

A CASE REPORT: RECONSTRUCTION OF THE CALCANEAL REGION DEFECT USING THE MEDIAL PLANTAR FREE FLAP

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Abstract

Soft tissue defects in the calcaneal region represent a reconstructive challenge because of their complexity and the lack of local flaps. We report a clinical case of using the medial plantar free flap to cover of this area. The advantages of the flaps will be discussed.

Keywords: Medial plantar flap; Medial plantar free flap; Free flap; Reconstruction; Calcaneal region defect.

INTRODUCTION

Reconstructing and covering the calcaneal region is difficult because the heel is a weight-bearing area. Frequently, the tissue defects are covered with pedicle medial plantar flaps. Opoku-Agyeman (2020) [1] reported that medial plantar flaps provided better outcomes than sural flaps. Linkoudis (2013) [2] reported the use of medial plantar free flaps to cover the medial volar of the foot. Xu (2022) [3] noted that the structure of medial plantar free flaps and the finger tissue are

compatible so that the flaps can be used to cover finger tissue defects. However, there are few reports about the use of medial plantar free flaps to cover the calcaneal region defect. Our report aimed: *To discuss a case of calcaneal region defect covered with contralateral medial plantar free flaps.*

CASE REPORT

A 25-year-old female patient was admitted with a left plantar and a part of the left calcaneal area skin avulsion; she underwent wound debridement.

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Date received: 19/01/2024

Date accepted: 12/3/2024

<http://doi.org/10.56535/jmpm.v49i4.721>

After the debridement, there was a soft tissue defect with a size of 8 x 5cm. The defect was scheduled to be covered with a contralateral medial plantar free flap; the dimension of the flap was 9 x 6cm (*Figure 1*). The plantar artery, 2 venae comitantes, and some more branches on the donor side were exposed. The posterior tibial artery and 2 veins were exposed in the defect area. After the arterial anastomosis, the vessels were rerouted, but there was no flow in the 2 venae comitantes of the flap, so we decided to connect the posterior tibial vein of the defect area

to a branch of the flap. After the anastomosis, the vein was rerouted, and there was a flow in a satellite vein. Then, the 2 satellite veins of the defect area and the flap were connected. The donor site was covered by a full-thickness skin graft, the flap was survival, and the wound healed by primary intention. 3-month follow-up, the flap was good survival, with no necrosis at the edge of the flap. The patient was able to start weight-bearing and there was no ulceration or raw area on the flap. After 3 months, the sensitivity of the flap has not fully recovered.

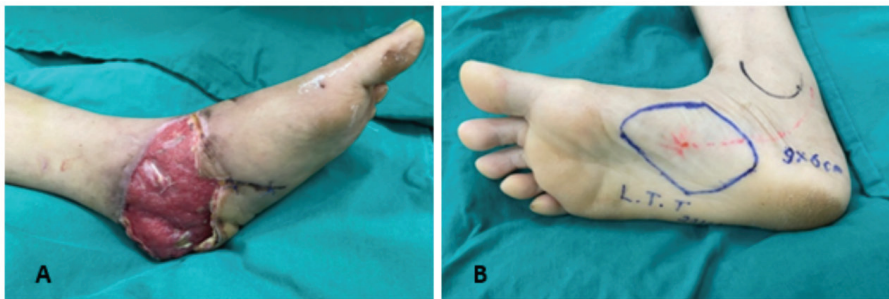


Figure 1. Donor site and defect area before the surgery.
A: Tissue defect; B: Flap design.



Figure 2. Post-operative outcome.
A: 10 days after the surgery; B: 3 months after the surgery.



Figure 3. 3 months after the surgery.
Left foot: Recipient area; Right foot: Donor site.

DISCUSSION

The epithelial tissue of the calcaneal region is thick, so it can bear weight better than other regions of the body. Regularly, local flaps with pedicle, and plantar flaps, for example, are used for tissue defects on the heel. In this patient with plantar complicated wounds, the local flaps were not available. The medial plantar flaps are usually indicated for the defects because the medial plantar area does not bear much weight, so the flaps can be harvested and covered later on by thick skin graft without impeding the function. Lykoudis (2013) [2] reported a case of medial plantar defect successfully covered with the medial plantar flap. Pertea (2018) [4] noted that medial plantar flaps should

be the top priority for tissue defects of the calcaneal region defect. However, there are still few reports on the use of the medial plantar free flap to reconstruct the calcaneal region defect.

In case of no backflow in satellite veins after the anastomosis of the flap artery and the posterior tibial artery, the cause should be that the posterior tibial vein is not a dominant efferent vein of the flaps. Corley (2009) [5] reported that there were some cases in which plantar veins are tributaries of the veins of the dorsum of the foot before flowing into a part of the posterior tibial veins. Uhl (2012) [6] reported that plantar superficial veins flow into the veins of the dorsum of the foot; and then, flow into the saphenous vein.

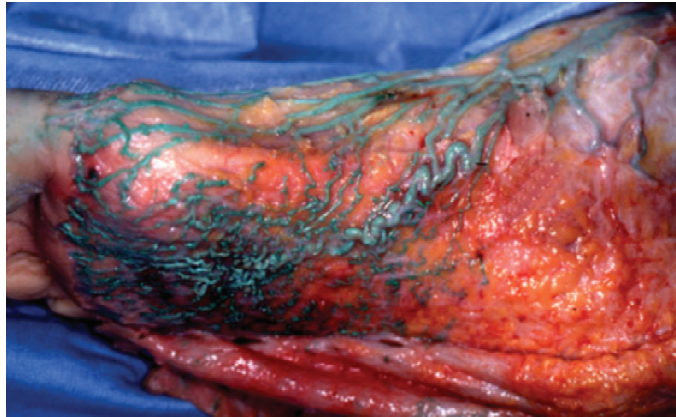


Figure 4. Medial plantar subcutaneous veins flow into the saphenous vein [6].

CONCLUSION

In our case, contralateral medial plantar free flaps are a favorable option for calcaneal or/and foot plantar region defects where medial plantar pedicled flaps can be harvested to cover. The issue of flow veins of the flap should be noted during the surgery.

Acknowledgment: The authors extend our gratitude to members of the General Trauma and Microsurgery Department and Anesthesia Department, Military Hospital 103 for their assistance. We declare to have no conflicts of interest.

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