Avoiding Hospital Surgical Debridement and Tissue Sampling Using a Novel Fabric-Based Technology

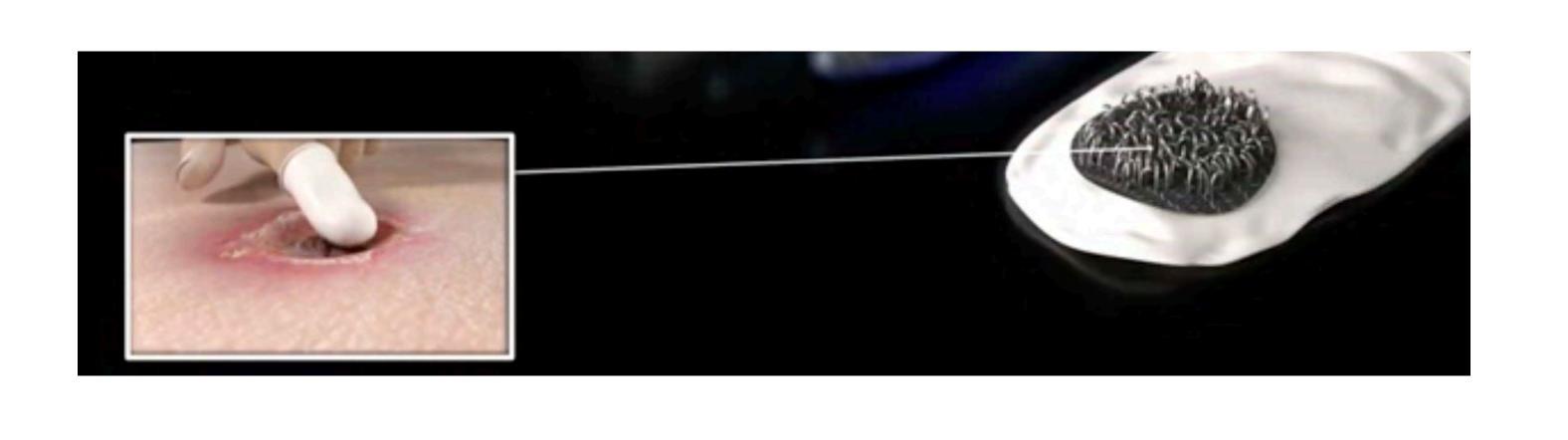
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Hooked Medical Fabric Applicator and Finger Cot





Introduction:

A 64 year-old type 2 diabetic male using tramadol was treated for a left lower vascular ulcer heel wound that evolved from a sore over 3 years with conventional debridement and a wound vac. Prior biopsy revealed squamous cancer and he underwent radiation therapy. When amputation was advised his blood glucose was 130mg/dl and HgbA1c was 7. Office based local anesthesia failed and two operating room treatments with a skin graft placement was performed. The original 5x4cm wound did reduce to to separate wounds separated by a skin gland measuring 3x1.5cm and 1.5x3cm. Fabric-devices have been used to remove tissue for lower genital tract biopsy with a safe and effective evidence-based history for over 5 years with some published utility for wound care.

Methods:

Results:

Topical 2% lidocaine spray was applied to the wound 10 minutes before wound debridement and biopsy procedure with the fabric-based brush-curettage finger cot and handle devices (Soft K-Cot®, and SoftBiopsy®, HIstologics LLC, Anaheim CA) using pressurized stroking and rotation of the fabric, depressing the hooks that covert to micro-curettes and achieve friction sufficient to remove and trap tissue. Pain was reported if present. Mechanical and surgical debridement to the level of the deep dermis and tangential biopsy and PCR organism analysis using the Thermofisher Quant Studio 12K flex method.



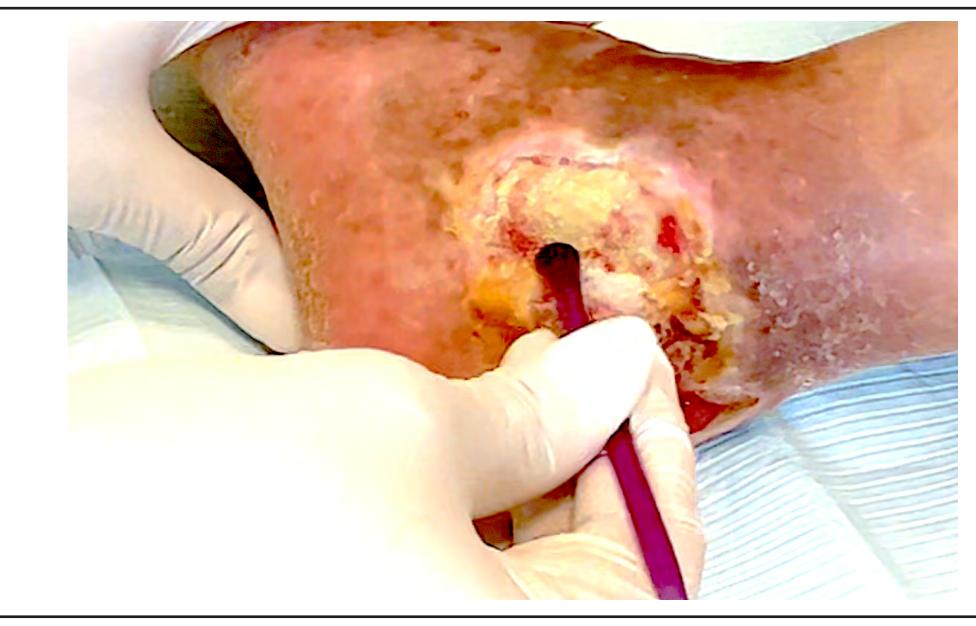
Hooked Frictional Fabric Devices



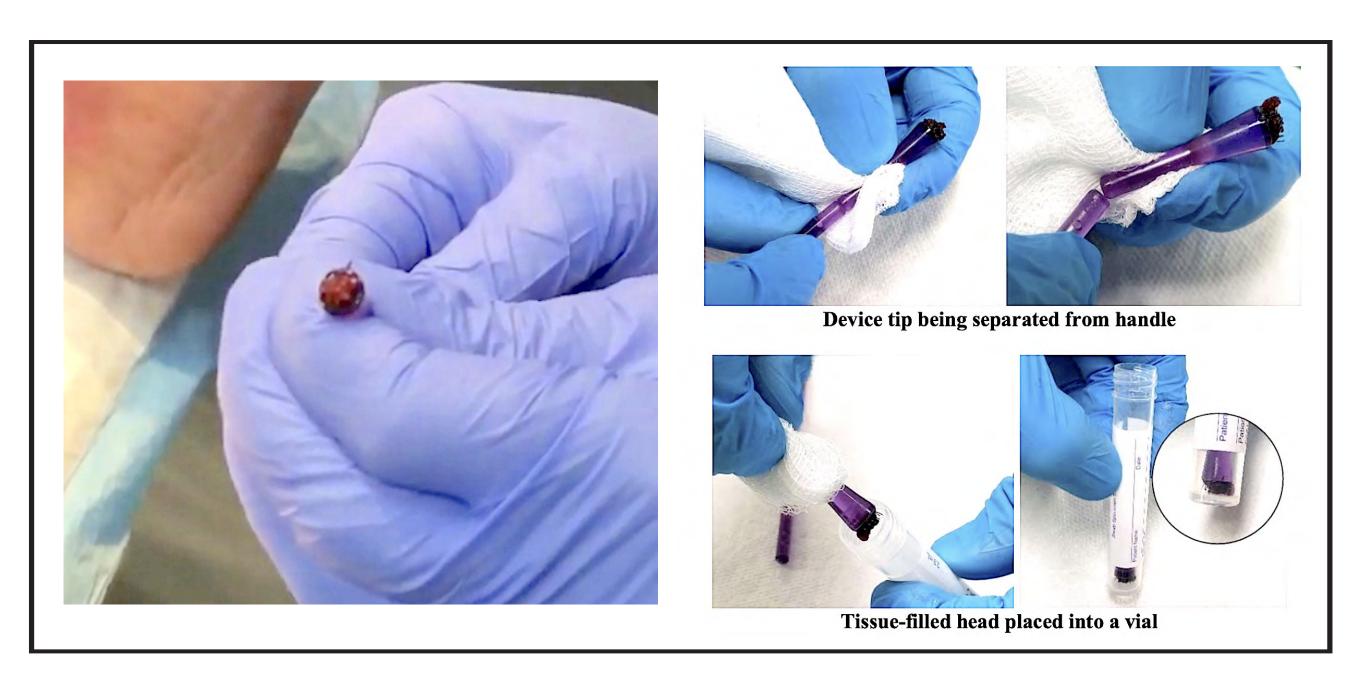
Debridement of the Woound Base with Hooked Frictional Fabric Finger cot



Excavated Necrotic Debris from the Woound Base with Hooked Frictional Fabric Finger cot



Debrided Wound Base with apparent Biofilm and Rotational Application and Tissue Sampling with Sampling with Device

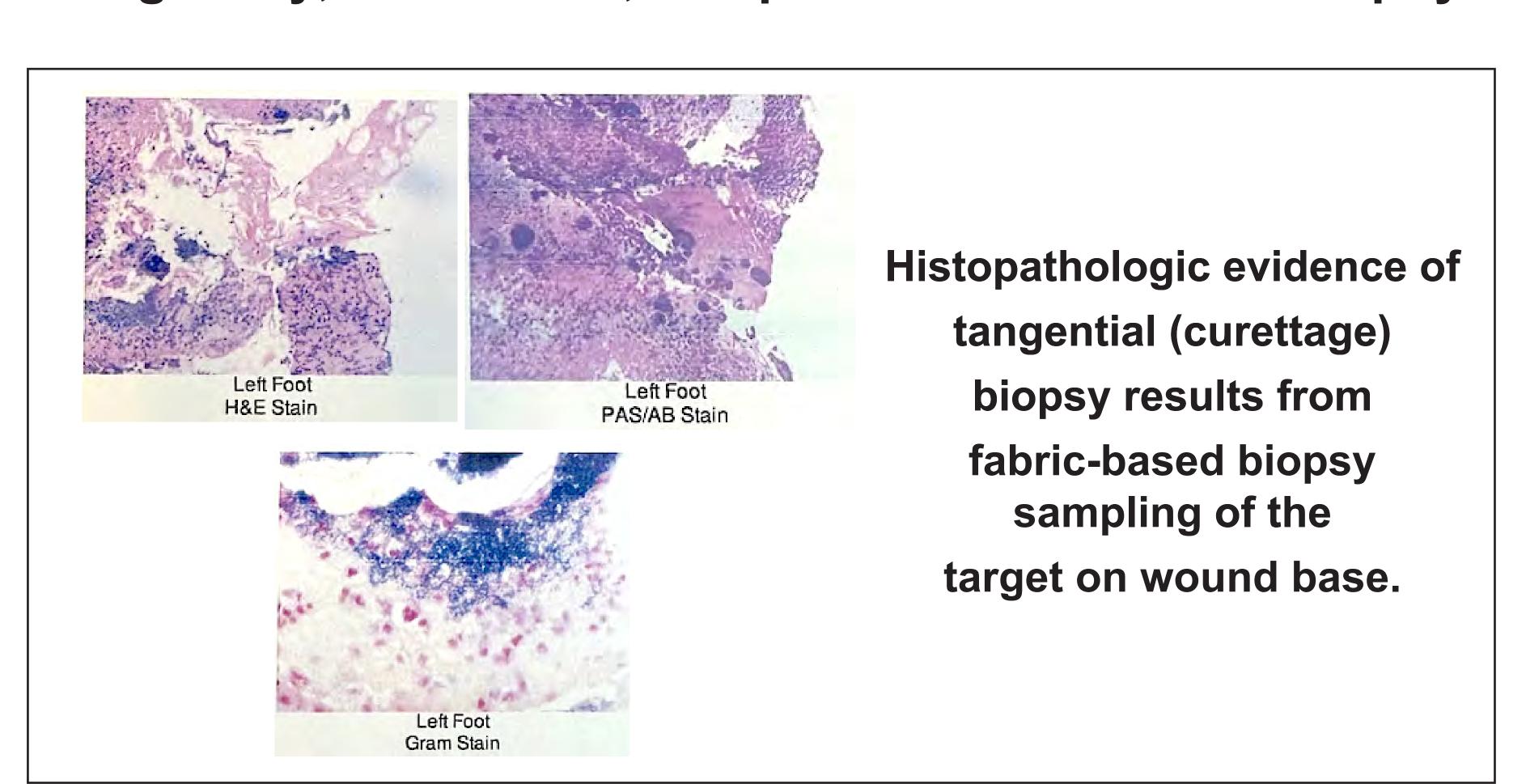


Biopsy Specimen to be detached for Lab



Post-Debridement and Biopsy

Selective debridement into deep dermis / superficial subcutaneous depth, removing necrotic debris, hyperkeratosis, and slough, with micro-punctate bleeding was achieved with mild discomfort. A second subsequent debridement a few weeks later was less painful. A biopsy of the inferior ulcer with pressure and rotation of the fabric-based biopsy device was performed after debridement, inferior to the skin island at the initial visit. Histopathology showed no evidence of recurrence of malignancy, ulcerations, and presence of bacteria. Staphylococcus and Pseudomonas was identified under PCR and appropriately treated. After the second debridement, the wound has improved and reduced in size.



Wound Pathogen Panel and Histopathology FINAL DIAGNOSIS AFTER MICROSCOPY LEFT FOOT, BRUSH BIOPSY: - SECTION SHOWS PROFILES OF LICERATED SKIN WITH GRANULATION TISSUE CHANGES AND BASOPHILIC COLLECTIONS OF BACTERIA. NO MALIGNANCY SEEN. - A CORRESPONDING PERIODIC ACID-SCHIFF/ALCIAN BLUE (PAS/AB) STAIN ALSO SHOWS LICERATED GRANULATION TISSUE, COLLECTIONS OF BACTERIA, AND IS NEGATIVE FOR FUNGUS. - A CORRESPONDING GRAM STAIN DEMONSTRATES GRAM POSITIVE COCCI. MICROSCOPIC DESCRIPTION: Microscopic examination has been performed and is reflected in the above diagnosis. CLINICAL SUMMARY: - Ulceration (Malignancy/Vasculitis) GROSS DESCRIPTION: Specimen received in formalin labeled with Patient's name, Date of Birth, and "Left Foot". It is noted on the requisition as a "Brush Biopsy" and indicated that it is "Left Foot". Specimen is beige in color and consists of multiple pieces of tissue, measuring 0.3 x 0.2 x 0.1 cm in aggregate. Specimen is entirely submitted in cassette labeled "326447L" for processing.

References

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- 4. Diedrich JT, Rathore S, Bentz JS. Comparison of Tissue Yield Using Frictional Fabric Brush Versus Sharp Curettage For Endocervical Curettage. JLow Genit Tract Dis. 2017 Oct;21(4):304-306.
- 5. Lonky NM, Schultz G. Frictional Fabric-Based Tissue Biopsy Sampling for Wound Organism Analysis. Society of Advanced Wound Care, Las Vegas, NV, October 29-31, 2021.
- 6. Lonky NM, Levine B. Case Study of a Fabric-Based Brush-Curette for Toe and Foot Crevice Wound Debridement and Tissue Sampling. SAWC, April 8-10, 2022, Phoenix AZ.

Discussion:

The novel use of a Kylon® brush-curette fabric-based technology allowed for what was not previously possible; two tolerable and effective debridement episodes and a diagnostic biopsy in the outpatient setting under local anesthesia in a hyper-sensitive patient.

