impact for sensor accuracy and response time with increased water ingress.

Discussion: Future advancements in sensor design could prioritize positioning sensors in a 3D configuration across multiple depths within the dressing or embedding them in matrix structures within multisensory embodiments to achieve more precise calibration. Such innovations have the potential to transform wound care by offering deeper, more accurate insights into the complex and non-homogeneous nature of wounds.

LR-046

Aligning Foam Dressing Performance with Clinical Goals

Laura Swoboda, DNP, APNP, FNP-C, FNP-BC, CWOCN-AP, WOCNF

Introduction: Foam dressings have become a mainstay in modern wound care, offering numerous benefits such as exudate management and a moist wound healing environment. However, not all foam dressings are created equal. Variations in performance characteristics can impact prophylactic outcomes, wound healing & patient comfort. Objectives: (1) To evaluate the microclimate properties of various foam dressings, including moisture vapor transmission rate (MVTR) and temperature; (2) To assess the adhesion properties of foam dressings to different skin types and wound bed conditions; (3) To correlate these laboratory findings with clinical outcomes and patient preferences.

Methods: Foam Dressings: A diverse range of foam dressings with varying composition, thicknesses, absorbency, and adhesive properties were selected; Microclimate Testing: MVTR and temperature were measured using a validated laboratory setup; Adhesion Testing: Peel tests were conducted on standardized skin simulants to assess adhesive strength and detachment mode; Clinical Correlation: A review of clinical findings was performed to identify patient outcomes associated with different foam dressings.

Results: Variations in MVTR and temperature were observed among the different foam dressings. Adhesion strength and detachment mode are influenced by factors such as dressing thickness, adhesive type, and skin condition. Clinical outcomes were correlated with dressing performance characteristics including: MARSI, dermatitis, undisturbed wound healing, economic findings, and wound prophylaxis

Discussion: The findings of this study highlight the importance of considering foam dressing performance characteristics when selecting appropriate products for wound prophylaxis & care. Optimal MVTR and temperature control are essential for maintaining both intact skin and a conducive wound healing environment. Additionally, strong and reliable adhesion is crucial for preventing dressing dislodgement and minimizing skin trauma, but must be tampered with the risk of MARSI. By aligning foam dressing performance with specific clinical goals, healthcare providers can optimize wound care and improve patient outcomes.

Conclusion: Laboratory testing of foam dressing performance characteristics, combined with clinical evidence, can inform evidence-based decision-making in wound care. By understanding the impact of factors such as MVTR, temperature, and adhesion on skin, clinicians can select the most appropriate dressings to achieve optimal outcomes and enhance patient care.

LR-047

Successful Reduction of Matrix Metalloproteinases (MMPs)

and Elastase Activity by a Novel Thermo-reversible Antimicrobial Gel

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Introduction: Chronic wounds can be characterized by elevated levels of harmful matrix metalloproteinases (MMPs), elastase, and presence of biofilms, which often cause prolonged inflammatory response. MMPs and elastase can disrupt normal tissue re-epithelization and delay wound healing. A novel thermo-reversible antimicrobial gel (TRG) containing metal chelating agents, poloxamer 407, and antimicrobial preservative polyhexanide with mildly acidic pH, has been shown to have lasting antimicrobial and antibiofilm activity against wound related pathogens. The TRG's ability to chelate divalent cations required for MMP activity may potentially inhibit these proteases. Additionally, a mildly acidic pH and antimicrobial agent of TRG may reduce the activity of elastase, which requires mildly alkaline pH. This study was aimed at determining the effectiveness of TRG against gelatin-degrading MMPs, and elastase using in vitro models.

Methods: Effect of the TRG on MMP-3 and MMP-9 activity was assessed using agarose-gelatin plates. MMP-3 or MMP-9 plus TRG or untreated enzyme controls were incubated for 24 hours at 37°C and zone of clearance was visualized using Coomassie Blue G250 staining. Microwells containing the neutrophil elastase and colorimetric substrate were treated with TRG, and the absorbance at 405 nm was measured after 5, 10, 20, and 30 minutes of incubation at 37°C. Percent reduction in elastase activity was determined by comparing absorbance for TRG treatment groups relative to untreated controls.

Results: TRG treatment significantly reduced the zone of clearance for two MMPs tested, compared to an untreated control, indicating reduction of MMP-3 and MMP-9 activity. Elastase activity decreased by over 80% for TRG treatment after ≤30 minutes of incubation.

Discussion: Since elevated levels of MMPs and elastases in wounds interrupt normal healing of chronic wounds, reduction of their activity is a key for better wound healing outcomes. This novel TRG is formulated with metal-chelating agents, poloxamer 407 and polyhexanide, is mildly acidic and was effective against detrimental proteases. Taken together, this novel TRG would be a beneficial tool for combating chronic wounds given the effective antimicrobial/antibiofilm properties, as well as anti-protease activities. Further studies would help confirm its anti-protease activity in vivo.

PRACTICE INNOVATIONS

PI-001

Utilizing Technology to Enhance a Comprehensive Pressure Injury Prevention Program to Improve Quality, Efficiency, and Patient Safety Across a Hospital System

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Introduction: The Center for Medicare & Medicaid Services rewards hospitals for the quality of care provided rather than the quantity of services provided1, motivating hospitals to monitor and invest in pressure injury prevention (PIP) strategies. Turning and repositioning are fundamental to PIP, and prior studies reveal turn protocols are adhered to between 42%2 - 66%3 of the time. The aim of this analysis was to evaluate the influence of technology on improving adherence to PIP protocols.

Methods: A 3-hospital system with an established PIP protocol, which included a skin care regimen and preventive foam dressings, analyzed hospital-acquired pressure injury (HAPI) incidence data. The data was used to evaluate the pre- and post- incidence outcomes for all areas which implemented a repositioning reminder system (RRS) and excluded Stage 1 and mucosal membrane pressure injuries.

Results: Hospital 1 implemented the RRS in the intensive care unit (ICU) in January 2022. Comparing the baseline data from calendar year (CY) 2021 to CY 2022 revealed a 44.69% reduction in HAPI incidence in units where the RRS was implemented and an average adherence to turn protocols of 83% for all patients monitored by the RRS. Subtracting the financial investment in the RRS from the estimated pre- and post- HAPI treatment costs4 revealed a greater than 2 million USD return on investment in CY 2022.

Discussion: The reduction in HAPI incidence combined with the positive return on investment supported a systemwide expansion of the RRS and standardization of PIP protocols. Hospital 2 and 3 implemented the RRS in ICUs in September 2022, and Hospitals 1 and 2 expanded the RRS to the progressive care units in September 2023.

PI-002

Nonhealing Neuropathic Ulcer Heals with Novel Transforming Powder Dressing

Rosalyn Barnabee, BSN, CWON

Introduction: Chronic neuropathic diabetic foot ulcers (DFUs) often result from neuropathy, peripheral vascular disease, and unnoticed trauma. This case study explores the innovative use of a Transforming Powder Dressing (TPD) for a 60-year-old diabetic male nurse with a recurrent neuropathic ulcer over the medial malleolus. Following a 2-year healing process for a previous DFU at the same site, the patient developed a new 3.7 x 3.1 x 0.4 cm wound caused by inadvertent thermal injury during a motorcycle ride. Initial treatment with antibiotics and conventional dressings for three weeks showed no improvement. Concerns for risk of amputation led to the consideration of TPD as an alternative therapeutic approach.

Methods: After debridement to remove slough, TPD was applied to the wound. TPD is an extended-wear dressing comprising of polymers that transform into a moist, oxygen-permeable matrix when hydrated, providing a protective environment for wound healing. The dressing was applied initially, with a reapplication on day 27 and 3 additional "top-offs."

Results: By day 60, the TPD matrix had dried into a scab, indicating epithelialization. The scab detached by day 90, revealing complete wound closure without complications. The treatment required only one debridement, two primary dressings, and five total applications of TPD over 90 days (once every 18 days on average).

Discussion: The application of TPD for this recurrent neuropathic DFU demonstrated a faster healing rate, reduced dressing changes, and fewer debridements compared to previous standard care. The patient experienced no adverse events, highlighting the potential of TPD as an effective treatment option for complex wounds.

PI-003

The Quest for a Sustainable Wound Management Solution for Rural Areas of Tropical Developing Countries

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Introduction: Background: A warm climate, poor sanitation, lack of knowledge, and poverty contribute to a disabling wound prevalence that often exceeds 20% in rural areas of tropical developing countries. In this environment, wounds of all types are usually poorly managed at very high cost. Traditional health practitioners and village health workers, rather than health professionals, provide health care in most villages. Problem: Wound management education for these lay health providers should include only sustainable practices which have proven safe and effective in the tropical village setting (they must have ecological validity). An extensive review of the literature found only a few moist improvised dressing solutions, such as a plastic wrap technique which was used on pressure injuries in Japan. No wound coverings which could be sustainable in the tropical village setting were described. Usual practice data in this setting, essential for designing a comparison study, was also completely absent from the published literature.

Methods: An innovative "story completion" data collection method overcame cultural obstacles which have prevented researchers from obtaining meaningful quantitative data in this challenging setting. Village health workers, untrained villagers who perform self-care, and traditional health practitioners ranging from herbalists with Red Cross training to self-proclaimed witch doctors, from a variety of ecosystems and cultures in villages in Ghana, Zambia, and Cambodia, were interviewed to obtain detailed descriptions of their current usual topical wound management.

Results: Wound management practices of nonprofessional health care providers were identified in detail and quantified for the first time. In contrast with untrained villagers, the "wound expert" participants usually revealed a preference for moist treatments, such as bandages or occlusive herbal poultices, regardless of wound type. These experts expressed frustration, because often they cannot meet their goal of reliably providing a moist wound environment. Safe wound cleansing and debridement were described less consistently.

Discussion: These detailed results provided the usual practice data needed to design a comparison study to help ensure the ecological validity (both safety and efficacy) of the Available Technology Dressing (ATD) technique. The data was conclusive: moist wound management is desirable, even in the tropics. The ATD technique is loosely based on improvised dressings from Japan and India, with major modifications make it suitable for the tropical village setting. The RCT was conducted in 2021. The Available Technology Dressing technique has proven useful for a wide variety of wound types and settings.

PI-004

Extended Wear Dressing in Acute Traumatic Wounds: Case Series from a Ukrainian Combat Hospital Shows Reduced Pain, Hospital Stay, and Dressing Changes

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Introduction: Burns, open wounds, and penetrating shrapnel injuries from combat blasts result in immense pain and prolonged recovery, delaying soldiers' return to duty1. In Ukraine, hospitals are overwhelmed with a continuous influx of seriously wounded soldiers, facing over 30,000 new injuries each month2. Conventional wound care products often necessitate multiple dressing changes per day or week, consuming significant medical resources, including time, personnel and materials. Utilizing innovative transforming powder dressings (TPD) that stay in place for extended periods (up to 30 days) can potentially ease the burden on medical facilities and personnel. This case series details four wounded soldiers who were treated with TPD instead of conventional dressings, and describes the outcomes related to frequency of dressing changes, wound complications, wound related pain, and hospital length of stay using TPD.

Methods: Four male soldiers (ages 28-51) with different types of acute traumatic injuries were treated with TPD, including one burn wound and three penetrating shrapnel wounds. All patients received standard care with antibiotics and analgesics, and TPD was applied in place of conventional dressings. Upon hydration with saline, TPD aggregates to form a moist, oxygen-permeable barrier that protects the wound from contamination and supports healing by allowing vapor transpiration of excess fluids. Simple secondary dressings were used over the TPD.

Results: In all four cases, TPD was successfully used by the surgical team and the soldiers themselves during their recovery, including after discharge from the hospital. The soldiers reported a significant reduction in wound-related pain. The use of TPD also facilitated earlier discharge from the hospital (than anticipated for patients receiving conventional wound care treatments), as the wounds continued to heal effectively and were easily managed in combat conditions, with reduced frequency of dressing changes. Throughout the treatment, no complications were observed, and all wounds progressed to complete healing.

Discussion: This case series suggests that TPD is a valuable option for managing acute traumatic wounds in high-volume combat or civilian settings with a shortage of personnel and resources. TPD can play a critical role in conserving medical resources and improving patient outcomes in challenging environments.

PI-005

Multimodal Therapy Treatment in Patient with Extensive and Advanced Hidradentitis Supurativa of Multiple Areas

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Introduction: Hidradenitis suppurativa is a devastating disease, not only physiologically, but pshycologically that affects thousands of patient's daily life. The cases discussed in the report describe the multimodal approach to the patients with focus on surgical reconstruction of the most affected areas and control with medical management to improve long term outcomes

Methods: Multimodal approache to patients with severe hidradenitis suppurativa to improve physical and pschycological well being.

Results: Improvement in heath outcomes and social integration in patient treated medically and surgically

Discussion: Hidradentitis suppurativa is a complex disease that requires multimodal treatment, which includes medical, social and psychosocial support

PI-006

To Compress or Not to Compress: The Development of a Lower Extremity Compression Algorithm

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Introduction: Clinicians managing complex patients frequently face challenges in determining the appropriateness of lower extremity compression therapy. Patients with conditions such as chronic wounds, cellulitis, lymphedema, and mixed etiology may benefit from compression therapy. However, the presence of comorbidities like congestive heart failure, mixed venous and arterial disease, or active cellulitis with or without wounds raises concerns about the potential risks of exacerbating these conditions with compression therapy. There is a vital need to standardize the use of lower extremity compression in acute care, post acute, and in the home health setting.

Methods: The Lower Extremity Compression Algorithm is a clinical decision-making tool designed to assist clinicians in guiding the decision-making process for lower extremity compression. The initial version of the algorithm was developed by acute care Physical Therapists, with expertise in wound care and edema management. A comprehensive literature review identified evidence based best practices for lower extremity compression. The development process involved extensive collaboration across multiple disciplines, including physical therapists, nurses, hospitalists, and vascular surgeons. The final algorithm was reviewed and approved by the hospital's Quality and Safety Department.

Results: The Lower Extremity Compression Algorithm offers comprehensive guidance for the clinical management of patients across various healthcare settings. It includes color-coded sections, reference ranges for Ankle Brachial Index (ABI), and includes information on commonly used compression systems available in most hospitals throughout the United States.

Discussion: Compression therapy is a highly effective treatment for patients with lower extremity edema, acute and chronic lower extremity wounds, lymphedema and various combinations of these conditions. The Lower Extremity Compression Algorithm serves as a practical tool for clinicians across different settings. It offers standardized guidance to assist in clinical decision making regarding the appropriateness of compression therapy, including when to apply it and which compression system is most suitable to optimize patient outcomes.

PI-007

Accelerating Patient Transitions from Hospital to Home with Single Use Negative Pressure Wound Therapy: A Discharge Pathway

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Introduction: Complexities in wound management step-down strategies can result in extended hospital length of stay (LOS) for patients who require negative pressure wound therapy (NPWT) but could otherwise be discharged. Single use NPWT (sNPWT) can serve as a bridge between hospital and community NPWT, allowing patients to return home once outpatient wound management is achievable. The aim of this study was to implement a discharge pathway utilizing sNPWT* and to examine the feasibility, effectiveness, and potential cost savings of this strategy.

Methods: This case series included 68 patients with open lower limb wounds treated with the sNPWT discharge pathway. Wounds were assessed before and after sNPWT use and differences in average inpatient length of stay (LOS) and costs were calculated for patients discharged on sNPWT compared to patients who remained hospitalized until community NPWT was available.

Results: Use of the sNPWT discharge pathway was well tolerated by patients and resulted in good clinical outcomes including complete wound healing. Compared to patients who remained hospitalized on NPWT, patients discharged on sNPWT had an average reduction in LOS of approximately 20 days for a projected cost savings of £12,350 per patient in hospital costs.

Discussion: Preliminary findings indicate the use of a sNPWT discharge pathway is feasible and may result in reduced hospital LOS and costs while improving patient care. Additional studies are needed to understand the impact of this sNPWT transition strategy on patient outcomes and overall costs of care.

PI-009

The Increasing Role of Synthetic Skin Substitutes

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Introduction: Acute and chronic wounds continue to remain a challenge to heal. Infection, scarring, and surgical morbidity are problematic. As the industry has produced a wide array of Cellular, Acellular, and Matrix-like Products (CAMPs) active in wound healing, a new class of synthetic skin substitutes has developed in parallel. The products are off the shelf, cost-effective, and avoid the issues of using biologic tissue implants in patients. In addition, some have antimicrobial activity or are resistant to infection.

Methods: The CMS database was accessed to identify synthetic skin substitutes. The structure, activity, and background research were sought for the 6 identified products by consulting the databases of Pubmed, Clinical Trials.gov, and Google Scholar. The product companies were contacted for further information regarding the mechanism of action, risks and complications, indications, and clinical experience. The products included a foam-based wound surface closure device designed originally for burns but equally effective in other wounds. Two products were identified using an electrospun technique for creating nanofiber matrices. Both employ dissolvable and resorbable synthetic polymers. Another matrix product is made of polylactide-based molecules that produce lactate as it dissolves. This promotes antimicrobial activity and additional cellular functions necessary for healing. There is also a product constructed of resorbable Borate bio-glass, which releases boron, calcium, and magnesium when dissolved. These chemicals mediate healing activities in the wound. Finally, a bioresorbable matrix containing ionic and metallic silver is focused on treating biofilms and wounds with high bacterial contamination.

Results: These products have been shown to be clinically effective in promoting wound healing in both acute and chronic wounds. Some have demonstrated decreased healing times. As a group, they have improved granulation tissue formation in various challenging wounds and improved cosmesis in the healed wounds. The products are more resilient and require less post-operative care than many CAMPs. There have been remarkably few complications associated with their use. There is still a paucity of studies to support the wide use of the newly introduced class of materials, but they will inevitably enter the mainstream of wound care.

Discussion: A new class of synthetic skin substitutes is emerging. These products have varied components and structures and are all resorbable. The first of these products was developed to treat burn injuries but has been utilized to treat a wide variety of wounds. We continue to learn how to employ these synthetics best and look forward to seeing the emerging literature.

PI-010

Preoperative Wound Bed Preparation Using Fluorescence Imaging to Optimize Outcomes in Complex Wound Management and Reconstruction

Michael N. Desvigne, MD, FACS, CWS, FACCWS; Misael Alonso, MD, FACP, CWSP, FAPWCA

Introduction: Preoperative infection management and wound bed preparation is a critical step in reducing postoperative complications and improving outcomes in reconstructive surgery for chronic wounds. Methods of assessing bacterial infection and biofilm presence such as clinical evaluation and microbial cultures are often subjective, inaccurate and can delay necessary interventions. Fluorescence imaging technology (MolecuLight®), provides real-time, objective detection of bacterial presence in wounds, enabling targeted management of infection and biofilm. This study aims to evaluate the impact of preoperative fluorescence imaging in assessing and optimizing wound bed preparation prior to complex reconstruction.

Methods: A total of seventeen (n=17) patients with chronic, non-healing wounds (pressure ulcers, DFUs, VLUs, and non-healing surgical wounds) were evaluated preoperatively using fluorescence imaging to assess location and presence of bacteria at pathologic loads (104 CFU/gr) in the wound and surrounding tissue. Based on fluorescence imaging findings, targeted wound debridement, cleansing, and antibiotic therapy were initiated to reduce bacterial load prior to surgery until fluorescence signals were eradicated or significantly reduced. In some cases, the need for operative debridement was in part determined by the imaging results. Postoperative outcomes, including healing time, infection rates, and complications, were compared to historical data from similar cases managed with standard care methods. In addition, objective imaging served as a tool to assist with management decisions.

Results: Fluorescence imaging revealed bacterial contamination and biofilm in 17 of the 17 cases, guiding additional debridement and more precise antibiotic therapy prior to surgery. The treatment algorithm as guided by fluorescence included: office and bed side debridement, surgical debridement, negative pressure wound therapy (NPWT) with and without instillation. Antibiotic therapy was initiated in any patient revealing evidence of acute infection. Segments of the management protocol where fluorescence imaging was involved in the decision-making process typically involved: 1) Preoperative infection control, 2) Urgent surgical debridement, 3) Timing of surgical closure, and 4) Postoperative infection control. Postoperative healing occurred without infection-related complications in all surgical cases. No patients experienced infection recurrence or surgical site infections (SSIs).

Discussion: The preoperative use of fluorescence imaging for wound bed preparation significantly enhanced surgical outcomes in complex skin reconstruction. Additionally, fluorescence imaging proved valuable in guiding management decisions. By offering real-time, objective insights into bacterial load and biofilm presence, it enables more targeted and effective infection control, ultimately leading to faster healing and fewer postoperative

PI-011

Improved Outcomes in Surgical Reconstruction of Skin Defects: A Case Series Utilizing Fluorescence Imaging for Infection Management and Wound Bed Preparation

Michael N. Desvigne, MD, FACS, CWS, FACCWS; Misael Alonso, MD, FACP, CWSP, FAPWCA

Introduction: Surgical reconstruction for chronic wounds requires meticulous wound bed preparation to minimize postoperative complications. Non-viable tissues, bacteria, and biofilms must be removed to prevent post-operative infections. Traditional methods of wound assessment frequently fail to identify bacteria and biofilms1,2, and historically post-operative infection rates can reach up to 50%3, often leading to prolonged healing times. Point-of-care fluorescence imaging (MolecuLight®) has emerged as a promising tool for real-time infection detection and management, potentially improving outcomes in skin and soft tissue reconstruction. This technology detects and highlights bacterial presence above 104 CFU/gr in biofilm or planktonic form. This case series aims to evaluate the impact of intraoperative fluorescence imaging-guided wound bed assessment and preparation in surgical reconstruction with a focus on minimizing postoperative complications and improving healing rates.

Methods: We present 5 challenging cases of chronic complex, wound candidates for that presented for surgical reconstruction. These included: Pressure ulcer on trunk n=2, VLU n=1, DFU n=1, Non-healing surgical wound on abdomen n=1. Intraoperative fluorescence imaging was performed in all 5 cases pre and post excisional debridement to monitor bacterial presence and location. The time to heal and incidence of postoperative complications, including post-operative infections, were measured.

Results: The intraoperative use of fluorescence imaging helped confirm the adequacy of surgical debridement regarding the presence of bacteria and prompted additional intraoperative excision in 3 of the 5 cases. In all 5 cases surgical healing progressed with no post operative infection. The pressure ulcer surgical reconstructions (n=2) healed without incident. The VLU, DFU, and non-healing surgical wound of the abdomen healed by secondary intention without further surgical intervention. Postoperative complications, particularly infection-related issues such as dehiscence, wound breakdown or surgical site infections, were 0%.

Discussion: Intraoperative use of fluorescence imaging using MolecuLight is a valuable adjunct in the surgical management of skin defects to help reduce postoperative complications. By objectively assessing the wound bed and confirming the adequacy of wound bed preparation, fluorescence imaging enables more complete bacterial removal and may lead to more successful surgical intervention. Further investigation in larger, controlled studies is needed.

PI-013

Evaluation of Negative Pressure Wound Therapy Using an All-in-one, Encapsulated, Reticulated Open-cell Foam Dressing in Complex Wounds

Michael N. Desvigne, MD, FACS, CWS, FACCWS; Jody Wolfe, BSN, MBA, RN, CWOCN

Introduction: Negative pressure wound therapy (NPWT) using a polyurethane, reticulated open-cell foam (ROCF) dressing has been employed for managing diverse wound types. While NPWT's therapeutic benefits are well established, ROCF dressing application can create obstacles for therapy. Additionally, patient discomfort during ROCF dressing removal due to tissue ingrowth may also make effective NPWT prohibitive.[1-3] Dressing change frequency (every 48-72 hours) may require additional assistance by home health care services. Here, we report our evaluation of an extended wear (up to 7 days), all-in-one, encapsulated ROCF dressing* with an integrated perforated non-adherent contact layer designed to help mitigate tissue ingrowth and a hybrid silicone/acrylic adhesive drape.[4]

Methods: Antibiotics were initiated, if necessary. Each patient was treated previously with NPWT using ROCF dressing. An encapsulated ROCF dressing of appropriate size was applied over the defect with the foam and non-adherent layer also extending over the periwound skin. NPWT† applied continuous subatmospheric pressure (-125 mmHg). The encapsulated ROCF dressing was worn for ≥ 72 hours prior to dressing change but can be worn for up to 7 days.

Results: Four (n=4) patients presented for care. Wound types included pressure ulcers, (n=2), a complex thigh wound (n=1), and a lower back wound resultant of a non-healing surgical site (n=1). Reduced placement time (< 5 minutes), relative ease of dressing application and removal, and periwound skin protection were noted by patients and staff. Three patients (75%) wore the encapsulated ROCF dressing for 7 days; whereas 1 patient (25%) experienced dressing removal at Day 6 due to soilage. Nevertheless, all patient wounds exhibited improvement evidenced by reduced wound dimensions and re-epithelialization. Interestingly, the appearance of wounds managed with NPWT using the encapsulated ROCF dressing were smooth, less granulated and accompanied by epithelialization relative to the characteristic appearance of ROCF dressing-treated wounds.

Discussion: In these 4 patients, the encapsulated ROCF dressing served as an attractive alternative to traditional ROCF dressing. In these patients, it appeared effective in helping to support wound area reduction. The encapsulated ROCF dressing seemingly helped to reduce home health visits for dressing changes; thereby allowing wound monitoring without dressing placement variability.

PI-014

Use of Negative Pressure Wound Therapy with an All-in-one Dressing to Manage Split Thickness Skin Grafts in Three Patients with Venous Leg Ulcers

Michael N. Desvigne, MD, FACS, CWS, FACCWS; Jody Wolfe, BSN, MBA, RN, CWOCN

Introduction: Split-thickness skin grafts (STSGs) are a valuable tool in the management of Venous Leg Ulcers (VLUs). An all-in-one dressing has recently become available for use with negative pressure wound therapy (NPWT). This dressing is designed with an incorporated silicone-acrylic adhesive drape and perforated non-adherent layer to be worn for up to 7 days and facilitates fast and simple dressing application and removal. This study evaluated the use of NPWT with the all-in-one dressing to manage STSGs in three patients with VLUs.

Methods: Prior to STSG, the wound bed was prepared using surgical debridement and NPWTi-d* with ROCF dressings†. After STSG, NPWT‡ and all-in-one dressing§ were applied to bolster the STSG. A negative pressure of -125 mmHg was utilized with dressing changes every 7 days. Placental allograft was placed over the STSG to optimize healing. STSGs and periwound skin were assessed at each dressing change.

Results: Three female patients between the ages of 63-86 years with a history of venous insufficiency (n=3), hypertension (n=3), lupus (n=2), diabetes mellitus (n=1), cirrhosis (n=1), and breast cancer (n=1) presented for care. STSGs were managed with NPWT and all-in-one dressing, treatment duration ranged from 1 to 5 weeks. Two patients had 100% graft take and one patient had 75%-80% graft take due to non-compliance.

Discussion: Wound bed preparation and use off the all-in-one dressing with NPWT over the STSG was well tolerated by all patients. Application of the all-in-one dressing with NPWT over the STSGs resulted in granulation tissue formation and improved graft take in these patients. The dressing application was simple and fewer dressing changes were required.

PI-015

Impact of Implementing a Soft Silicone Multi-layered Foam Dressing Protocol for Pressure Injury Prevention on Incidence and Severity

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Introduction: A community hospital in Baltimore, Maryland had a hospital-acquired pressure injury (HAPI) rate of 3.18 in 2022, with the intensive care unit (ICU) having the highest number of HAPIs. The majority of these HAPIs were found on the sacral region, of which many were on the sacrum and of an advanced stage (e.g., Stage 3, 4, or unstageable). Due to the high human1,2 and economic3,4 burden of HAPI, the inpatient WOC nurses, quality department, and ICU leaders convened in , January 2023 to discuss ways to improve the ICU HAPI rate as well as the overall severity. The team agreed that in addition to the current standard preventative measures, an additional method was needed to address sacral HAPIs.

Methods: A protocol was developed for the application of a prophylactic foam dressing to the sacral area for all qualifying patients. In February 2023, the ICU received education and began implementation of the new protocol. A clinical nurse completed chart audits to track adherence to the new protocol and provided real-time, peer-to-peer feedback to the ICU nursing staff. Prophylactic dressing usage was also reinforced during WOC nurse rounding. As a result of the outcomes, the protocol was later expanded to Intermediate Care (IMC) in September 2023.

Results: Pre-intervention HAPI incidence was collected and analyzed. Post-intervention data was collected in the ICU from March to September 2024 and in the IMC from September 2023 to September 2024. In the 3 months prior to implementation of the dressing, there were 6 incidences of advanced HAPIs in the ICU. In the 7 months following implementation of the protocol there were no reported advanced HAPI. Following implementation of the protocol a downward trend in HAPI rates has been recorded with data collection ongoing.

Discussion: Reduced overall HAPI and severity resulted in positive patient, clinical, and economic outcomes. As a result, the protocol was well-received by both staff and hospital administration. Continued education, auditing, and data collection to promote continuing education and adherence to the protocol is ongoing.

PI-016

Beyond the Numbers: Visualizing Thermal Gradients in Wound Care

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Introduction: Infrared thermography (IRT) applications in wound care continue to emerge1,2,3, and over more than traditional single-point temperature measurement (thermometry). IRT captures sounds of temperature readings within the image and can be used to create gradients and contrasts that reveal patterns that can be visually assessed to guide clinical decision-making. Compared to thermometry, this offers the greatest advantage to the method; however, training is required to interpret the patterns. This abstract reveals the critical steps to utilizing IRT within wound care practice and highlights key patterns to review in the IRT image beyond the absolute temperature or measured temperature difference between two points.

Methods: Using a series of case studies, this presentation reviews key principles of thermographic imaging with a focus on visual inspection. A series of case images from various wound types (e.g., diabetic foot ulcer, pressure injury, venous leg ulcer, infected vs. Non-infected) to analyze different patterns that appear in thermographic images.

Results: Providing a structured process for collecting IRT images and a framework to review may aid wound care clinicians in recognizing patterns to inform clinical decision-making. Acquisition protocols are important for image standardization. Palette contrast selection is also important for highlighting focus areas. Typical patterns include cooler wound bases caused by evaporative heat loss from moisture and exudate. In contrast, asymmetrical thermal changes or high contrasts in temperature caused by large temperature differences can be critical indicators of underlying inflammation or infection that need to be recognized.

Discussion: By understanding how to collect and interpret IRT images effectively, wound care clinicians can identify subtle changes in the wound status that might go unnoticed by only using single-point measurements or a temperature difference. Visual inspection of IRT images utilizes the thousands of temperature data points collected in the IRT image, providing a better picture of wound healing progress and risk.

PI-017

Chronic Wound Healing: The Essential Role of Copper-based Dressings in Innovative Care

Amanda Fuller, LPN, WCC, DAPWCA, TCC-C

Introduction: Effective treatment options are crucial for chronic wound healing, and copper-based dressings* have emerged as a novel solution. Copper's unique properties support wound healing and serve as a good alternative to traditional antimicrobial agents like silver and iodine which have been utilized for years. As an essential trace mineral, copper is critical for the proper functioning of body tissues, making copper-infused dressings a more natural choice with fewer adverse effects.

Methods: We introduced Copper alginate dressings* to chronic non-healing wounds in the wound care setting. Focusing on wounds stalled in the inflammatory phase or showing clinical signs of biofilm formation and infection.

Results: By implementing Copper dressings* significant advantages over silver were found. Copper penetrates bacterial cell membranes electrostatically, preventing bacterial replication. They reduced inflammation by lowering pro-inflammatory cytokines and growth factors while promoting pro-angiogenic factors for new blood vessel formation. Additionally, they enhanced dermal fibroblast activity and acted as a cofactor for lysyl oxidase, linking collagen and elastin in the extracellular matrix. Copper also exhibited broad-spectrum biocidal properties, with rare occurrences of tolerant bacteria. Patients who utilized this dressing in our clinic showed decreased inflammation, degradation of biofilm, decreased infection rates, and improved weekly wound measurements at clinic visits.

Discussion: Incorporating copper dressings into the care of chronic wounds can make a remarkable difference. These innovative dressings offer unique benefits that can enhance healing and promote better outcomes. This new approach targets chronic inflammation, disrupts biofilm, prevents infection, and reduces wound healing time, helping stalled wounds progress through normal healing phases. Copper, which is non-irritating and non-sensitizing, outperforms silver in all aspects. Current limitations are related to the available forms of copper dressings, but as new forms emerge, they will enhance wound management and patient recovery. Further research is needed to support these advancements.

PI-018

A Scoping Review on Smart Bandages with Gas Monitoring Capabilities and a Proposed Machine Learning Protocol for On-device Wound Monitoring

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Introduction: The integration of the Internet of Things (IoT) into wound care offers revolutionized management of wounds by enabling real-time diagnostic insights, alerts, and treatment capabilities not previously possible in traditional dressings and hydrogel scaffolds. This scoping review explores the impact of gas-detecting smart bandages, specifically those sensing pulse oxygen saturation (SpO_2) and tissue oxygenation (pO_2), and their potential to improve patient outcomes. As part of this review, we propose a closed-loop, cloud-based protocol for continually fine-tuning predictive models meant to run locally (on-device) via leveraging device IoT capabilities.

Methods: Three electronic databases were searched for current research on smart bandages with gas monitoring capabilities. Studies within

the last 10 years focused on at-home wound monitoring were included, while non-human studies and studies focusing on traditional wound care or smart bandages were excluded.

Results: Forty-two studies met the criteria and were included in the scoping review. Both spO2 and pO2 have been demonstrated using well-established methods. SpO2 is primarily measured using photoplethysmography (PPG), with studies testing off-the-shelf PPG modules and custom electrochemical sensors. Electrochemical techniques have shown 1.5 µA/% sensitivity for oxygen monitoring, while optical methods using PPG have successfully measured tissue oxygenation under controlled experimental conditions with an average error of 2.6% (1,2). These methods have proven reliable in static environments such as calibration chambers and simulated settings. Current devices struggle to manage exudate flow, often allowing older exudate to saturate the sensor, hindering the sensor's ability to capture real-time physiological changes and obtain accurate readings (3,4).

Discussion: The gas-monitoring capabilities of smart bandages have shown promise in enhancing wound care through real-time physiological insights. SpO2 methods offer non-invasive and validated systematic feedback, while pO2 methods enable localized intervention. Inadequate oxygen delivery is an important marker of impaired healing, and measuring tissue oxygenation and pulse oxygen saturation is critical for assessing repair progress and the efficaciousness of wound healing interventions. Moreover, the integration of machine learning—particularly in the form of small models that can run on-device could enhance these systems by enabling real-time diagnostic alerts and modulating potential device therapeutic capabilities, thus improving wound management and outcomes. We propose a closed-loop, cloud-based protocol for smart wound monitoring where device-level diagnostic predictions are validated through provider input to continually fine-tune the device's diagnostic model and improve model accuracy at an individualized level.

PI-019

Feasibility of a Wearable Pressure Sensor for Lymphedema Garments

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Introduction: Lymphedema is a disfiguring condition of indurated fibrotic edema treated by complete decompressive therapy (CDT). After CDT people get maintenance compression garments (Reference 1). Consumers apply maintenance garments "by feel" without sense of when garments fatigue. Too much/little compression leads to costly, painful exacerbations. Our long-term goal is empowering consumers to self-manage compression with a convenient wearable pressure sensor (WPS). Our short-term goal is demonstrating feasibility.

Methods: The WPS sensor is 6x2x0.05 cm., which is thin and flexible, connecting to an electronics control module (ECM) that is 3x2x0.6 cm. We protect the skin from the thicker ECM by placement outside/between garment layers in novel pockets/pouches. The WPS-Bluetooth-iPhone interface boasts an intuitive display. We tested 3 hook-and-loop garments: 1) Leg wrap 1 (LW1); Leg wrap 2 (LW2), and an arm/forearm wrap (AFR1). There were 4 trials, each with 6 continuous hours normal activity. The author self-applied closures to achieve therapeutic pressures monitored hourly. Leg and arm pressures were measured in anatomic position. We observe that well-used garments lose more pressure with time than unused ones. This study is consistent with previously reported error of +/-15% (Reference 2). The author self-inspected skin post-wear and found no discomfort or obvious erythema from the WPS/garment during any trial.

Discussion: Preliminarily: (1) The WPS yields reproducible, accurate, stable readings for an extended period; (2) well used wraps fatigue more with use than unused ones; (3) there are no obvious sign of pressure injury or discomfort for any wrap. Results are preliminary based on small sample size and one observer. The wearable sensor may hold promise as a wearable sensor for lymphedema garments.

PI-020

The Effects of Blue Light Photobiomodulation on Complex Wounds

Viviana Gonçalves, RN, TVN, MSN

Introduction: Photobiomodulation with blue light is an innovative technology in the healing of complex wounds, promoting cellular modulation, reducing inflammation and inducing the promotion of the healing process. The regulation of metalloproteinases in complex wounds is fundamental, as the presence of these structures is a precursor to delays in healing. The application of blue light promotes the production of ATP, which is essential for cellular metabolic processes and which leads to effective healing.

Methods: Application of photobiomodulation with blue light, in complex wounds (deep dehiscences and leg ulcers), once a week, as a complement to the treatment carried out. It was applied to 32 patients, of which 17 had deep dehiscences (sternotomy and saphenectomy), 15 had leg ulcers that had been in progress for more than 3 years.

Results: Wounds resulting from dehiscence all close without resorting to surgery, with an average closure time of 8 weeks. After the start of the technology, the healing process occurred uneventfully and with a reduction in pain with each treatment, with a resulting very functional scar. In leg ulcers, the shortest time was 3 years and the longest time was more than 30 years, and the average time to closure was 13 weeks. All patients report a reduction in pain after the third application, having maintained the same type of previous treatment.

Discussion: The use of this technology as a complement to the treatments carried out, promotes the healing process, managing to enhance the dressing material that is placed later. Reducing pain associated with increasing quality of life is essential to promote the healing process.

PI-021

Implementation of Telemedicine in an Outpatient Ostomy Clinic

Janice M. Gorski, DNP, APNP, FNP-BC, CWON-AP

Introduction: Telemedicine improves access to care and is convenient for patients. A meta-analysis found ostomy care provided through telemedicine reduced stoma-related complications. Reimbursement from Medicare for telehealth visits is the same as in-person visits. An academic medical center in the Midwest set a goal to increase accessibility through virtual visits. Ostomy patients were waiting up to four weeks for appointments due to limited clinic space; therefore, a half-day virtual clinic was proposed to improve access to ostomy care, as well as to meet the institution's goal. An inpatient ostomy APP was seeing an average of less than one patient per the proposed half day.

Methods: During the twelve-week trial, a half-day virtual clinic schedule allowed the outpatient APP to provide virtual visits outside of the space limitations of the clinic. The inpatient APP transitioned to the outpatient clinic for in-person visits for the half-day. Candidates for virtual appointments were patients who were scheduled for annual visits, visits for rashes, or follow-up visits. The process for virtual visits included, prior to the appointment: support staff sent instructions for the visit by mail and through the electronic health record one to two weeks prior to the appointment; support staff sent a measuring guide with the letter; and patients could send photos of the stoma with the measuring guide and the back of their used wafer through the patient portal. During the visit the provider conducted a review of systems; reviewed previously sent photos or viewed patients changing the pouching system; developed a plan of care; and discussed recommendations. After the appointment, the provider completed patient instructions; the provider sent a message for staff to order samples or ordered durable medical equipment; and the provider sent a message for staff to schedule a follow-up appointment.

Results: During the twelve-week trial, patients scheduled in both half day clinics increased access to the ostomy clinic by 10%. Of the virtual visits, 91% were successfully completed.

Discussion: With the success of the trial, the half-day virtual clinic schedule became permanent after six weeks. Virtual visits are an effective way to provide care to many ostomy patients.

PI-023

Ultrasonic Vibrational Handheld Debridement to Reduce Biofilm and Pain in Chronic Wounds

Mary E. Hanley, DO, MBA, FUHM, CWSP, FAPWCA

Introduction: Chronic wounds are increasingly common as the population in the US ages and diabetes continues to grow in epidemic numbers. Patients presenting to outpatient Wound Care practices often require sharp debridement of these wounds to remove biofilm and cellular debris precluding healing. Sharp debridement with dermal loop curette, scalpel, or scissors is often poorly tolerated by many patients even with adequate application and soak time for topical anesthetics. Biofilms are commonly found on these chronic wounds and present significant impediments to healing.

Methods: The XSONX TM handheld wound hygiene system offers a novel and simple to use alternative for managing these complex wounds in need of debridement and biofilm managment in the outpatient clinic setting. The tool uses vibrational debridement technology (VDT) which stimulates microbleeding of the wound bed to replicate the hemostatic phase of wound healing and recruit platelets and their growth factors to the wound to stimulate healing. The tool powerfully cleans and debrides chronic and contaminated wounds. The ultrasonic vibrations reduce the pain of debridement, and patients tolerate it very well.

Results: The handpiece is battery powered and reusable. There are a variety of detachable, disposable head pieces which can be tailored for use to achieve the desired effect. XSONX handheld debridement tool is a practical and valuable addition to the wound clinician' armamentarium for sharp debridement and removal of biofilm from wound beds.

Discussion: Sharp debridement is a requirement for managing many complex wounds. The XSONX ultrasonic debridement tool is a safe, reliable, comfortable tool to decrease biofilm and promote wound healing.

PI-024

The Clinical and Economic Outcomes of an Integrated Care Bundle Utilising a Three-layer Silicone Adhesive Foam Dressing for Exudate Management of Chronic Wounds: A Retrospective Cohort Analysis

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Introduction: Chronic wounds have significant human and economic challenges, including quality of life and at a healthcare organizational level. The aim of this retrospective, real world, cohort analysis is to report the clinical and economic outcomes of an Integrated Care Bundle (ICB) that utilized a 3-layer silicone adhesive foam dressing* for exudate management across multiple chronic wound types within a community setting in Canada.

Methods: Analysis of the safety and effectiveness of an introduction of wound centered ICBs which were adopted to improve the management of chronic wounds, from March 2016 to December 2018. Outcomes were compared from patients who received a 3-layer silicone foam adhesive dressing* alongside an ICB against those that did not, as part of their care.

Results: Patients who received care with an ICB and the dressing* (n=6612) experienced improved clinical outcomes, compared with those who did not (n=2242). Including faster time to healing (12.7 vs 25.4 weeks, respectively) and longer time between dressings changes (3.5 vs 1.8 days, respectively). There were reduced number of nursing visits in the ICB cohort which led directly to reduced resource costs, compared to the patients in the non-ICB cohort (CAD$1736 vs $6488, respectively).

Discussion: This real-world cohort analysis demonstrated the adoption of an ICB that included treatment with a three -layer silicone adhesive foam dressing* improved clinical outcomes, reducing chronic wound healing times and the frequency of wound dressing changes.

PI-025

Braden QD Scale Interpretation and Use by Critical Care Nurses for Pressure Injury Risk Screening

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Introduction: The purpose of this quality improvement project was to improve the accuracy and interpretation of the Braden QD Scale risk assessment tool by pediatric critical care nurses in the prevention of pressure injuries (PI). Accurately scoring critical care patients is important for identifying those at risk for PI development, as PI incidence is higher in the critical care setting and early implementation of preventative measures is crucial. During direct observations, discrepancies were identified between critical care nurses and wound care trained nurses in the interpretation of the Braden QD Scale elements and final scoring.

Methods: The IHI Model for Improvement was used to drive the project by using pre-selected patient scenarios, providing real-time education to all critical care nurses, and administering surveys. Patient scenarios with varying risk were presented to the nurses for interpretation and scoring while observing response habits. The wound care trained nurses obtained insight to the nurses' thought process of the application of the scale as well as provided individualized and immediate education based on the specific patient scenario. The surveys gathered the value nurses placed on the Braden QD Scale and its effect on their clinical practice, and feedback on the educational strategies used.

Results: Only 12% of scores matched those of the wound care trained nurses despite 100% of nurses feeling they were proactively taking PI prevention measures. 79% of nurses saw the Braden QD Scale as a significant indicator of pressure injury risk prior to education. Nurses tended to score each element at the first applicable option rather than reading through all options to identify the most applicable one. In a paper format, the nurses stopped at the first applicable left option (reading from left-to-right) and in the electronic health record (EHR), at the first applicable top option (top-to-bottom).

Discussion: There is need for standardized education in interpreting the Braden QD Scale by routine training, mandatory annual reviews, and enhanced onboarding modules. Research is needed to explore if less ambiguity in the score elements improves standardization, reducing variability of responses. Another potential area of investigation is leveraging technology for optimal EHR display of score elements.

PI-027

Complementing Our Immune System: The Antimicrobial Mode of Action of Endogenous Nitric Oxide and Its Potential in Wound Care

Daniel G. Metcalf, PhD; Scarlet Milo, PhD – R&D Program Advisor, Advanced Wound Care R&D, Convatec Ltd; Jonathan Roberts, PhD – R&D Scientist, Advanced Wound Care R&D, Convatec Ltd

Introduction: Hard-to-heal wounds, such as diabetic foot ulcers, are highly prevalent and place a significant burden on patients and healthcare systems. The aim of this review was to evaluate nitric oxide (NO) as an antimicrobial agent and assess the potential of NO-generating wound dressing technology* for the management of hard-to-heal wounds. The presence of microorganisms plays a significant role in the pathogenesis of hard-to-heal wounds. Systemic antimicrobial therapy has a crucial role in treatment of infected hard-to-heal wounds, while antimicrobial dressings are used to manage wound bioburden. However, there is emerging recognition of biofilm tolerance to standard antimicrobials, which, coupled with the prevalence of antibiotic resistance, presents a challenge to effective treatment. NO and reactive nitrogen species (RNS) are im-

perative antimicrobial components of the host immune response, which, when uncompromised, significantly diminish the risk of development of bacterial resistance.

Methods: We conducted a narrative review of the evidence underlying the antimicrobial mechanisms of NO and assessed its potential as an antimicrobial agent to treat hard-to-heal wounds.

Results: We identified and reviewed key antimicrobial mechanisms of NO and RNS. NO freely penetrates the bacterial cell wall and membrane, where RNS inactivates extracellular and internal cell wall proteins. RNS destroy microbial DNA while NO inhibits DNA synthesis and repair, destabilizing the genome resulting in cell disfunction and eventual death. RNS inactivate iron-sulfur cluster containing proteins that are essential to metabolic processes, resulting in bacterial cell death.

Discussion: NO generation within a wound dressing* represents a promising strategy as an antimicrobial agent for the treatment of hard-to-heal wounds, due to the multiple mechanisms of action of NOI, which reduce the risk of bacterial resistance.

PI-028

The Antibiofilm Effects of Nitric Oxide, a Component of Our Innate Immune System

Daniel G. Metcalf, PhD; Scarlet Milo, PhD – R&D Program Advisor, Advanced Wound Care R&D, Convatec Ltd; Jonathan Roberts, PhD – R&D Scientist, Advanced Wound Care R&D, Convatec Ltd

Introduction: Hard-to-heal wounds, such as diabetic foot ulcers, pose a significant clinical challenge, resulting in poor patient quality of life and substantial economic burden. The aim of this review was to evaluate the evidence of nitric oxide (NO) as an antibiofilm agent and assess the potential of a novel NO-generating wound dressing technology* in managing these complex surface-associated and aggregated microbial communities. Biofilm frequently develops in hard-to-heal wounds and contributes to wound inflammation, delayed healing, and increased risk of local infection. Due to the tolerance of biofilm the host immune response, antibiotic treatments, and standard antimicrobial dressings, there is a clinical need for wound treatments able to effectively target biofilm in hard-to-heal wounds. NO represents one such strategy, due to its capacity to target specific mechanisms integral to biofilm survival.

Methods: We conducted a narrative review of the evidence underlying the antibiofilm effects of NO, and discussed its potential as an antibiofilm agent for the management of hard-to-heal wounds.

Results: Key antibiofilm mechanisms of action were identified and reviewed. NO induces biofilm dispersal, exposing bacteria, making them more susceptible to antimicrobial agents. NO disrupts intra-biofilm bacterial communication, resulting in reduced virulence of biofilm bacteria and thus the extent and severity of colonization and infection. Reactive nitrogen species (RNS) may destabilize the biofilm matrix via depolymerization of polysaccharides and cleavage of extracellular DNA, enabling increased penetration of NO and antimicrobial agents to reach the microorganisms within.

Discussion: The antibiofilm effects of NO substantiate its potential in wound care. For example, a novel NO-generating wound dressing technology* may represent a promising strategy for the management of surface-associated/aggregated microbial communities and infection in hard-to-heal wounds.

PI-029

Unlocking the Power of Fresh Produce in Chronic Wound Care

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Introduction: Malnutrition affects 30%–50% of the general population and up to 85% in long-term care facilities. Patients with chronic wounds, particularly those with vitamin, mineral, and protein deficiencies, face increased risks of infection, delayed healing, and prolonged hospital stays. Nutrients such as vitamin A (cell growth), vitamin C (collagen synthesis), and zinc (protein synthesis) are critical for wound repair. However, underserved communities with limited access to nutritious foods often experience poor healing outcomes. This pilot study evaluated the impact of a fresh produce delivery program on wound healing in underserved patients with chronic wounds.

Methods: This 8-week feasibility pilot study recruited 6 patients (average age: 77 years) with chronic wounds unhealed for ≥3 months from underserved communities in Los Angeles, CA. Inclusion criteria required patients to have a chronic open wound and receive ongoing wound care. Exclusion criteria included food allergies, anticoagulant therapy, conditions impairing nutrient absorption (e.g., Crohn's disease), or specialized diets.

Participants received bi-weekly deliveries of fresh produce rich in vitamins A, C, E, K, and minerals (zinc, iron) and were counseled on incorporating these foods into their daily diet. Nutritional adherence was tracked via food diaries and surveys, while wound progression was measured weekly using digital imaging and manual methods.

Results: Primary outcomes: 3 patients achieved 100% wound closure (2 by week 3, 1 by week 6); 2 patients achieved 49.4% and 91.8% healing by week 8, respectively. Average healing rate: 88.2% over 8 weeks. Secondary outcomes: faster healing correlated with higher dietary adherence; quality-of-life improvements included increased energy and enhanced mood.

Discussion: This study highlights the feasibility and benefits of integrating fresh produce delivery into chronic wound care. Improved healing rates and quality of life underscore the importance of addressing nutritional deficiencies in underserved communities. Future recommendations include adding culturally relevant foods, expanding program outreach, cohort size, and tailoring delivery to patient needs. This approach represents a promising strategy to improve wound healing outcomes in vulnerable populations.

PI-030

The Evolution of Wound Dressings: Past, Present, and Future Approaches to Address Local Barriers to Wound Healing

Scarlet Milo, PhD; Daniel Metcalf, PhD – Director, Advanced Wound Care R&D, Convatec Ltd

Introduction: Hard-to-heal wounds, such as leg ulcers and diabetic foot ulcers, are highly prevalent and place a significant burden on patients and healthcare systems. The aim of this review was to describe a next stage of the evolution of advanced dressings for the treatment of hard-to-heal wounds.

Methods: Narrative review.

Results: Major developments in dressing technologies in the last three or four decades have focused on key local barriers to wound healing: (1) exudate management, (2) infection management, and most recently, (3) management of biofilm (surface-associated and aggregated microbial communities). Past approaches have focused on dressing physical and chemical characteristics designed to manage exudate and infection. For example, material advances in alginates, hydrocolloids and advanced gelling fibers have provided clinically useful material properties for the management of moderately to highly exuding wounds. Furthermore, the addition of, for example, ionic silver to such dressings* provided a safe and effective method for management of microbial colonization and local infection. More recently, biofilm has been inexorably linked to hard-to-heal wounds. A present 'state of the art' dressing is the first of its kind designed to manage, in addition to exudate and local infection risk, surface-associated and aggregated microbial communities within the dressing**, utilizing additional excipients to penetrate microbial extracellular polymeric substances and facilitate the antimicrobial effects of ionic silver.

Discussion: Future approaches will require next-generation wound dressings to enhance and expand the management of the above local barriers to wound healing. By addressing factors such as poorly-perfused

tissue and hypoxia, dressing technology can potentially facilitate the power of the host immune and wound healing systems. A novel prototype nitric oxide-generating dressing technology*** combines physical and chemical properties to not only manage exudate, infection and surface-associated/aggregated microbial communities within the dressing, but also to potentially address tissue perfusion and hypoxia by physical means, to improve wound healing outcomes. Enhanced physical and chemical dressing characteristics (fluid absorption and donation, continuous moisture vapor transmission rate, pH), also impart an environment that is inhospitable to pathogens and development of surface-associated and aggregated microbial communities.

PI-031

Lessening Limb Loss with Interstate Collaboration in Charcot Arthropathy and Osteomyelitis

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Introduction: Patients in rural healthcare settings are more likely to lose salvageable limbs due to Charcot arthropathy and chronic osteomyelitis. These patients often have limited or no access to advanced technology or the specialized physicians who provide such treatments and interventions. Establishing a pathway for underserved areas to receive limb-saving treatment is crucial. Below-knee amputations should not be preferred simply due to limited access to specialists in Charcot reconstruction and osteomyelitis care.

Methods: Four Charcot arthropathy and osteomyelitis patients were selected to receive advanced treatment out of state. These treatments included the percutaneous injection of gentamicin-based antibiotic sulfate*, Charcot reconstruction, and external fixation devices. Patients returned to their local wound clinic for post-operative care after the procedures. Their cases were managed collaboratively through telemedicine, involving the review of imaging and photographs. Any complications were managed locally and with prompt interprofessional communication between provider and surgeon.

*Trade marked- Cerament G

Results: Two patients have healed, are walking and have been discharged from the wound care clinic, one patient developed proximal complications and will unfortunately require below-knee amputation, and one patient has recently returned to the local clinic for post-operative care. One patient required a second trip to the surgical location; the remainder of patients have been managed in the local area.

Discussion: It is feasible for patients to undergo complex surgical interventions and then return to their local wound clinic for follow-up care without the need for frequent travel to the surgical location. Patients should be informed of advanced surgery options available outside the area or state. As evidenced here, the assumption that patients are unwilling and/or unable to travel must be challenged. We can and should expand protocols to additional locations using a hub-and-spoke model, which effectively facilitates referrals from wound care clinics to surgical specialists. This innovative approach to wound care referrals demonstrates that limb salvage can be highly achievable when patients actively engage with a dedicated team of wound care professionals and surgeons. Collaboration is key to fostering positive outcomes in the healing process.

PI-032

Innovate to Elevate: Reducing Pressure Injuries

Katie Nolan, RN, WCC, MSN; Glynnis Lowe, MSN, RN, NE-BC; Taylor Wolpert, BSN

Introduction: Hospital-acquired pressure injuries (HAPIs) remain a critical challenge in healthcare, affecting over 2.5 million patients annually in the United States and contributing to 60,000 deaths. A 53-bed inpatient rehabilitation and brain injury unit experienced elevated HAPI rates in FY23, with 62% of reported cases being heel-associated. Root cause analysis revealed contributing factors such as darkly pigmented skin, inconsistent pressure relief interventions, and lower extremity surgeries. A proactive, targeted intervention was developed to address these risks and reduce HAPI rates.

Methods: A six-month proactive heel HAPI prevention plan was implemented. Interventions included: (1) Enhanced education on heel floating techniques and real-time process reinforcement; (2) Targeted visual assessments for patients with Braden Scores ≤18 and recent lower extremity surgeries; (3) Introduction of a clinical "Decision Tree: Heel Pressure Injury Prevention" tool; (4)Implementation of two licensed personnel skin checks following patient leaves of absence ≥24 hours; (5) Training on evidence-based assessment techniques for darkly pigmented skin. Outcome measures included compliance with heel observation protocols, adherence to skin assessments, and monitoring of heel-specific and overall HAPI rates. Data were collected and analyzed to assess the effectiveness of these interventions.

Results: The unit achieved a 76.92% reduction in overall HAPI rates, with heel-associated HAPIs reduced to a single case in FY24. Daily heel observation compliance exceeded target benchmarks, and admission skin assessments by two licensed personnel improved consistency in early detection and intervention.

Discussion: This structured, proactive approach demonstrates the effectiveness of targeted interventions in reducing HAPI rates. The inclusion of education, interprofessional collaboration, and a clinical decision-making tool provided sustainable improvements in care. Special attention to vulnerable populations, such as patients with darkly pigmented skin, was critical in achieving these outcomes. This model can be replicated across similar settings to address HAPI challenges and improve patient safety and outcomes.

PI-033

Enhancing Wound Care: A Case Series on the Efficacy of an All-in-one Negative Pressure Dressing

Mary Anne R. Obst, RN, BSN, CCRN, CWON, CWS

Introduction: Negative pressure wound therapy (NPWT) is widely recognized for its efficacy in managing complex wounds, yet traditional systems often present challenges due to their bulkiness and complexity. These factors can hinder patient comfort and complicate discharge planning, particularly in home care settings. This case series introduces an innovative all-in-one NPWT dressing designed to simplify application, enhance comfort, and reduce waste.

Methods: This study involved a three-patient case series where the new all-in-one NPWT dressing was applied to various wound types, including surgical dehiscence, pressure injuries, and a surgically opened abscess. The dressing's design allows for easy application and extended wear time while being compatible with different pump types. Patient outcomes were assessed through caregiver feedback and clinical observations regarding comfort, usability, and wound healing progression.

Results: Across the three cases, patients reported significant improvements in comfort and ease of use compared to traditional NPWT systems. Caregivers noted reduced burden during dressing changes, which were less frequent due to the dressing's extended wear capabilities. Wound healing outcomes were favorable, with all patients demonstrating positive progress by the end of the treatment period.

Discussion: The findings from this case series suggest that the innovative all-in-one NPWT dressing effectively addresses many limitations associated with traditional NPWT systems. By simplifying the application process and enhancing patient comfort, this dressing promotes better adherence to treatment protocols and supports sustainable wound care practices. Its versatility makes it suitable for both clinical and home environments, aligning with patient-centered care principles and improving discharge planning efficiency. Further studies could expand on these results to solidify its role in wound management protocols

PI-034

An Innovative Approach in Outpatient Wound Healing Center

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Introduction: The objective of the project was to focus on developing

a streamlined process for introducing and utilizing an autologous skin cell suspension device, previously confined to the operating room, into an outpatient wound healing center (WHC). The integration of such device aims to enhance patient care, improve clinical outcomes, and expand the availability of specialized treatments in non-hospital environment. Given the unique demands of outpatient care, the process was addressed to meet the challenges, such as device transition to outpatient setting, proper training for all healthcare professionals, and patient suitability. By tailoring device use to the outpatient context, we seek to optimize operational efficiency, reduce healthcare costs, and provide patients with greater access to advanced medical technologies. This abstract outlines the key considerations, strategies, and benefits associated with adapting surgical equipment for outpatient use, ensuring that it is both effective and safe in a less controlled clinical environment.

Methods: An evidence-based practice was adopted for implementing an autologous skin cell suspension device in an outpatient WHC. A thorough review of the device's clinical evidence was essential. The process then began with multiple hands-on in-services to ensure proper device and skin harvesting tool usage, this included the wound care team and physicians. A candidate selection criteria was established based on identified indications for the procedure. An algorithm was developed to guide patient selection, wound criteria, required instruments and medications.

Results: The device was successfully used in the outpatient WHC, avoiding hospital admissions, time under general anesthesia and operating room time. This approach led to significant progress in patient outcomes and enhanced operational efficiency. Implementing this device in an outpatient WHC demonstrated its feasibility and enhanced the range of tools at our disposal.

Discussion: Best practices for the procedure were developed, including continuing education for staff and patients, the use of relaxation techniques, proper procedural preparation, and clear communication of post-care instructions to patients. This approach has set the foundation for further innovation in outpatient wound healing and the continued advancement of healthcare in clinical settings.

PI-035

Clinical Assessment of a Novel Sharp Debridement Device for Biofilm Management in Chronic Non-healing Wounds

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Introduction: Chronic wound biofilms are a major barrier to healing, contributing to prolonged inflammation and treatment resistance. While traditional sharp debridement (TSD) is a standard treatment, its limitations include the need for specialized training, potential for pain and bleeding, and scope of practice restrictions. This study investigated a novel sharp debridement device (EZD) as a potential alternative.

Methods: This prospective study enrolled 80 patients with chronic wounds, randomized to either EZD sharp debridement (EZ-Debride, MDM Ventures, San Antonio, TX) or TSD (scalpels/curettes). Biofilm presence and extent were assessed pre- and post-debridement using a modified Alcian Blue wound blotting technique, graded on a 0-3 scale. Biofluorescent imaging (BFI) and provider clinical assessments provided additional evaluation of the biofilm removal efficacy.

Results: Both EZD and TSD significantly reduced biofilm, as evidenced by decreased Alcian Blue staining grades post-debridement ($p < 0.005$ for both). However, EZD resulted in a significantly greater reduction in biofilm (84.97% vs. 34.87%, $p < 0.0001$). While BFI showed limited correlation with Alcian Blue staining overall, in cases with positive pre-debridement BFI imaging results, EZD achieved a 100% reduction in bacterial fluorescence compared to 50% with traditional methods. Clinical assessment confirmed a higher rate of complete biofilm removal in the EZD group (60% vs. 12.2%).

Discussion: This study demonstrates that the novel sharp debridement device, EZD, is a safe and effective tool for biofilm removal in chronic wounds, potentially surpassing TSD methods. EZD offers a less invasive, more efficient, and potentially less painful approach, suggesting its value in improving clinical wound management and patient outcomes. Further research should examine its impact on long-term healing and broader clinical applicability.

PI-036

Spooky Action at a Distance: Neuromodulation, Physiologic Distress Signals, and Limb Preservation

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Introduction: The rising global prevalence of chronic conditions such as obesity and type 2 diabetes demands innovative approaches to mitigate their health and economic impacts. Complications like neuropathy and chronic limb-threatening ischemia (CLTI) significantly elevate the risks of limb loss and cardiovascular events, underscoring the need for effective interventions.

Methods: Advances in neuromodulation therapies, including 10-kHz spinal cord stimulation (SCS) for diabetic neuropathy, peripheral focused ultrasound (pFUS), and ultrasound-driven splenic stimulation, show promise in addressing diabetes-related complications and promoting wound healing. Remote ischemic conditioning (RIC) has also demonstrated efficacy in healing diabetic foot ulcers. In severe cases, surgical techniques such as tibial transverse transport (TTT) and lateral tibial periosteum distraction (LTPD) enhance blood flow, stimulate angiogenesis, and improve limb function. Combining these methods with debridement, negative pressure wound therapy, and skin grafting may further optimize outcomes.

Results: Neuromodulation therapies appear to effectively manage complications, potentially alleviating pain and accelerating wound healing. TTT and LTPD promote angiogenesis in patients with diabetic foot ulcers and CLTI. Integrated approaches combining these surgical techniques with advanced wound care strategies improve microcirculation and support more robust healing.

Discussion: These seemingly disparate therapies represent one unique unifying idea: creating a physiologic impact at a distance from the target. We look forward to further works in all of these areas that may confirm or refute these initially tantalizing physiologic signals.

PI-037

No Clinic, No Problem: The Mobile Wound Care Revolution

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Introduction: Chronic wounds represent a significant burden to the healthcare system, contributing to high rates of morbidity and mortality among affected patients. These wounds often require frequent ambulatory care visits at a wound center for management, yet many patients face barriers to accessing care, including transportation challenges, limited resources, and inadequate support at home. A novel mobile wound clinic model addresses these challenges by delivering nurse-practitioner-led, evidence-based advanced wound care directly to patients in their homes, reducing costs and improving both patient access and outcomes while providing personalized care plans.

Methods: A nurse-practitioner-led mobile wound clinic provides direct care in patients' homes, replacing the need for weekly ambulatory wound center visits. Key interventions include comprehensive assessment, evidence-based wound treatment, bedside education, and evaluation of in-home resources such as caregiver support, wound care supplies, and durable medical equipment (DME). Collaboration with the interdisci-

plinary care team ensures a holistic approach, incorporating advanced wound care therapies, the use of technology for wound monitoring, serial debridements, and tailored nutrition interventions to optimize healing. Skilled home health agencies partner to facilitate continuity of care and track patient outcomes, including wound healing rates, cost benefit analysis, and hospital readmissions.

Results: The mobile wound clinic included more than 1,560 unique patient visits over 12 months in a metropolitan area and reflects significant growth in patient volume as time progressed. This novel clinic approach eliminates the need for transportation to ambulatory wound centers and replaces one skilled home health nurse visit per week, contributing to measurable cost reductions and improved wound healing rates. Additional results include improved communication and faster delivery of new orders to skilled home health care agencies. Patient satisfaction scores highlight the benefits of in-home assessment, advanced wound care delivered on-site, and individualized care plans, along with a reduction in hospital readmissions related to wound complications.

Discussion: The nurse-practitioner-led mobile wound clinic demonstrates a scalable and effective model for improving access to wound care while reducing healthcare costs. By addressing barriers such as transportation and limited resources, this novel approach improves patient outcomes and satisfaction. Limitations include regional variability in patient demographics and access to skilled home health agencies and resources. Further studies are needed to explore long-term cost-effectiveness and scalability in diverse settings.

PI-039

From Adoption to Adaptation: A One-year Follow-up on the Usability, Perception, and Adoption of Digital Interactive Clinical Pathways Among a Portuguese National Wound Care Society

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Introduction: Clinicians often face information overload, making it challenging to keep up with evidence-based practices.1,2 Traditional paper-based pocket guides, which quickly become outdated, have been a common tool for point-of-care decision-making.1Having information digital information readily available allows wound care providers of all types rapid access to ever-changing practice recommendations. A Portuguese national wound care society* transformed their printed pocket guide library into nineteen interactive digital guides, featuring interactive clinical pathways, videos, checklists, and documentation templates and disseminated among 100 Society members. This study evaluates the usability, satisfaction, and adoption of these pathways one-year post-implementation.

Methods: A year later, an evaluation form within the platform gathered feedback using 4 Likert scale and 2 open questions. This assessed usability (how easy and often the guides are used), perceived usefulness (how the guides aid in decision-making and promote best practices), and overall perception/satisfaction (willingness to recommend). Data on the frequency of pathway usage were independently collected.

Results: Of the 22 members who completed the evaluation, the most frequently accessed pathways were "Leg Ulcers," "Wound Bed Preparation," and "Infection Management." Eighty percent of clinicians used the pathways 1-2 times monthly; 86% found them helpful in clinical decision-making; and all would recommend them to peers. Five percent reported difficulties in accessing the guides, prompting the Society to offer members 4 educational webinars with clinical cases illustrating how to use each digital guide at the point-of-care.

Discussion: The digital pathways demonstrated high usability and satisfaction among members, streamlining information dissemination and updates. They offer the society enhanced content management and distribution, enable in-depth data analysis, and facilitate the evaluation of interventions linked to improved real-world outcomes. This approach aims to standardize care, reduce healthcare costs, and enhance wound management outcomes.

PI-040 (RPT-007)

Improving Quality of Life for Patients with Complex Colorectal Wounds: Innovative Approach Using Transforming Powder Dressing

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Introduction: Colorectal surgery is performed for many conditions, including bowel obstruction, diverticulitis, cancer, inflammatory bowel disease, and more. Colorectal wounds are some of the most challenging wounds to manage, considering surgical site infection (SSI) ranges from 5-30% and is linked to significant increases in postoperative morbidity. These wounds are often left open to reduce SSI risk, adversely impacting patient quality of life (QoL) with delayed healing, pain, bleeding, frequent dressing changes, and increased nursing care demands.

Methods: The objective was to evaluate the impact of a transforming powder dressing (TPD) in simplifying care of complicated colorectal wounds and improving patient QoL. TPD, comprised of polymers similar to those used in contact lenses, is an extended wear (up to 30 days) powder dressing that when hydrated, transforms into a moist, oxygen permeable matrix that protects the wound. TPD was sprinkled over open wounds (including tunnels), transformed with sterile saline, and left to protect the wound from exposure to contamination. Patients were followed until healed and TPD was topped off or reapplied as needed. Demographics, challenges with SOC dressings, wound measurements, dressing change frequency, pain and satisfaction were recorded.

Results: Ten patients with a variety of complicated, surgical colorectal wounds were included. Of the 10 patients, 60% were female with an average age of 42.2 years (range: two months to 62 years). Seven had abdominal wounds (four with fistulas, and two with 9-10 cm tunnels), two had peristomal complications, and one had omphalocele. Wound volume averaged 693.3 cm3 (range 0.7 cm to 2159.4 cm3). All patients healed (average 18.8 weeks; range 2.3-42 weeks) with no SSIs. Weekly dressing change frequency was reduced by 78.1% (total of 191.4 TPD changes over the TPD treatment period compared to equivalent of 873.9 with SOC). All adult patients reported reduced pain, and increased satisfaction with TPD compared to SOC.

Discussion: TPD was utilized in complicated colorectal wounds resulting in reduced pain, increased patient satisfaction, and significantly less dressing changes when compared to SOC. No SSIs or other complications were identified. TPD should be considered for treating complex colorectal wounds.

PI-041

Accelerated Healing of Mucocutaneous Separation Using a Transforming Powder Dressing: An Innovative Technique

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Introduction: Mucocutaneous separation (MCS) occurs when the stoma partially or circumferentially detaches from the mucosa of the surrounding peristomal skin at the junction where they meet. MCS is fairly common, with an incidence of 3.7-9.7% 1. If left unresolved, MCS can lead to infection, peritonitis, stomal retraction or stomal stenosis2. Prompt and appropriate management of MCS is essential to prevent these complications and ensure optimal stoma function. Current, conventional approaches to treat MCS are painful and resource intensive, including localized wound care (cleaning, filling the separation with skin barrier powder or absorbent dressings), pouching systems to reduce skin

trauma, and close monitoring of the separation in case a stoma revision is indicated.

Methods: This case study involves a 27-year-old male with history of Crohn's Disease who underwent ileocolonic resection with end ileostomy surgery which was complicated by a 4.0 x 0.2 x 1 cm MCS on post-operative day 12. Concerned about the challenges of using traditional wound care products in this wound, an alternative wound care approach utilizing transforming powder dressing (TPD) was explored. This technique aimed to 1) offer enhanced protection and reduce infection risk in case of ostomy output leakage into the peritoneal cavity, and 2) reduce dressing change frequency to minimize pain and extend pouch wear time. TPD is an extended-wear, oxygen-permeable dressing made from polymers similar to those in contact lenses. When moistened with saline, the powder transforms into a moist barrier that can remain in place for up to 30 days, providing wound coverage and protection.

Results: On postoperative day 13, TPD was applied in the MCS, followed by a 2-piece pouching system. Less than 24 hours after TPD was applied, the wound had reduced by 95% and achieved complete healing 11 days after initial TPD application. TPD was only applied once and topped off once without any primary dressing changes.

Discussion: A marked acceleration in cellular proliferation was observed after TPD application and the MCS wound healed quicker than anticipated, without any complications. TPD has been used for other peristomal complications with good outcomes and should be considered also for treatment of MCS.

PI-042

Implementation of a Unique Hybrid Wound Telehealth Model: Extending Post-acute Care Across the Country

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Introduction: This pilot study aims to elucidate the feasibility and effectiveness of a hybrid telehealth model that combines in-person and virtual care for post-acute wound management and care coordination. The goal of the hybrid wound telehealth model is that of the healthcare quadruple aim: improving patient experience, improving population health, reducing costs, and improving provider experience.

Methods: A retrospective/prospective assessment was conducted utilizing the hybrid telehealth model, whereby virtual visits were conducted using a secure telehealth platform, allowing for real-time video consultations, image sharing, and remote wound assessment. Wound healing trending was performed in eKare. In addition to remote wound assessment, wound quality measures, including quality of life assessment and chronic disease management, were conducted. Remote patient monitoring and chronic care management data was collected via electronic health record review and stored in Microsoft Excel v. 16.72. Key performance indicators evaluated included wound assessment, patient satisfaction, and healthcare utilization.

Results: Hybrid care improves outcomes associated with post-acute care coordination for wound patients. 100% of patients examined benefitted from care coordination. Patients receiving hybrid care reported high levels of satisfaction with the convenience and accessibility of virtual care. Healthcare utilization, measured by the number of in-person visits, was significantly lower in the hybrid care group.Wound patients were assisted with critical care coordination tasks, including obtaining vascular assessment, offloading, and compression. Chronic disease management foci included hypertension, blood glucose levels, and tobacco cessation. Patients were contacted after DME wound supply orders to discuss order placement and use of supplies to ensure acquisition and proper use. Wounds with concerning features not responding to conservative measures were referred for in-person treatment. Conversely, patients with stable wounds remained in place. Remote wound assessment was beneficial in identifying wounds that needed sharp debridement at the wound provider's level.

Discussion: This pilot study demonstrates a hybrid telehealth model's feasibility and potential benefits for wound care. By combining in-person and virtual care, this model improves access to wound care services and enhance patient satisfaction. Telemedicine performed by wound healing clinicians working in a network setting offered a safe option to remotely manage complex wound care patients with comorbid diseases.

PI-043

Use of Kylon Fabric for Wound Hygiene and Debridement

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Introduction: Traditional wound hygiene often has limitations in terms of efficacy and patient comfort. A novel wound care material, kylon fabric, offers a promising approach to enhance wound hygiene and debridement. This abstract explores the potential benefits of kylon fabric in wound care, highlighting its unique properties and clinical applications.

Methods: Kylon is a medical fabric coated with an array of stiff nylon hooks serving as curettes and brushes to clean and mechanically debridement different tissue types within complex wounds. Its unique structure allows for both wound hygiene and debridement depending on method of use. The fabric's micro-curette properties minimize trauma during debridement, reducing pain and discomfort for patients while still allowing for debridement at the epidermis, dermis, and subcutaneous levels. Additionally, kylon fabric can be used for wound hygiene, gently removing necrotic tissue and exudate from the wound bed.

Results: Clinical studies have demonstrated the effectiveness of kylon fabric in various uses including collecting samples for microbial analysis, debridement, and wound hygiene. Furthermore, a study surveying patients and providers reported increased comfort and satisfaction with kylon fabric devices due to their atraumatic nature and ease of use. Field use considerations for use beyond wound hygiene (ie debridement) include educational preparation, state nurse practice act, facility policy, and training. In settings without practice barriers nurse practitioners can perform surgical debridement in the wound clinic setting including the use of kylon fabric with pressure applied leading to micro-curette deployment and resulting sharp debridement.

Discussion: In conclusion, kylon fabric offers a valuable tool for wound care professionals. The ease of use and disposal requirements makes it uniquely suited for use by multitudinous healthcare specialties in diverse care environments and. Its unique properties, including multi-indication use, tolerability, and debridement capabilities, make it a promising alternative to traditional debridement methods.

PI-044

The Use of a Multilayered Leukocyte, Platelet and Fibrin Patch in Conjunction with Near-infrared Spectroscopy for Difficult to Heal Diabetic Foot Ulcers

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Introduction: Diabetic foot ulcers (DFU) continue to be challenging to treat appropriately, and the costs associated continue to grow. One statistic is that one million dollars are spent on diabetic foot complications every 30 minutes in the US. As health care providers, it is imperative that the interventions chosen for DFU are effective and evidence based. The multilayered leukocyte, platelet, and fibrin patch (MLPF) has been proven to accelerate wound healing in DFU, even in patients with low ankle-brachial indices (ABI). However, the ABI is no longer considered the gold standard to determine ischemia. Near-Infrared Spectroscopy (NIRS) is a new diagnostic tool that allows providers to determine if wounds are adequately perfused, which is essential to wound healing. The ability to provide a high concentration of the patient's own blood cells to an ischemic wound is a novel concept provided by the MLPF patch. This study sought to determine if providing an MLPF patch to a proven

ischemic DFU using NIRS would have positive outcomes.

Methods: Our center uses NIRS before and after debridement to determine if adequate debridement has been performed and if adequate perfusion is present. We have adopted this process when applying the MLPF patch to ensure proper wound bed preparation and positive outcomes in ischemic wounds.

Results: We have treated numerous patients with the MLPF patch in conjunction with NIRS to ensure adequate tissue perfusion. One example of a successful outcome was an 81-year-old male had been treated in our clinic for 10 months. He had a history of osteomyelitis and had been receiving hyperbaric oxygen therapy with little healing noted. Also, different cellular tissue products and surgical closures were tried to no avail. After just six applications of the MLPF patch, along with the use of NIRS, his wound healed from an initial measurement of 5.3 cm2.

Discussion: The use of NIRS has been quickly gaining adoption among wound care providers as a better option to determine perfusion than the ankle-brachial index and other similar diagnostics. With the use of NIRS, a provider can determine if adequate perfusion is present in a wound, therefore allowing better wound bed preparation for advanced therapies. When used with NIRS, the multilayered leukocyte, platelet and fibrin patch has improved healing and outcomes in chronic diabetic wounds. More research is needed to determine the effectiveness of the MLPF patch on confirmed ischemic wounds without the presence of diabetes.

PI-045

Clinical Outcomes from a Next Generation Negative Pressure Wound Therapy Device Utilized in North American Post-acute Care Settings

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Introduction: Negative pressure wound therapy (NPWT) is a wound treatment modality indicated for acute and chronic wounds, most often utilized to expedite the healing process of large and/or highly exuding wounds1. Complex dressing application and pump operation, maintenance, and patient concordance with therapy are obstacles often associated with NPWT. A new traditional NPWT (tNPWT) has recently been introduced, specifically designed to improve upon known clinical, operational, and patient barriers to NPWT2.

Methods: Case information was extracted retrospectively and recorded on anonymized forms. Patient demographics and comorbidities, wound types, locations, characteristics, dressing application, and therapy selection until discontinuation was captured. Cases were captured on 6 patients exhibiting 13 wounds treated with NPWT between August 2023 and September 2024 in North America.

Results: The NPWT system was applied to wounds classified as a pressure injury or post-surgical wound. The wounds presented in different anatomical locations, and the patient demographics, comorbidities, levels of chronicity, and durations of therapy varied between all patients. Multiple approved fillers and wound contact layers, different pressure and therapy delivery settings, and dressing application techniques were utilized. Despite the variations in approach, the 13 wounds were observed to fully close or improve in tissue quality, area, and volume.

PI-046

Clinical and Experience Outcomes for the Use of a New Traditional Negative Pressure Wound Therapy Pump on Complex Wounds in the Post-acute Setting

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Introduction: Traditional Negative Pressure Wound Therapy (tNPWT) is often associated with complex dressing and pump operation1, which can lead to increased clinician time and decreased patient concordance to therapy2. A new tNPWT system has been introduced which was specifically designed to improve upon the barriers often associated with tNPWT.

Methods: Case information for 25 wounds treated in the post-acute setting with the new tNPWT system were extracted retrospectively and recorded on anonymized forms. Patient demographics, comorbidities, wound type, location, and characteristics were recorded. Therapy delivery modes and written and visual depictions of dressing application techniques and products used were captured. Near-infrared spectroscopy (NIRS) was utilized to measure the influence of NPWT on oxygen saturation, oxygen-carrying hemoglobin, and total hemoglobin at the wound site before initial application and throughout treatment with tNPWT.

Results: Twenty-five wounds were treated with the new tNPWT system, many of which required complex dressing application and adjunctive product use. This real-world dataset evaluates the use of the new tNPWT system, recording the wound and patient outcomes and the clinician experience with its use across multiple visits and dressing applications. The data demonstrates both the healing outcomes and provides insight into complex dressing applications through wound and dressing imagery, measurements, and the NIRS results.

Discussion: This data collection supports the efficacy of this new tNPWT system, demonstrating the varied approaches to application and the resulting wound outcome and use experience. The documentation of the wound outcomes in combination with the NIRS results supports the use of tNPWT for chronic and complex wound care in the post-acute setting.

PI-047

Revolutionizing Fecal Care with Automation: Enhanced Containment, Reduced Infections, and Improved Patient Care

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Introduction: This study introduces the Automated Stool Management Kit, an innovative technology designed to enhance fecal containment in critical care units. Traditional methods often fail to manage fecal incontinence, leading to pressure injuries and infections. They have leakage rates of 40-78%, which the kit reduces to just 1.8%. Kit represents a breakthrough in patient care, offering a more reliable, efficient solution.

Methods: Patient Eligibility: Bedridden adults with at least one liquid stool incontinence within 24 hours before device use. Patients on oral anti-coagulation therapy or with recent cardiac arrest were included at care provider's discretion. Patients with suspected or confirmed rectal abnormalities were excluded. Interventions and Assessments: Patients used absorbent pads with the device in place, monitored every 8 hours. The perineal area was checked for complications. Assessments focused on successful fecal diversion, leakage rates, duration of use, nursing time, caregiver strain reduction, patient comfort, accidental expulsion, device removal due to inefficacy. Statistical Analysis: Data were analyzed using Microsoft Excel, presenting results as absolute values, percentages, with mean ± standard deviation.

Results: 20 patients were evaluated. At device insertion, 40% had stool consistency at Bristol Scale 7. Devices were successfully deployed, with 95% of care providers reporting ease of insertion. Among 341 assessments, no leakage was observed in 323 instances (94.72%), minor leakage in 12 (3.5%), major leakage in 6 (1.8%). Only 6 under pads were changed due to soiling. In 87 days of collective use, the device accidentally expelled twice but was reinserted. Nurses spent an average of 6.8 minutes daily and 0.4 minutes per follow-up. The device remained in place for an average of 4.4 days. No anorectal bleeding observed.

Discussion: The innovative Automated Stool Management Kit addresses the issues of balloon catheters, which have leakage rates of 40-78%, by reducing these rates to just 1.8%. Once nurses are proficient, leakage rates at large health systems drop to 0%. The kit

improves fecal incontinence management, reduces pressure injuries and infections, and is validated for safety, efficacy, and user-friendliness with no adverse events. It's well-tolerated by patients on anticoagulant therapy, enhances patient care, operational efficiency in critical care settings.

PI-048

A Novel Trilayer Human Amnion/chorion/intermediate Layer Membrane* Use for Chronic Venous Leg Ulcer Case

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Introduction: Venous leg ulcers (VLU) affect 1% to 2% of the population and the incidence increases with age affecting approximately 4% of those older than 65 years.1 Because VLUs have a high chronicity and recurrence rate and slow healing time, they accounts for 80%2 of all leg ulcers. VLUs are known to impact a patient's quality of life from pain, swelling, and exudate leakage, which leads to psychological distress including embarrassment, social isolation, depression, and anxiety. VLUs impact the inflicted person's mobility and daily activities due to the limitations from the wound and associated symptoms. Per CMS3 and CAMPs4 guidelines, after four weeks of standard of care, with less than 50% surface area reduction, wounds, including VLUs, are considered chronic. Current recommended guidelines suggest that advanced therapies including placental-based allografts be considered for chronic wounds.3,4 LHACM, a new, novel tri-layer placental-based allograft intended for deeper and complex wounds, is presented in this case study. We submit a Venous Leg Ulcer (VLU) case where a novel trilayer human Amnion/Chorion/Intermediate Layer Membrane* (LHACM), was employed to support the chronic wound closure.

Methods: A 70-year-old polymorbid female presented with a chronic VLU. The chronic VLU wound was treated with standard of care and eight LHACM applications, which adheres to the new LCD allograft allowance.

Results: The chronic VLU wound closed in 3 months.

Discussion: This case represents foundational evidence support use of LHACM, a novel trilayer human Amnion/Chorion/Intermediate Layer Membrane* treatment. Building evidence is important to support its continued use for chronic VLUs. Solutions to close chronic wounds including VLUs are needed to help these patients physically and psychologically.

PI-049 (**RPT-010**)

From Pressure to Prevention: Elevating Care in the Intensive Care Unit

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Introduction: Sacral gluteal Hospital Acquired Pressure Injuries (HAPIs), a form of skin breakdown, commonly affect ICU patients due to decreased mobility and poor hemodynamics. HAPIs have long term effects on patients' skin integrity, quality of life, and increase hospital costs. Literature shows turning reduces the incidence of HAPIs. Audits validate low turning compliance. Compared with traditional repositioning devices, Air Assisted Repositioning Devices (AARD's) are more accessible for frequent patient repositioning, effectively offload the sacrum, and decrease strain to staff.

Methods: This quality improvement project was implemented on a 28 bed ICU. AARD's were acquired through clinical nurse collaboration and leader advocacy for funding. The device was trialed and feedback included ease of use for nurse workflow, including ability to keep device under patient for frequent use. Nurses received education on patient selection, positioning, and device management. Select clinical nurses were trained as super users. Pre implementation data consisted of 90 observed turn assessments. Post implementation data was collected over 6 months. Turning assessment compliance was defined as: 1) adherence to the turning schedule, 2) offloading of the patient sacral gluteal region.

Results: Implementation occurred in April 2024. 2024 ICU pre implementation turning compliance, adherence to the turning schedule, was 54.7%; 18% of patients had sacral gluteal region offload. Post implementation turning compliance was 60%; 71% of patients had sacral gluteal region offload. In 2023 the ICU had 10 sacral gluteal HAPIs, six months post implementation ICU incidence decreased to one. Adjusted for time, this is an 80% reduction in sacral gluteal HAPIs in the ICU. Post implementation HAPI data outperforms national mean. Estimated cost savings of $83,600. Projected annual cost savings of $167,200. Post implementation data was disseminated during unit staff meetings.

Discussion: Turning compliance and offloading increased after education and implementation of AARDs, decreasing HAPI incidence and associated costs in the ICU. Nursing structural empowerment and decision-making impacted device selection, implementation, and post evaluation stages improving patient outcomes.