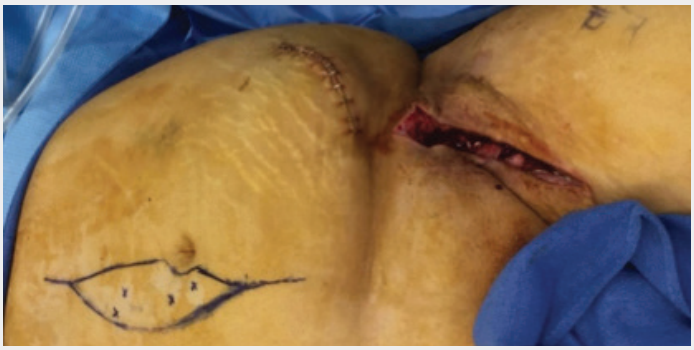
MIMEDX

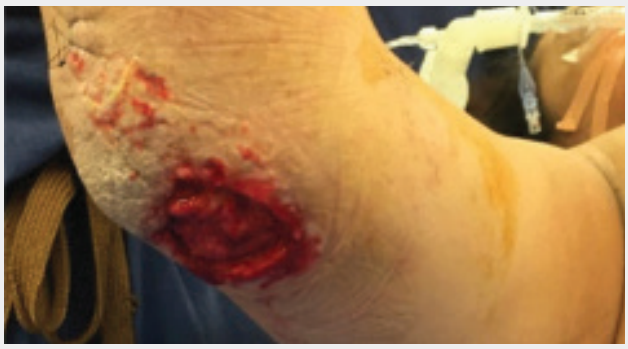
VOLUME 1 | EDITION 2

ADVANCED PLACENTAL-BASED ALLOGRAFTS

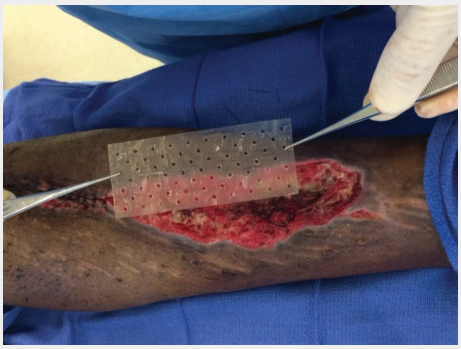
PLASTIC RECONSTRUCTION CASEBOOK



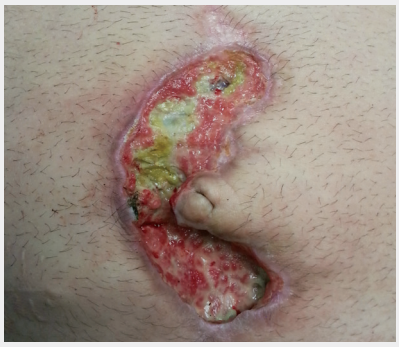
CLOSURE OF LEFT GROIN WOUND WITH VERTICAL RECTUS ABDOMINIS MYOCUTANEOUS (VRAM) FLAP AND DHACM



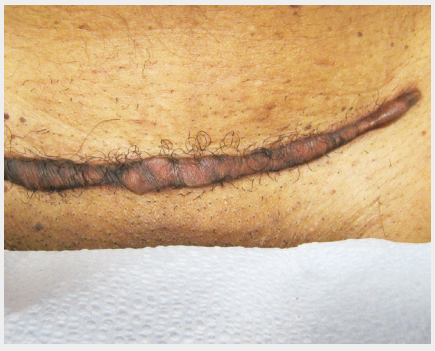
CLOSURE OF RIGHT ELBOW DEFECT WITH RADIAL FOREARM FLAP AND DHACM



EXTENSIVE LOWER EXTREMITY TISSUE LOSS SPLIT-THICKNESS SKIN GRAFT (STSG) AVOIDED



ACUTE ABDOMINAL WALL DEHISCENCE WITH EPIFIX®



KELOID SCAR REVISION WITH EPIFIX

Closure of Left Groin Wound With Vertical Rectus Abdominis Myocutaneous (VRAM) Flap and dHACM

Manish Champaneria, MD, FACS | Plastic and Reconstruction Surgeon | San Diego, CA

Challenge

A 58-year-old male with multiple comorbidities and history of wound healing challenges presented with a 16 cm x 4 cm x 2 cm left groin defect and exposure of a bypass graft due to a fall (Figure 1). His history of present illness included longstanding diabetes, end-stage renal disease, hypertension, atrial fibrillation, severe peripheral arterial disease, chronic obstructive pulmonary disease (COPD), and multiple vascular interventions to his left lower extremity.

Surgical Intervention

The patient underwent closure of the groin dehiscence with a VRAM flap (Figure 2), but approximately one week later, he became symptomatic from a multiloculated fluid collection. The patient complained of fevers and chills, as well as fatigue. A CT scan was obtained showing fluid collection (Figure 3). The seroma was drained, a left groin drain was placed, and dHACM (dehydrated Human Amnion/Chorion Membrane) was placed under the flap. dHACM provides a semipermeable barrier that supports the healing cascade and protects the wound bed to aid in the development of granulation tissue. The product is a biocompatible human extracellular matrix and retains 300+ regulatory proteins.[1-3]

Follow-Up

No complications were noted at follow-up appointments, and the flap remained stable. At week 20, the patient developed an appropriate scar and did not have a recurrent seroma (Figure 4). The tissues closed, and the patient was able to return to his daily living.

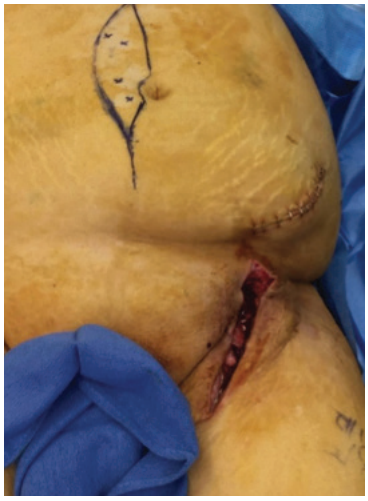


Figure 1:
Primary closure dehiscence and exposed bypass graft

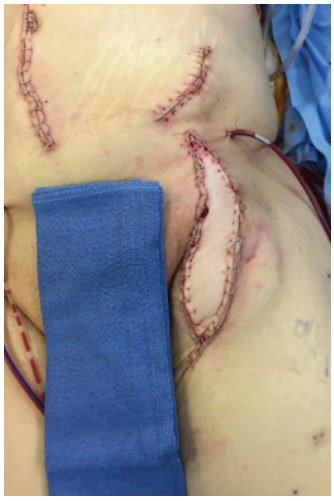


Figure 2:
Placement of VRAM flap

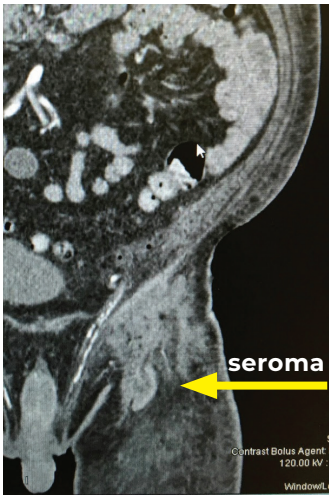


Figure 3:
Seroma formation at left groin

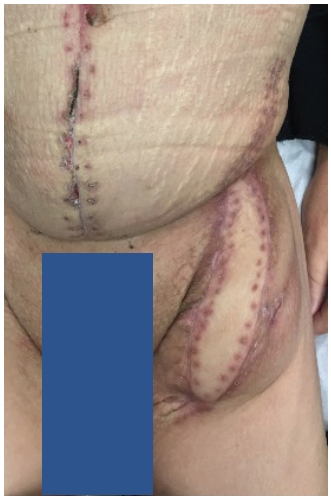


Figure 4:
Week 20: s/p drain and dHACM placement under flap

SB934.002

Closure of Right Elbow Defect With Radial Forearm Flap and dHACM

Manish Champaneria, MD, FACS | Plastic and Reconstruction Surgeon | San Diego, CA

Challenge

A 17-year-old female sustained a Type III elbow fracture in a motor vehicle accident. She underwent open reduction and internal fixation of the right elbow fracture, but then developed a full-thickness defect with exposed hardware and underlying elbow measuring approximately 6 cm x 5 cm x 0.5 cm.

Reconstruction of the elbow can be quite challenging due to various degrees of motion and movement. Durable, soft tissue coverage is necessary. Typically a reverse lateral arm flap is utilized in this area; however, it was not the best option due to the patient being obese, which would result in thicker flap with poor function and cosmesis.

Surgical Intervention

The right elbow wound was debrided and reconstructed with a right radial forearm flap (Figure 2). dHACM (dehydrated Human Amnion/Chorion Membrane) was placed under the flap. dHACM provides a semipermeable barrier that supports the healing cascade and protects the wound bed to aid in the development of granulation tissue in acute and chronic closures. The product is a biocompatible human extracellular matrix and retains 300+ regulatory proteins.[1-3] Postoperatively, the radial forearm flap was soft and pliable and adequately covered the defect.

Follow-Up

At week 20, there were no complications and the flap appeared stable, resulting in good range of motion of the elbow, excellent cosmesis, and stability of scar. At the approximately one year follow-up (Figure 4), the patient had durable, soft tissue coverage of her elbow with good function and range of motion. She was also able to complete her daily life activities with full range of motion.

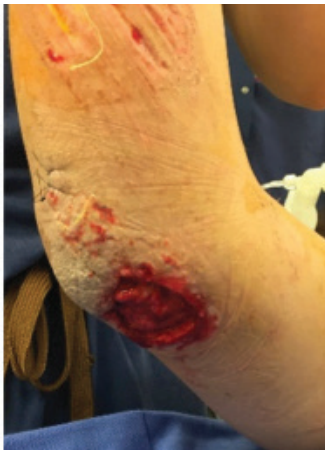


Figure 1:
Preoperative defect

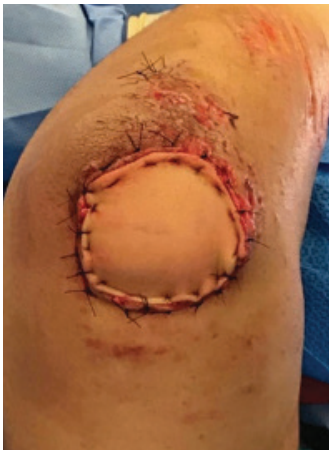


Figure 2:
Intraoperative right radial forearm flap

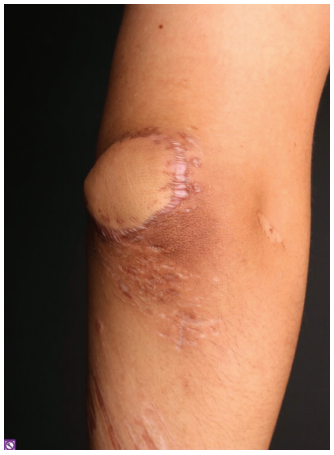


Figure 3:
Week 20 postop

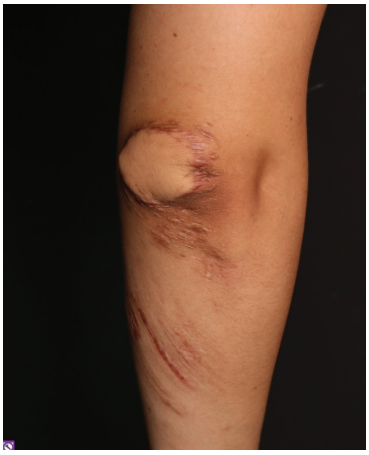


Figure 4:
1 Year and 6 Weeks postop

Extensive Lower Extremity Tissue Loss Split-Thickness Skin Graft (STSG) Avoided

W. Dotie Jackson, MD | Plastic and Reconstructive Surgery | Jackson,MS

Challenge: Acute Lower Extremity Wound in a Patient With Multiple Comorbidities

A left lower extremity injury with abrasions, extensive soft tissue loss, avulsion of tissue from the periosteum, lacerations, and exposed vital structures is a serious injury. Multiple comorbid conditions that can disrupt the healing cascade add an additional level of complexity to the treatment approach. Studies in certain patient populations have shown a direct correlation between the number of comorbidities and clinical outcomes. A significant rise in complications, length of stay, and mortality rates is associated with the rise in number of patient comorbidities.[1-3]

Clinical History

A 61-year-old female presented to the emergency department one day after a 4th of July grilling accident in which the grate from the grill fell on her left lower extremity (LLE) (Figure 1). She had extreme pain and difficulty ambulating. It was noted she had full-thickness soft tissue loss associated with multiple soft tissue abrasions, avulsions, and a complex 10 cm x 15 cm laceration. There was exposed tendon, periosteum, and vascular structures. The leg was edematous. She had +1 DP and PT pulses. She also had multiple comorbidities including smoking, hypertension, coronary artery disease, uncontrolled diabetes mellitus, COPD, asthma, peripheral arterial disease, and arthritis

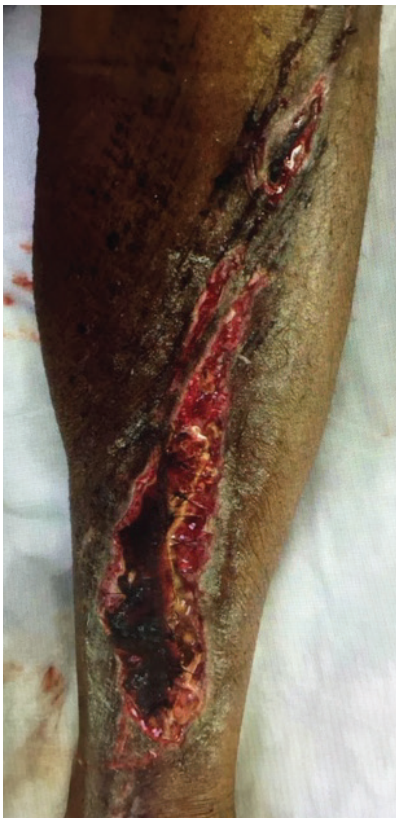


Figure 1:
10 cm x 15 cm laceration on LLE

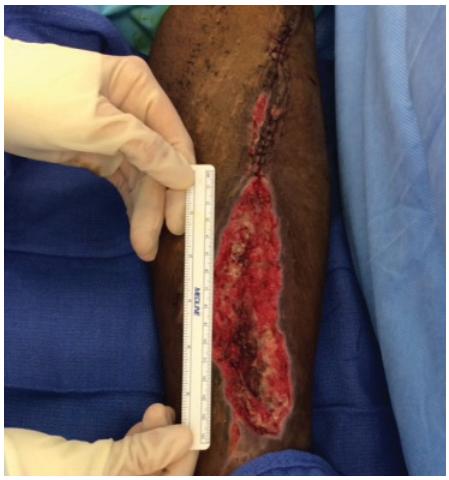
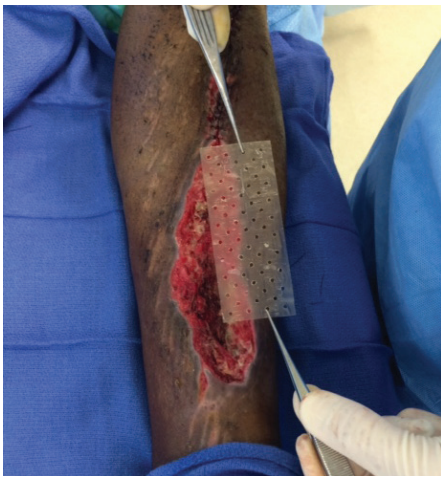
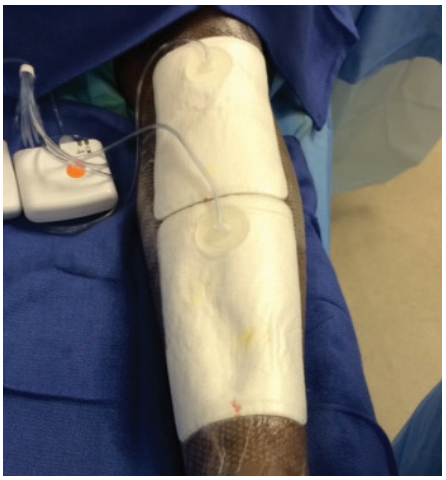
Surgical Intervention

The patient was taken to the operating room where she underwent debridement of the devitalized soft tissue, tendon and periosteum, closure of the 10 cm x 15 cm laceration, and pulse lavage irrigation. This was followed by application of two 4 cm x10 cm dHACM* (dehydrated Human Amnion/Chorion Membrane) allografts that were placed onto the remaining defect. Negative pressure wound therapy dressings were then applied to secure the dHACM in place (Figures 2-4).

dHACM provides a semi-permeable barrier that supports the healing cascade and protects the wound bed to aid in the development of granulation tissue in acute and chronic closures. The product is a biocompatible human extracellular matrix and retains 300+ regulatory proteins.[1-3]

The patient was discharged home with follow-up in seven days. All dressings were to remain intact. Physical therapy provided the patient with crutches, and she was instructed non-weight bearing to the LLE. She continued oral antibiotics and pain medication.

**This case used EPIXL dHACM which was discontinued on 8/27/21.*

Figures 2 - 4: dHACM and negative pressure wound therapy dressing application after debridement

Follow-Up

On postop day 7, all dressings were removed. The patient did not report any pain at the site of trauma. The wound was redressed with a non-adherent gauze. On postop day 14, the wound had healthy granulation tissue visible and significant contracture. The patient was again examined on postop day 20, and was noted to be fully healed. The overlying skin and soft tissue were stable. The new skin growth was pliable enough to be pinched. The patient was pain free and ambulating without assistance. Subsequently, there was no need for a skin graft (Figures 5-9).

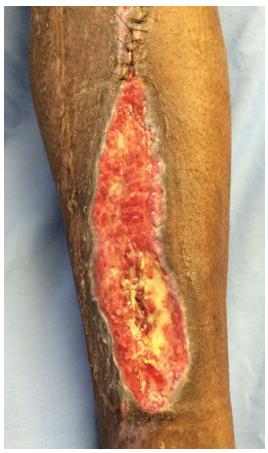


Figure 5:
Postop Day 7

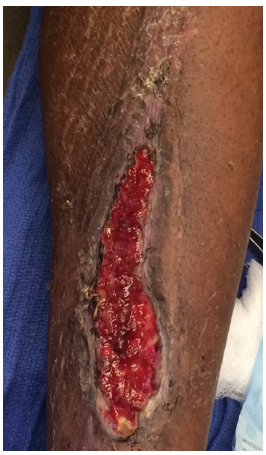


Figure 6:
Postop Day 14

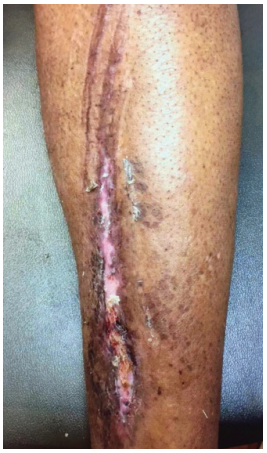


Figure 7:
Postop Day 20

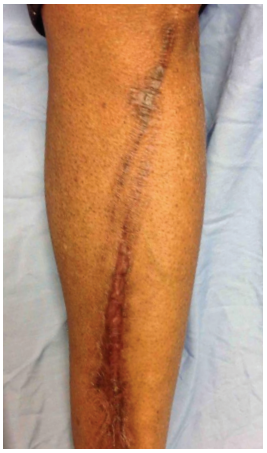


Figure 8:
5 months postop

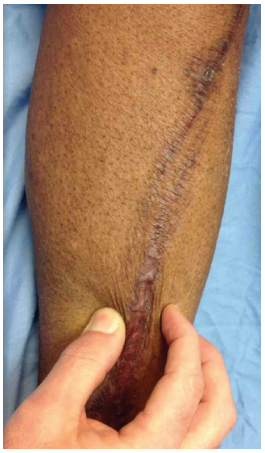


Figure 9:
5 months postop

Conclusion

Lower extremity wounds can be challenging, complex, and debilitating to the patient. These effects are compounded when the patient has multiple comorbidities. Thus, alternatives to local tissue rearrangement and free tissue transfer need to be explored on the reconstructive ladder, especially when vital structures are exposed and need coverage. dHACM can be helpful with reconstructive options such as bridging to a STSG, or as in this case, avoiding a STSG. The patient was treated on an outpatient basis with simple wound care, thus minimizing hospital stay, costs, and the need for ancillary services such as nursing, social work, home health, and physical therapy. She returned to normal activity in a relatively short time period.

Acute Abdominal Wall Dehiscence With EPIFIX

John Ko, MD, PhD, FACS | Plastic Surgery | Elmhurst, NY

Challenge

62-year-old obese male, BMI of 29, type II diabetes, with a history of hypertension, myocardial infarction with stent placements, multiple abdominal surgeries, and over forty years of cigarette smoking, underwent large ventral hernia repair. At one week postop, the patient developed ischemia at the incision line, which led to an incisional dehiscence.

Studies have shown a direct correlation between the number of comorbidities and clinical outcomes. A significant rise in complications, length of stay, and mortality rates is associated with the rise in number of patient comorbidities.[4-6]

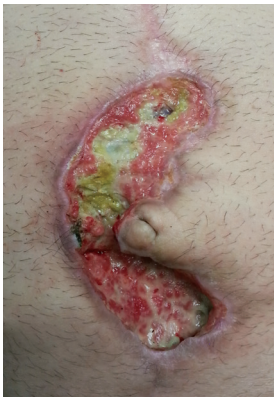
Surgical Intervention

The patient was managed with serial debridement and wet-to-dry dressings for two months, then placed on negative pressure wound therapy (NPWT) for four weeks at home. After one month of NPWT, the wound had only decreased by 30%. NPWT was discontinued, and EPIFIX was applied every other week, instead of weekly, due to the travel distance for the patient. EPIFIX is a dehydrated human amnion/chorion membrane allograft. The product provides a semi-permeable barrier that supports the healing cascade and protects the wound bed to aid in the development of granulation tissue in acute and chronic closures. It provides a biocompatible human extracellular matrix and retains 300+ regulatory proteins.[1-3]

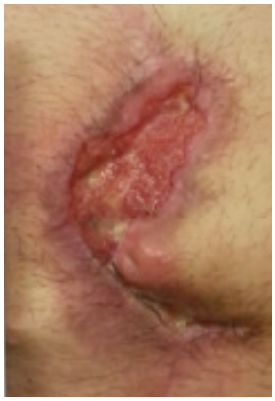
EPIFIX

Follow-Up

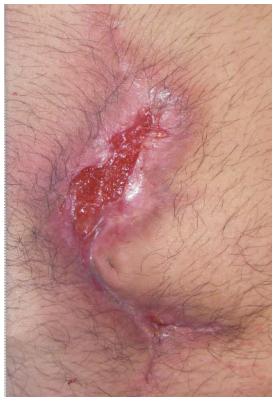
Upon examination at his two month EPIFIX follow-up visit, the wound was fully closed and re-epithelialized. The patient returned for a routine one-year visit and has remained fully closed and asymptomatic.



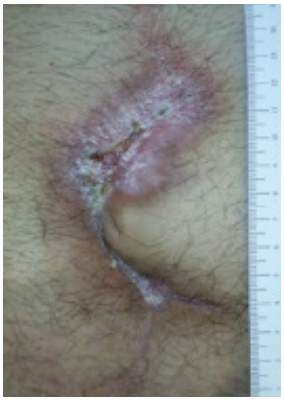
Following debridement



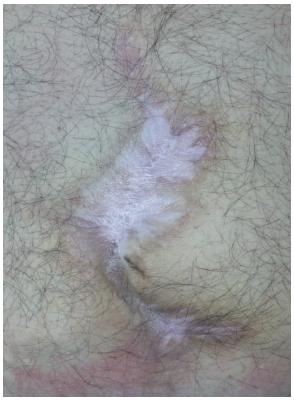
Four weeks of NPWT, only 30% size reduction, first EPIFIX 4 cm x 4 cm applied



Week 2: Two 2 cm x 3 cm EPIFIX applied



Week 4: One 2 cm x 3 cm EPIFIX applied



Week 8: Wound closed and stable

SB934.002

Keloid Scar Revision With EPIFIX

Sanders R. Callaway, MD | Dermatology | Augusta, GA

Clinical History

Patient presented with keloid scar (Figure 1) after Caesarean section procedure.

Treatment

One third of the keloid scar was treated with EPIFIX in revision surgery to evaluate its outcome prior to treating the remainder of the scar (Figure 2). EPIFIX was placed within the incision site before suturing.

EPIFIX is a dehydrated human amnion/chorion membrane allograft. The product provides a semi-permeable barrier that supports the healing cascade and protects the wound bed to aid in the development of granulation tissue in acute and chronic closures. It provides a biocompatible human extracellular matrix and retains 300+ regulatory proteins.[1-3]

Follow-Up

The scar was greatly reduced in height and in color. Subsequent revision surgery treated the remainder of the keloid scar with EPIFIX.

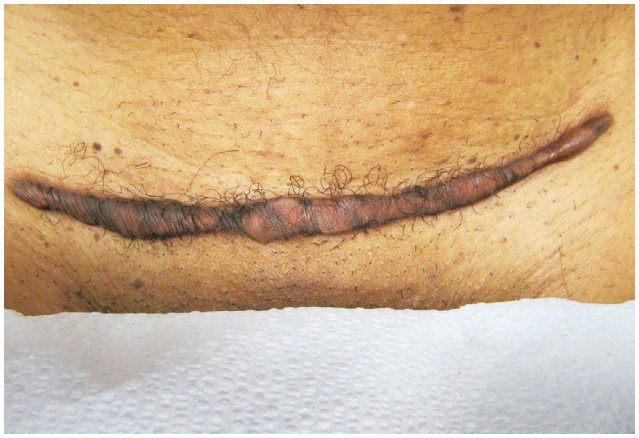


Figure 1: Preoperative presentation

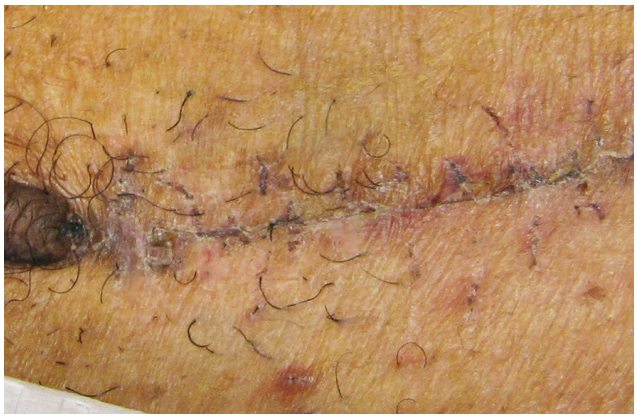


Figure 2: Post-scar revision using EPIFIX on 1/3 portion of original scar

To find out more about MIMEDX® products:

Please Call: 866.477.4219 Email: customerservice@mimedx.com

REFERENCES 1. Koob TJ, Lim JJ, Massee M, Zabek N, Denozière G. Properties of dehydrated human amnion/chorion composite grafts: Implications for wound repair and soft tissue regeneration. *J Biomed Mater Res B Appl Biomater.* 2014;102(6):1353-1362. **2.** Lei J, Priddy LB, Lim JJ, Massee M, Koob TJ. Identification of Extracellular Matrix Components and Biological Factors in Micronized Dehydrated Human Amnion/Chorion Membrane. *Adv Wound Care (New Rochelle).* 2017;6(2):43-53. **3.** MM-RD-00086, Proteome Characterization of PURION Processed Dehydrated Human Amnion Chorion Membrane (dHACM) and PURION Plus Processed Dehydrated Human Umbilical Cord (dHUC) Allografts. **4.** Thombs BD, Singh VA, Halonen J, Diallo A, Milner SM. The effects of preexisting medical comorbidities on mortality and length of hospital stay in acute burn injury: evidence from a national sample of 31,338 adult patients. *Ann Surg.* 2007;245(4):629-634. **5.** Myles PS, Iacono GA, Hunt JO, et al. Risk of respiratory complications and wound infection in patients undergoing ambulatory surgery: smokers versus nonsmokers. *Anesthesiology.* 2002;97(4):842-847. **6.** Dunne JR, Malone DL, Tracy JK, Napolitano LM. Abdominal wall hernias: risk factors for infection and resource utilization. *J Surg Res.* 2003;111(1):78-84.

SMR²T™ & Purion®

MIMEDX