

## Case report: An extended latissimus dorsi "non-free" flap

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**Summary**—A case is reported in which perfusion of a latissimus dorsi musculocutaneous flap was maintained through its secondary blood supply during transfer to a sacral defect, while its thoracodorsal pedicle was being lengthened by saphenous vein grafts. The secondary blood supply was divided only when the microvascular anastomoses were seen to be functioning so this flap was never a truly "free" flap.

### Case report

A 64-year-old woman had undergone external radiotherapy for carcinoma of the cervix in 1959. In 1979 she developed ulceration with exposure of the sacrum and coccyx which over the ensuing years became worse. The area of obvious radiation damage measured 16 × 15 cm (Fig. 1).

An extended latissimus dorsi musculocutaneous flap was planned for coverage. The muscle was elevated with division of its insertion only, leaving intact the medial segmental perforators. After division of the thoracodorsal vessels, the flap remained viable on this secondary circulation.

The ulcer was 30 cm from the thoracodorsal vessels. A 65 cm segment of the left greater saphenous vein was harvested for creation of an arteriovenous loop between the proximal thoracodorsal vessels. This loop was bisected and then anastomosed in end-to-end fashion to the distal thoracodorsal vessels. Once excellent flow was established, the origin of the muscle was divided and the whole flap was adequately perfused via the restored thoracodorsal system (Fig. 2). The ulcer was then debrided and the flap advanced caudad and inset. A skin graft was used to close the donor site. There were no postoperative complications (Fig. 3).

### Discussion

Salibian *et al.* (1983) first described the use of the free latissimus dorsi flap to cover sacral ulcers as a two stage operation to ensure viability of the free flap prior to ulcer debridement. This was modified by Nahai and Hagerty (1986) as a single stage procedure using long bilateral greater saphenous vein interposition grafts.

Our modification is based on the well known fact that the latissimus dorsi muscle has a type V vascular supply (Mathes and Nahai, 1982). There-

fore, following division of the thoracodorsal vessels, a "reverse" flap can remain perfused via the secondary segmental paraspinous perforators of the intercostal vessels (Stevenson *et al.*, 1984). The still

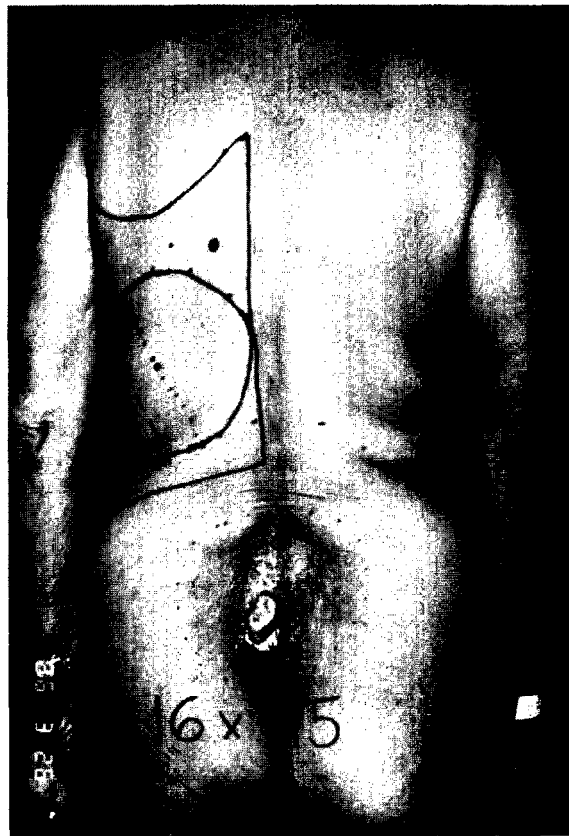
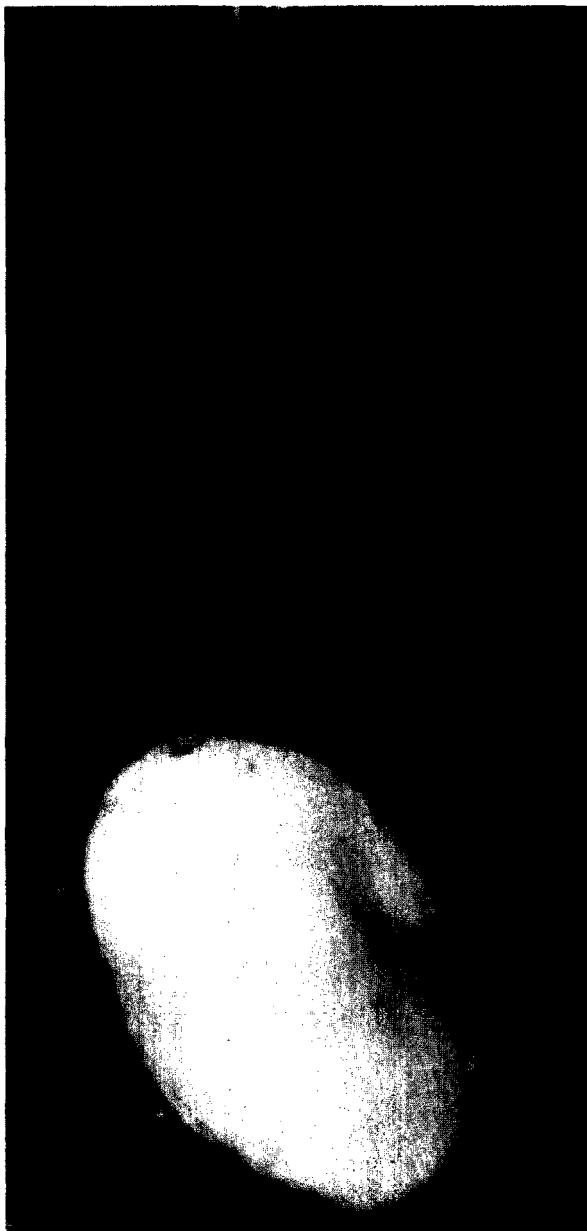


Fig. 1

Figure 1—Sacral radiation ulcer and proposed donor site.



**Fig. 2**

Figure 2—The extended latissimus dorsi flap.

perfused flap can be turned over medially to allow the microvascular anastomoses of the vein grafts to be carried out without any concern for warm ischaemia time. If they are satisfactory, flap elevation can then be completed by dividing the secondary segmental blood supply and advancing



**Fig. 3**

Figure 3—Successful coverage of sacral area 4 months post-operatively.

the flap caudad, restrained only by its new vascular leash (Fig. 2). In effect, the flap is never "free" or detached from the patient's circulation.

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### References

- Mathes, S. J. and Nahai, F.** (1982). *Clinical Applications for Muscle and Musculocutaneous Flaps*. St Louis: C. V. Mosby Co.
- Nahai, F. and Hagerty, R.** (1986). One-stage microvascular transfer of a latissimus flap to the sacrum using vein grafts. *Plastic and Reconstructive Surgery*, **77**, 312.
- Salibian, A. H., Tesoro, V. R. and Wood, D. L.** (1983). Staged transfer of a free microvascular latissimus dorsi myocutaneous flap using saphenous vein grafts. *Plastic and Reconstructive Surgery*, **71**, 543.
- Stevenson, T. R., Rohrich, R. J., Pollock, R. A., Dingman, R. O. and Bostwick, J.** (1984). More experience with the "reverse" latissimus dorsi musculocutaneous flap: precise location of blood supply. *Plastic and Reconstructive Surgery*, **74**, 237.

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