

MYOCUTANEOUS FLAPS FOR RECONSTRUCTION OF HEEL DEFECTS

(A Preliminary Report)

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Introduction

Defects of the heel pose a difficult problem for reconstruction. Skin over the heel should be thick and tough to withstand weight bearing. It should also have sensation as it is exposed to repeated trauma. No other material is better suited for this purpose than the skin of sole itself. Very few satisfactory techniques are available for cover. In the fore foot rotation flaps based on medial calcanean vessel have very limited application. A cross sole flap, using non weight bearing skin, (Myr-y-Mir, 1954) is cumbersome and needs prolonged uncomfortable immobilization with a fair risk of separation and failure. One stage myocutaneous flaps for transferring skin from non-weight bearing part of sole on to heel are a recent development (Hartrampi, 1980). This flap was developed by us independently in 1978 on the cadavers (Fig. 1). Our experience in successful use of these flaps is presented.

Materials and Methods

In three cases of defects following local excision of clinically malignant lesions of heel the cover was provided by myocutaneous flaps based on flexor digitorum brevis. Of the three, two cases had nodular malignant melanomata. The

third was clinically diagnosed as a melanoma but later turned out to be a pigmented chronic granulomatous ulcer.

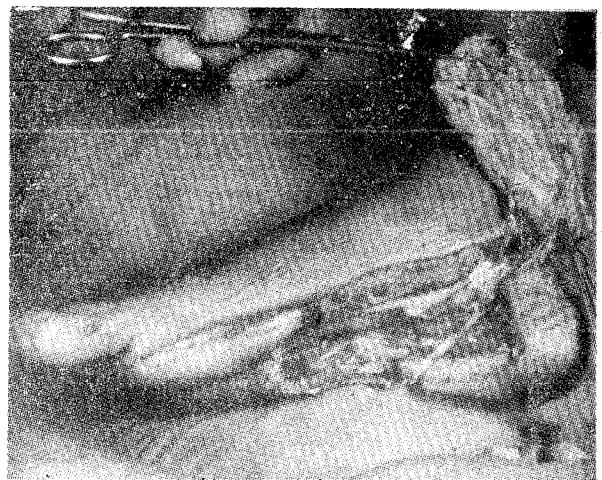


Fig. 1. Cadaver dissection showing flap of flexor digitorum brevis with overlying skin. Arrows point to the dye which has reached the most distal part of the flap after injecting into posterior tibial artery.

Illustrative cases

1. A male patient aged 27, presented with a nodular malignant melanoma (3 x 4 cm) on the heel (Fig. 2). Wide excision, with a clearance of 5 cm proximally, left a defect of 40 cm² on the heel, exposing the calcaneum.

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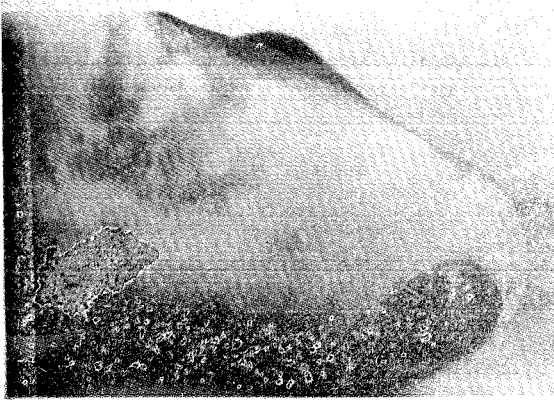


Fig. 2. A pigmented lesion of heel.

A myocutaneous flap based on flexor digitorum brevis was raised along with lateral plantar artery. The exposed lateral plantar nerve was covered with flexor accessorius. The flap transferred to heel and donor area covered with a skin graft. The flap survived entirely and the patient was able to walk home in a month, after undergoing inguinal block dissection for metastatic lymphnodes.

2. A 35-year old male patient developed a recurrent ulcer after local excision of a pigmented lesion on heel elsewhere (Fig. 3). Wide excision resulted in a defect of 50cm² on plantar and lateral aspects of heel. Cover was provided by a myocutaneous flap based on flexor digitorum brevis and abductor hallucis, supplied by medial and lateral plantar vessels. The result after one year shows the flap and the donor area (Fig. 4, 5).

Discussion

The procedure was successful in all the cases and provided a large island of skin. The skin transferred is the best alternative as it is thick and can resist the strain of weight bearing. The flap has additional advantage of providing good padding by the muscle. Protection of the nerve by transferring medial heel of flexor

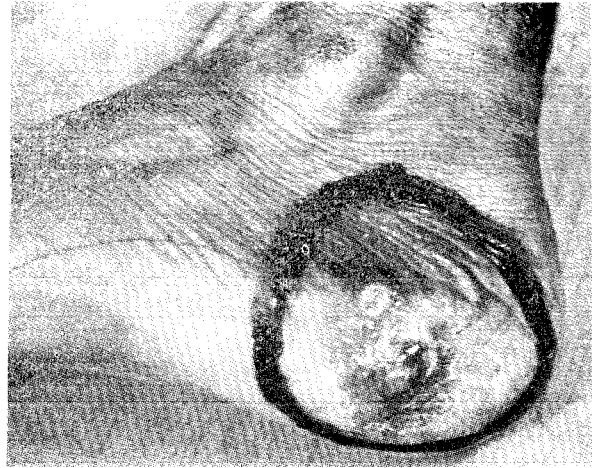


Fig. 3. Recurrent ulcer after excision of a pigmented lesion elsewhere. Proposed excision marked out.

digitorum accessorius appears useful to avoid undue pressure and damage to the nerve. The patients were able to walk after two weeks. The work was originally planned in 1978 for dealing with trophic ulcers of heel where padded cover is essential. Unfortunately we could not get a suitable case for the same. It should be particularly valuable in the management of indolent trophic ulcers.

The alternatives to the myocutaneous flap are far inferior. Muscle transposition with skin grafting has been used (Vasconez, 1974). The muscle will certainly provide a good bed but a skin graft can never be as satisfactory as sole skin which is specially adapted for weight bearing and stress.

Summary

A flexor digitorum brevis based myocutaneous flap was worked out on cadavers in 1978 for heel defects. Our experience with these cases of melanomas of the heel is presented. The flap should have great potentialities for trophic ulcers of the heel.

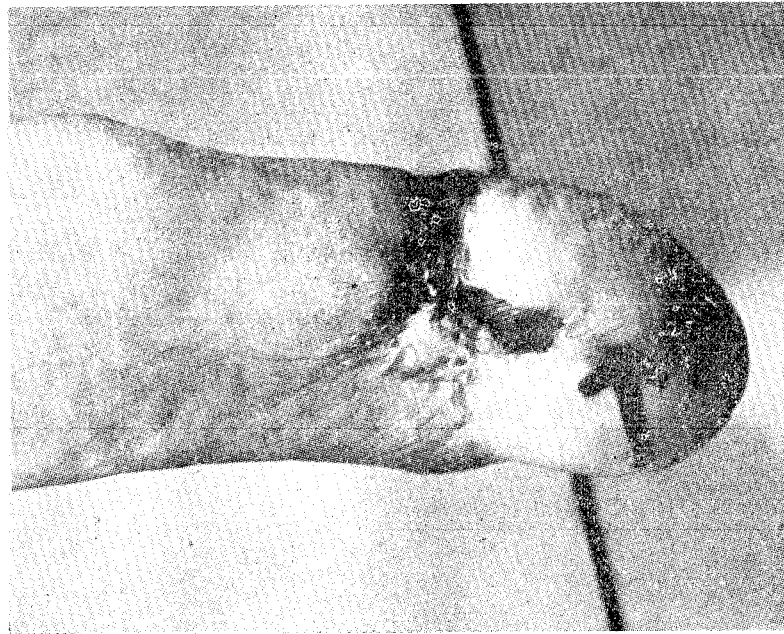
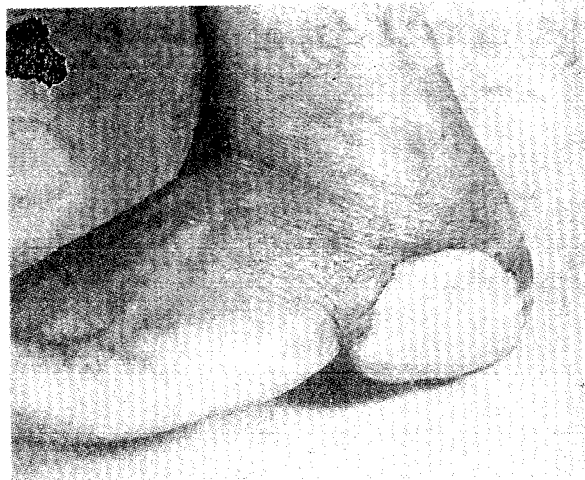


Fig. 4 & 5. Result after one year. The grafted area which was deep, flattened out with time.

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