Glabrous Skin Graft For Bilateral Full Thickness Plantar Burns

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BACKGROUND AND OBJECTIVE

The discourse on glabrous skin reconstruction is limited, especially specific to burns and is not well described in South African and international literature. Our case reports is unique and adds value to this discussion in the following ways:

- pathology (nature and extent of injury)
- setting (developing country with resource constraints)
- Fitzpatrick VI-V
- unique subtype of burns and challenging to manage due to the unique histological, functional and aesthetic properties

A 36 year old, african male presented with bilateral full thickness open flame burns.

Following the plastics principle of **"replacing like with like tissues"**, we opted to trial a glabrous skin graft in order to maximise function, minimise disfigurement, restore appearance and normal anatomical structure.

METHOD

Staged reconstruction:

Stage 1:

- autograft from the left thigh to the plantar surface for wound bed preparation (Ideally cadaver skin/synthetic skin substitute would have been used. Not available in our setting)

Stage 2:

- non-glabrous autograft from the left foot was peeled off.
- Glabrous skin was harvested from the right foot with a dermatome at 0.45mm.
- Donor skin meshed 1:3 and was clipped in placed onto the wound.
- Wound dressed with paraffin gauze and dry dressings. Wounds were exposed on day 5

Figure 1: Pre-operative bilateral plantar wounds with foot arches and weight bearing areas

Figure 2&3: Stage 1, RIGHT & LEFT foot, wound bed cleaned and prepared

Figure 4&5: RIGHT & LEFT foot, autograft from thigh

Figure 6: Day 6 post-operative

Figure 7: Stage 2, LEFT foot removal of initial autograft

Figure 8: Harvesting of glabrous skin

Figure 9: Glabrous skin graft clipped in place, LEFT foot

RESULTS

Day 5

1 month

5 months

Postoperatively graft has taken. Wound bed clean.

- Wound completely healed
- Hyperpigmentation attributed to migration of melanocytes from initial autograft
- Donor sites completely healed

- Wound smooth, recontouring and fill out of recess
- Return of sensation, exposure to surface without marked sensitivity
- Donor site no longer distinguishable
- Non-glabrous skin graft hyperkeratotic scar formation

RIGHT foot
Day 5 post op

LEFT foot
Day 5 post op

RIGHT foot
1 month post op

LEFT foot
1 month post op

5 months post op

The histological differences give glabrous skin its characteristic function, allowing for increased durability to pressure and shear force, as well as ability to adapt to changes in surface contours. These highlight the advantageous indication for using glabrous skin. The use of non-glabrous skin complicates with hyperkeratotic scarring, contractures and subfibrotic tissue.

This case report demonstrates successful use of glabrous skin for treatment of full thickness plantar burns and despite misconceptions there was no donor morbidity. Thus we conclude that replacing like with like tissue yields superior outcomes resembling virgin skin anatomically, functionally and aesthetically.

DISCLAIMER: No conflict of interest
Consent obtained by patient for usage of information and photos