

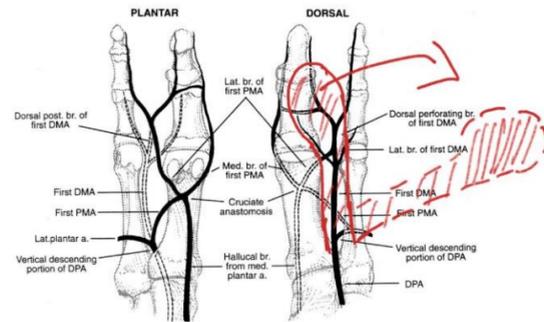
Adipofascial Second Digital Artery Flap for Lesser Digit Wound Coverage



Renée Shepherd DPM, Alex Dawoodian DPM, Ronald Belczyk DPM

Introduction

Reverse flow island flaps have been utilizing in both foot and ankle reconstruction for several years now. Studies and case reports are continuously being published due to the continued need for further advancement with wound care coverage from these vascular grafts. The digital artery island flaps have been studied and utilized to have very good results in regards to wounds of the weight-bearing surface to the forefoot.



Methods

In this case, a 67-year-old Hispanic male presents to the clinic with a chronic wound of the lateral third digit of the left foot. He has history of wounds with a fourth digit amputation to the left foot and a transmetatarsal amputation of the right. He has a pertinent past medical history of diabetes mellitus with peripheral neuropathy along with peripheral vascular disease. He has recently undergone an open bypass and presents with optimal vascularization requesting attempt for amputation prevention. The flap was released and mobilized for wound closure to dorsal aspect of the foot to the dorsolateral aspect of the fourth digit. During the procedure, utilizing intraoperative sterile Doppler, the digital arterial pedicle flap was created full thickness from the lateral aspect of the hallux. An incision was made dorsally connecting the island flap that had been raised, to the wound on the fourth digit. The flap was then advanced and secured with suture technique. The donor flap site was then covered and healed utilizing allograft of a split thickness skin graft from the ipsilateral thigh.

Results

Patient had successful salvage of the third digit with complete wound healing to all wound and graft sites. The chronic fourth digit wound, the donor site, communicating incision, and STSG donor site. Success of the flap resulted in the patient to avoid a previously recommended trans metatarsal amputation.



Two Years Post Op



Discussion / Conclusions

Dealing with immune-compromised patients can make treatment very difficult. Having the ability and knowledge to discover new vascularized pedicle flaps for difficult to heal wounds continues to prove positive outcomes. Wounds to the digits of the foot are very difficult areas due to the thin nature of protection, often times tendon and bone are quickly exposed making other wound care modalities exempt. In a patient who was at high risk for more proximal amputation, the reverse digital artery island flap was able to heal the vulnerable area.

References

- Ernst, Jordan J. "Retrograde Dorsalis Pedis Angiosomal Flow Compromised by Small Puncture Wound Leading to Transmetatarsal Amputation." *Journal of Aesthetic & Reconstructive Surgery*, vol. 04, no. 02, ser. 9, 10 Aug. 2018. 9, doi:10.4172/2472-1905.100043.
- Koshima, Isao, et al. "First Metatarsal Artery Capillary Perforator Flaps." *International Microsurgery Journal*, vol. 3, no. 1, 4 Jan. 2019, doi:10.24983/scitemed.imj.2019.00093.
- Patil, Rahul, et al. "Coverage of Defects over Toes with Distally Based Local Flaps: A Report of Four Cases." *Indian Journal of Plastic Surgery*, vol. 41, no. 1, Jan. 2008, pp. 62-66.
- Ramanujam, Crystal L., and Thomas Zgonis. "Reverse Flow Digital Artery Pedicle Flap for Closure of Diabetic Forefoot Ulceration." *Diabetic Foot & Ankle*, vol. 1, no. 1, 1 June 2010.
- Özkaya, Özey, et al. "Reversed First Dorsal Metatarsal Artery Island Flap for First Ray Defects." *The Journal of Foot and Ankle Surgery*, vol. 57, no. 1, Jan. 2018, pp. 184-187.