



ABDUCTOR HALLUCIS MUSCLE FLAP WITH ROTATION ADVANCEMENT OF SKIN FOR RESURFACING OF HEEL ULCERS IN LEPROSY PATIENTS

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SUMMARY : Provision of durable skin cover for chronic ulcers of the heel is a challenging problem. It is compounded by the absence of sensation in leprosy patients. Abductor hallucis muscle flap with rotation advancement of sole skin has been found to be a satisfactory procedure in the management of heel ulcers in six leprosy patients.

INTRODUCTION

Heel ulcers are common in leprosy patients. It is resistant to healing because of the weightbearing nature of the area and anaesthesia due to the disease. Since the area is painless, by the time patients present for treatment there is osteomyelitis of the underlying bone. The goal in treatment is to provide durable padding of the area with minimal donor site morbidity. We have used abductor hallucis muscle for padding with rotation advancement of plantar skin for resurfacing the defect in six patients with chronic ulcer of the heel.

TECHNIQUE

The surgery was done under local anaesthesia. Abundant hyperkeratotic skin and callosity around the ulcer were excised with the base of the ulcer. The osteomyelitic bone was debrided. The incision to harvest the muscle was made on the medial aspect of the foot along the border of the ulcer. This also formed the edge of the rotation advancement skin flap. Abductor hallucis muscle insertion was divided. It was dissected proximally up to the calcaneum and transposed into the defect and held by sutures. This was followed by the rotation advancement of the skin flap (Figs. 1-6). The foot was immobilised in plaster and kept elevated on the Bohler splint. Sutures were removed at two weeks and patients were allowed to weightbear after three weeks. Microcellular rubber chappals were provided with advice about care of the feet.

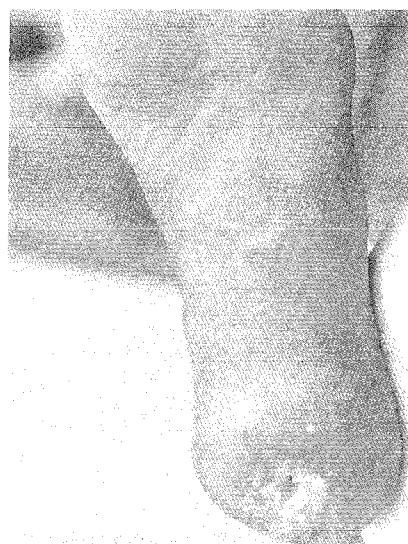
RESULTS

Six patients underwent the procedure. All of them had heel ulcers of more than one year duration. All wounds healed primarily and all were recurrence-free up to nine months. One patient had recurrence

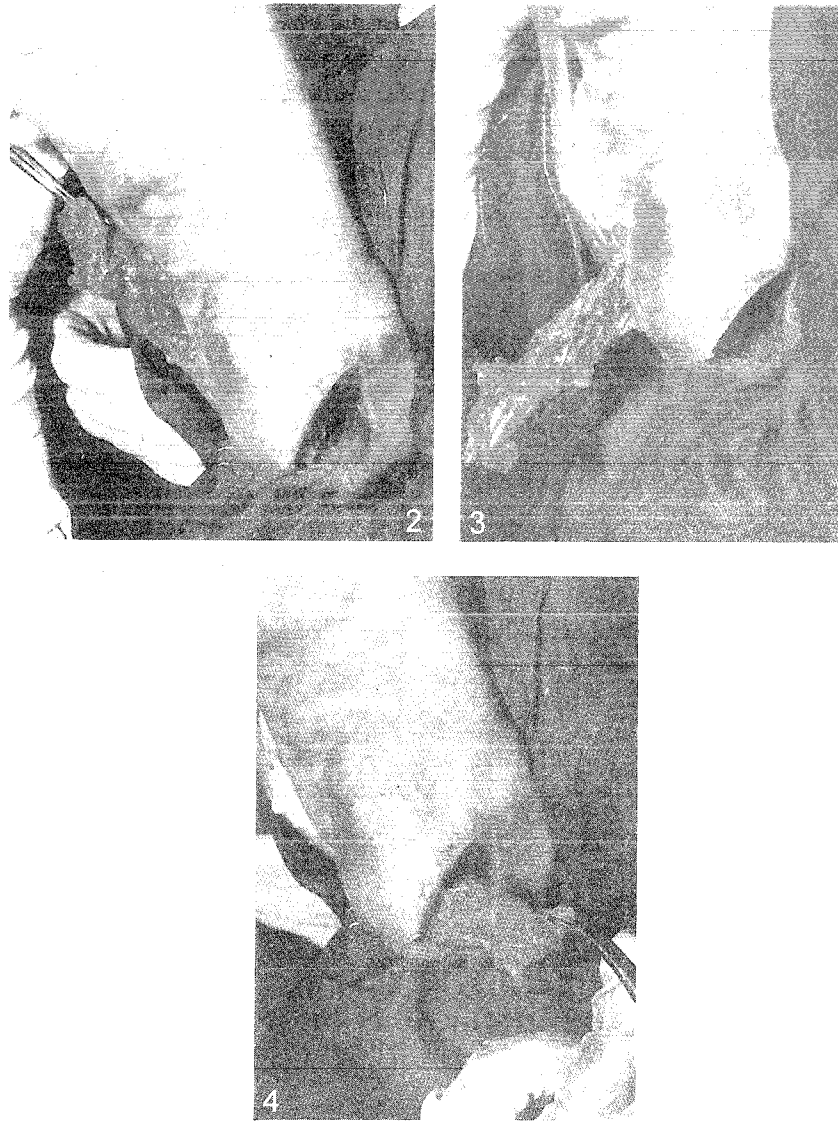
in ten months and another in one year. Both of them gave a history of more than a 2-km walk at a stretch during pressing circumstances. The ulcers recurred soon after the stress. They also healed with conservative management.

DISCUSSION

Resurfacing of chronic ulcers in the heel remains a difficult, challenging and frustrating problem to patients and surgeons. Sommerlad and McGrouther¹ examined 51 patients who had varying parts of their soles resurfaced in a variety of ways and found that no form of sole replacement appeared satisfactory and that most patients avoided weight bearing in the reconstructed area. Harrison and Morgan² used an instep island neurovascular flap for heel defects. It was a



(Fig - 1) Ulcer of heel



(Fig 2 - 4) Dissection and inset of abductor hallucis muscle



(Fig - 5) Just after operation



(Fig - 6) One month post operative

myocutaneous flap based on medial plantar artery incorporating abductor hallucis muscle. They found the transposition flap elevated superficially to the plantar fascia required "delay". The "delay" procedure produces fibrosis on the flap-base interface to make the already unyielding flap even less mobile. Hartrampf³ used flexor digitorum brevis muscle with or without its overlying skin for soft tissue cover in the heel in six patients with success. Of the six, five patients had defect in the weightbearing area of the heel. The area of the instep has also been used by other workers^{4,5}. Later May⁶ found that muscle flaps with skin grafts provided good functional reconstruction.

Use of muscle is very essential for padding in the weightbearing area. Methods to provide like skin over the muscle would be further advantageous than skin graft. We have used abductor hallucis muscle flap for padding with rotation advancement of plantar skin for resurfacing skin defects in leprosy patients. In such patients the problem is compounded by anaesthesia of the foot and reduced blood supply to the foot on account of conditions like tarsal tunnel like syndrome. In long standing ulcers fibro-fatty layer of the sole is replaced by scar tissue and abductor hallucis provides good padding as replacement.

Abductor hallucis is a long thin muscle located in the medial foot (Fig. 7). It lies between flexor digitorum brevis muscle and flexor hallucis longus tendon laterally and the bones forming the medial

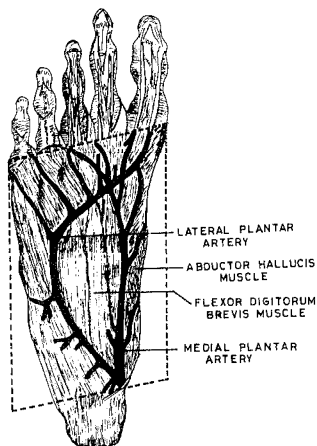


FIG.1-ANATOMICAL RELATIONS OF ABDUCTOR HALLUCIS MUSCLE.

(Fig - 7) Anatomical relations of abductor hallucis muscle

arch of the foot. The medial plantar artery supplies 3 or 4 pedicles to the posterior muscle belly and courses between the flexor digitorum brevis and flexor hallucis muscle. The muscle can be mobilised by dividing the distal pedicles up to the level of the medial malleolus approximately 4 cm. from the posterior aspect of the calcaneum. At this level approximately 2 or 3 pedicles to the muscle are preserved to provide adequate safe arc of rotation⁷. This muscle fills up the heel raw areas very well. There is no donor site morbidity.

CONCLUSION

We conclude that abductor hallucis muscle flap with rotation advancement of plantar skin is a good method for providing durable skin cover for heel ulcers in leprosy patients.

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