

The bi-scapular flap

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Summary—The free transfer of two transverse scapular flaps in continuity is described. This provides a donor site capable of yielding a skin flap 50 × 10 cm. Some observations on the vascularity of adjacent axial territories are made.

The scapular flaps have, since their description by dos Santos (1980), become a popular source of free skin transfer (Hamilton and Morrison, 1982; Mayou *et al.*, 1982). This popularity is due to their ability to provide thin skin cover up to 12 × 24 cm with predictable vessel size and minimal donor site morbidity, provided it is closed directly. However, the inability to extend the flap beyond the midline and the desire to close the donor defect limits the use of this flap to situations involving relatively modest defects.

When faced with a very long narrow defect the reconstructive choices are limited. A case in which this problem was solved by the use of two transverse scapular flaps raised contiguously and transferred as a bi-pedicled free flap is described below.

Case report

A 22-year-old man was involved in a motorcycle accident that resulted in a right high above knee amputation and left thigh to ankle degloving. Primary skin grafting produced quiet healing of the degloved limb. He subsequently developed an area of unstable scar 34 × 9 cm over almost the entire subcutaneous border of the tibia and extending over the lateral popliteal nerve, proximally (Fig. 1).

At operation the unstable graft was excised with the patient supine and the anterior tibial artery and vein prepared as recipient vessels. The defect produced was 39 × 9 cm. The patient was then turned prone and recipient vessels in the popliteal fossa prepared. A 40 × 9 cm flap was raised across the back to include both transverse scapular territories with a pedicle at each end. The back was closed directly without difficulty after some adjacent skin had been mobilised from the spinous processes in the midline.

With the patient still prone the flap was inset in the leg as far as possible, one pedicle was anastomosed in the popliteal fossa. The patient was then turned once more. At this point it was noted, much to our surprise, that the

whole flap was being adequately perfused by the single upper pedicle. In fact the other pedicle was bleeding, presumably via anastomoses across the midline. Despite this finding the lower anastomosis was completed for safety.

Due to swelling of the leg during the procedure the skin inset could not be completed. A small strip of skin graft was employed on a fascial extension of the flap anteriorly where the skin inset was deficient. The leg healed by first intention and the skin cover provided is proving durable.

Discussion

There are several flaps which might be considered when one is faced with a very long, narrow defect as in this case. The groin (Daniel and Taylor, 1973), tensor fasciae latae (Hill *et al.*, 1978), rectus abdominis (Pennington *et al.*, 1980) and latissimus dorsi (Olivari, 1976) flaps are the only donor sites with the potential to provide a flap of such dimensions on a single pedicle. The groin flap may be thin but has a notoriously unpredictable pedicle. The others would all have to be musculocutaneous to achieve such size and would therefore have considerable bulk. This would necessitate a much wider flap because of the convex surface being covered. The functional loss from the muscles might be considerable in a fit young man who continued to pursue his hobby of hill-walking despite a leg prosthesis and crutches. All these flaps are only capable of providing this length at the absolute limit of their territories with random pattern extensions, never a desirable situation if it can be avoided.

The transverse and parascapular flaps have been transferred successfully in combination with each other (Koshima and Soeda, 1985), as have all the flaps supplied by the thoraco-dorsal trunk in a single unit (Batchelor and Sully, 1984). Hamilton

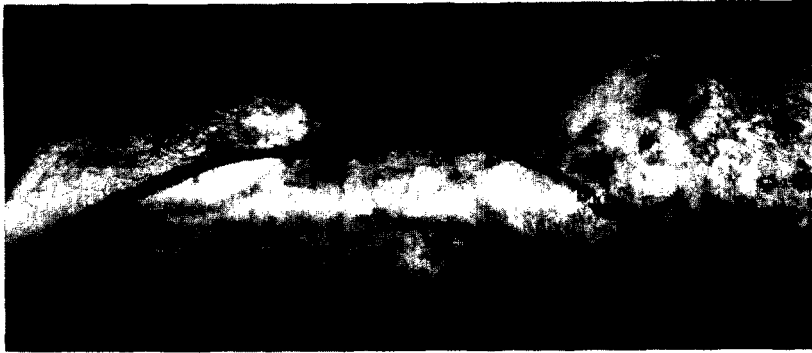


Fig. 1



Fig. 2

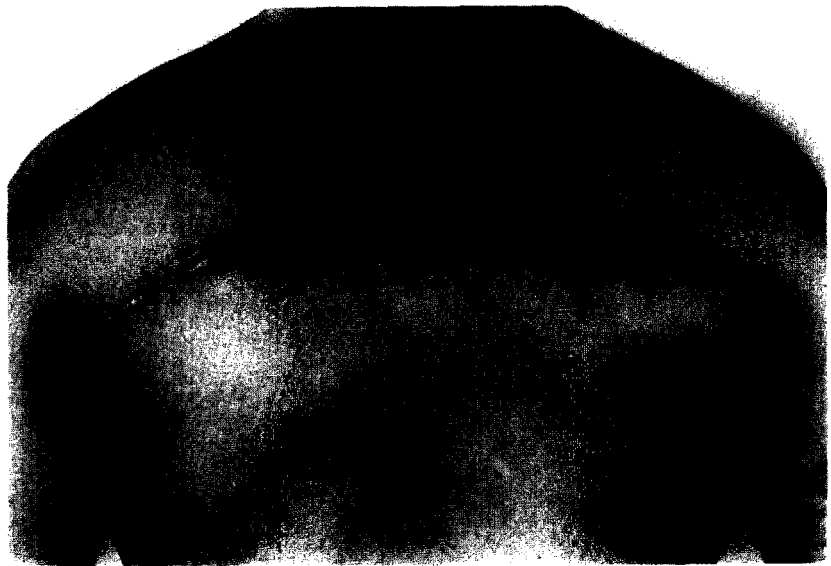


Fig. 3

Figure 1— The area of graft requiring excision. Figure 2—The postoperative result at 6 weeks. Figure 3—The donor site at 6 weeks.

and Morrison (1982) mention the theoretical possibility of the two transverse scapular flaps being used in combination. There do not appear to be any reports in the literature of successful bipediced free transfers using this or any other flap as a basis. This may be because the increased complexity is unjustified where simpler alternatives exist unless the chosen procedure confers specific advantages. The described combination yields a thin skin flap which is potentially 50 × 10 cm from a donor site that may be closed directly. The authors are unaware of any other donor site that can meet these criteria.

tified where simpler alternatives exist unless the chosen procedure confers specific advantages. The described combination yields a thin skin flap which is potentially 50 × 10 cm from a donor site that may be closed directly. The authors are unaware of any other donor site that can meet these criteria.

Mayou *et al.* (1982) state that any extension of the flap within 3 cm of the midline is unsafe. Hamilton and Morrison (1982) suggest that the territory extends to the midline. Our experience would seem to support the latter view. It has been widely taught in the past, and is still believed in some quarters, that a random extension of a flap across the midline is unsafe without delay. McGregor and Morgan (1973) demonstrated that the midline does not constitute a rigid "watershed" in terms of vascularity. The transverse skin paddle raised on a rectus abdominis flap (Schefflan and Dinner, 1983) gives us further clinical evidence of this fact.

Even so, the observation that a single pedicle perfused the whole flap is remarkable. Perhaps the addition of one axial territory to another, where anatomically possible, deserves further investigation. It may prove as reliable as the established manoeuvre of adding a random extension to such a flap.

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