



A distally based island first dorsal metatarsal artery flap for the coverage of a distal plantar defect

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SUMMARY. An intractable plantar ulcer of the great toe was successfully covered with a distally based island first dorsal metatarsal artery flap. Common dorsal digital veins served as venous drainage for the flap. The results show that this flap can be used as a reliable alternative to conventional techniques to repair a distal foot defect.

Methods of reconstruction of foot injuries are chosen according to the nature of injury, the area to be repaired, and the patient conditions.^{1,2} So far various methods have been employed to repair distal plantar foot defects. Skin grafts can be successfully used for defects of the non-weightbearing area and those where the subcutaneous pad has remained intact.¹ For defects of weightbearing distal plantar areas, surgical procedures involving the filleting of a toe³ and many

antegrade and retrograde random or axial pattern flaps are the techniques of choice.² In this paper I report the case of a patient in whom we successfully repaired an intractable plantar ulcer of the great toe using a distally based island first dorsal metatarsal artery flap. Earley and Milner⁴ described distally based first web flaps that included branches of the first dorsal and plantar metatarsal arteries and which they used to cover distal dorsal foot defects. I used the same donor



Fig. 1

Figure 1—Deep plantar ulcer of the right great toe.



Fig. 2

Figure 2—Design of a 2 x 4 cm, distally based first dorsal metatarsal artery flap.



Fig. 3

Figure 3—Elevation of the flap.



Fig. 5

Figure 5—Six months after the operation. The ulcer has healed.



Fig. 4

Figure 4—Transposition of the flap into the defect.

area, but to repair a plantar defect, and applied the flap as an island with a complete axial pattern pedicle.

Case report

A 45-year-old man was referred to us for the surgical treatment of an intractable neurotrophic plantar ulcer of the left great toe by the department of dermatology.

The ulcer was mainly in the non-weightbearing area, however, skin grafts did not seem to be appropriate because of the state of the flexor tendon, which was exposed and without intact paratenon (Fig. 1). On the other hand, it seemed that random pattern plantar flaps would not reach the defect. Fortunately, using a Doppler probe we could identify the course of flow of the dorsalis pedis artery and its branch, the first dorsal metatarsal artery. Thus, we planned to use a distally based first dorsal metatarsal artery flap to cover the ulcer (Fig. 2). A 2 × 4 cm flap was raised and transposed into the defect while preserving the dorsalis pedis artery and its perforating artery to the plantar artery. The branches of the common dorsal digital veins were included in this pedicle for venous drainage (Figs 3, 4). The donor site was closed primarily. The postoperative course was uneventful (Fig. 5).

References

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