

Punch grafting in hard to heal ulcers. A case report

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Case Report

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Background:

The case report we present regards a 36-year-old female patient who came to the emergency department with a history of hyperthyroidism who overdosed on thiamazole, having extremely painful chronic ulcers on her left leg. Initially underwent surgical cleaning and biopsy which showed microcalcifications and calcium deposits. No apparent cause found ruling out autoimmune or vascular diseases. Punch graft technique used to speed up wound healing achieving full closure 4 weeks after graft placement. Punch grafts can be seen as a helpful therapy technique because of how simple, cost-effective, and efficient they are.

Keywords: Punch graft, wounds, lower limb.

Chronic wounds result from a disruption in the normal healing process. If wounds fail to progress through the stages of healing within 4 to 8 weeks, they are considered chronic. This can occur when wounds become stalled at any of the 4 stages of wound healing: hemostasis, inflammation, proliferation, or remodeling/maturation. Various factors can impede wound healing, including foreign bodies, tissue maceration, ischemia, and infection. Medical conditions like malnutrition, diabetes, and renal disease can also hinder the healing process. (1) (2)

Breaking the cycle of chronicity is crucial to manage persistent inflammation and promote healing. Effective therapy involves early intervention, accurate assessment and diagnosis, appropriate patient and wound management, skilled healthcare professionals, and timely referral to specialists. (3)

Pain management in patients with difficult-to-heal wounds, often associated with arterial and Martorell leg ulcers, can be challenging for clinicians. Punch grafting, a traditional technique to improve wound healing, has shown to reduce pain significantly. The goal is to graft beds with red granulation tissue for optimal healing. (4) (5)

Punch grafting involves obtaining thin split-thickness skin grafts containing epidermis and papillary dermis, usually from the thigh under local anesthesia. The grafts are placed on the wound bed, with the donor site healing by secondary intention. This outpatient procedure should be followed by careful dressing changes to maintain a pro-healing environment. Unadhered grafts should be replaced,

and serial skin grafting sessions at 3-week intervals can expedite full epithelialization. (4) (5)

We present a case of hard-to-heal ulcerated calciphylaxis in the left leg successfully epithelialized after punch skin grafting.

Case report

Case report. A 37-year-old female patient with a history of poorly controlled hyperthyroidism due to an overdose of thiamazole 30 mg per day for several months without medical supervision. She denies other significant medical history. Her current condition began with a skin rash on the left leg in December 2023, which gradually increased in size. She reports receiving multiple treatments including flavonoids, multiple antibiotics, and wound dressings without improvement.

She was admitted to the emergency department of our hospital where we found two ulcers on the outer region of the left leg above the ankle, which were very painful at a 10/10 intensity on the visual analog scale. Herbal therapy was being used on both wounds, which had areas of necrosis, measuring 11 x 7 cm for the upper ulcer and 14 x 13 cm for the lower one. She underwent surgical debridement, biopsy, and culture, and started empiric antibiotic therapy, which was later adjusted based on the culture results, revealing *Aeromonas hydrophilia*. Negative pressure wound therapy was initiated.

On admission laboratory tests showed: Hb 12.1, WBC 520, Leu 8.24, Neutrophils 78%, Albumin 3.45, INR 1.16 TSH <0.0083, Low T4 2. Vascular



Figure 1. Ulcers upon arrival at the emergency room. Areas of necrosis are observed.

Doppler ultrasound: No reflux observed during Valsalva maneuver, no communication seen in deep or superficial systems. Arterial system without stenosis or ultrasound evidence of arterial insufficiency. The patient had a complicated clinical course with no improvement in pain.

Negative pressure wound therapy was discontinued, and honey dressings were started along with topical sevoflurane for pain management, leading to significant pain improvement to 4/10 on the visual analog scale by the fourth day. Antibiotic course was completed, and thiamazole treatment was adjusted. Home care continued with alginate dressings for both ulcers.

Both ulcers showed good granulation tissue, so a decision was made to graft the upper ulcer and continue with alginate for the lower one for comparison. The graft was taken in an outpatient setting. The receiving site was prepared with asepsis using water and soap. A graft was taken from the lateral side of the left thigh with sterile technique, using a scalpel blade. Grafts were placed on the recipient site. The surrounding skin was prepared with zinc oxide. Alginates were placed on both the donor and recipient sites, and both wounds were covered for 3 weeks.

Four weeks post-grafting, complete epithelialization of the upper ulcer was achieved, whereas the lower ulcer treated only with alginate closed at 9 weeks.

Discussion

Chronic wounds of the lower extremities are occurring with increasing prevalence. They affect millions of individuals annually, representing both a



Figure 2. Ulcers in the immediate post-operative period.

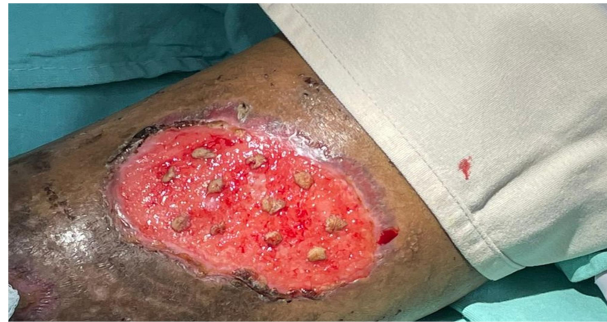


Figure 3. Punch Grafting.

significant health risk and a large economic burden. If an ulcer is present in an atypical location, its clinical appearance or symptoms are uncommon and it does not respond to conventional therapy, then suspecting an atypical etiology is warranted. For patients where the diagnosis seems unclear, tissue biopsy is often critical in narrowing the differential diagnosis. This can be done by performing a punch biopsy of the wound bed and edge to send for histology and culture. Calciphylaxis presents an extensive irregular, necrotic and painful ulcers on fatty areas such as thighs, abdomen, and breasts. (6)

Chronic pain is one of the symptoms that patients find particularly distressing. Many aspects of local wound management, if dealt with swiftly and appropriately, can lead to a reduction in the patient's pain experience, for example, resolution of infection or reduction in inflammation. Chronic pain involves both physical and emotional components and is rarely a sign of ongoing damage. A wound represents a loss of skin integrity and cut nerve fibers; therefore, the resulting pain is due to a combination of nociceptive pain and pain caused by nerve damage. (7)

Early punch grafting is considered the first-line treatment for some ulcers, mainly for its benefit in pain reduction and limitation of wound progression. Even if the conditions for grafting are not ideal, the punch graft releases growth factors and cells that promote epithelialization and pain reduction. (8) The most-used type of thin split-thickness skin graft is the mesh graft obtained with dermatome; this technique requires sophisticated material and must be performed in the operating room with the patient under general or



Figure 4. Complete epithelialization of both ulcers.

loco-regional anesthesia (9). Punch grafting is another type of thin split-thickness skin graft, less aggressive and simpler than the mesh graft, which does not require the use of complex instruments and can even be performed on an outpatient basis. Being conducted on an outpatient basis is interesting from an economic point of view, as it minimizes costs compared to hospital level implementation (10)

Conclusion

Punch grafts arise as a simple technique that can shorten epithelialization time as well as improve the chronic pain that accompanies ulcers. In our experience, we were able to compare grafts with a conventional technique in an ulcer with an atypical presentation, probably secondary to calciphylaxis based on biopsy findings. We found a reduction of almost half of the epithelialization time between the two techniques, as well as an improvement in the patient's symptoms. Therefore, we conclude that punch grafts do reduce pain and limit ulcer progression.

Conflicts of interests

The authors have no conflicts of interest in the development of this research.

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