



## The scapular fasciocutaneous flap: a new flap for reconstruction of the posterior neck

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**SUMMARY.** The axial, myocutaneous and free flaps have made immediate reconstruction of head and neck defects possible. Notwithstanding this remarkable progress, defects of the posterior neck leave the reconstructive surgeon with very little choice. The scapular fasciocutaneous flap is easy to harvest, reliable and versatile, with functional and cosmetic results comparable to free flaps. We describe the anatomy and the technique of this new donor site, along with a case report.

Wide excision of tumours of the posterior neck results in a defect which is a challenge for reconstruction. It requires transportation of a large area of skin and soft tissue to provide both functionally and cosmetically acceptable results. We have used a new flap based on the cutaneous perforators of the posterior intercostal arteries. A large fasciocutaneous flap can be raised, and we propose the term "scapular fasciocutaneous flap" for this new donor site.

### Case report

A 27-year-old woman presented with a recurrent tumour in the nape of the neck of 3 months duration. She had been operated for a similar swelling 4 years previously, when it was reported as dermatofibroma.

The tumour was excised with a 2 cm margin to include the upper fibres of the trapezius. The deep surface of the trapezius and the splenius capitis muscle were not involved. The resultant defect, 12 × 12 cm in size, extended from the midline to the lateral border of sternocleidomastoid, and 1 cm below the occiput above, to the spine of the scapula below. The base was formed by splenius capitis and exposed cervical spines.

A scapular fasciocutaneous flap of 15 × 10 cm was used to cover the defect. The donor site was covered with split skin graft from the thigh after achieving primary closure partially. Apart from a minor wound infection at the grafted site, the postoperative period was uneventful (Fig. 1). At 10 months postoperatively the flap was cosmetically and functionally acceptable, though the skin grafted site showed hypertrophic scars, probably due to the wound infection (Fig. 2). Histology showed dermatofibroma.

### Anatomy

The concept of fasciocutaneous flaps has conferred an element of safety in the planning of flaps whose base-to-length ratio exceeds 1:3. The rich vascular plexus

associated with the deep fascia is responsible for the improved blood supply to the tissues.

The scapular fasciocutaneous flap is an axial pattern fasciocutaneous flap based on the posterior branches of the third, fourth and fifth posterior intercostal arteries. Nine pairs of posterior intercostal arteries arise from the back of the thoracic aorta. They give off posterior, collateral, muscular, lateral cutaneous and mammary branches.

Of these the posterior branch runs backwards through the space which is bounded above and below by the body of the vertebra and laterally by a superior costo-transverse ligament. It gives off a spinal branch and courses over transverse process with the dorsal ramus of the corresponding thoracic spinal nerve, supplying offshoots to the muscles of the back and a cutaneous twig which accompanies the cutaneous branch of the dorsal ramus of the nerve.

### Operative technique

1. Position and marking: the patient was placed in a three quarters prone position to afford simultaneous access to the scapular area, skin graft donor site and the recipient site. The scapular spine, lateral border of the scapula and the transverse process of the thoracic spine was marked.

2. The flap was elevated in the sub-fascial plane from lateral to medial, leaving the trapezius, part of the deltoid, and latissimus dorsi muscles bare, up to approximately 5 cm from the midline. Further careful dissection revealed the entry of the third, fourth and fifth cutaneous perforators into the flap (Fig. 3).

3. The effective length of the flap was measured from the proximal portion of its upper border, which is its "pivot point". This can be extended up to the midline, while the lower border was found to lengthen in most cases because of the abundance of skin in the posterior axillary fold. Rarely, it may be extended to the midline to increase mobility.



Fig. 1



Fig. 2

**Figure 1** Immediate postoperative picture of the scapular fasciocutaneous flap, with skin grafting of donor area. **Figure 2** Final results at 10 months.

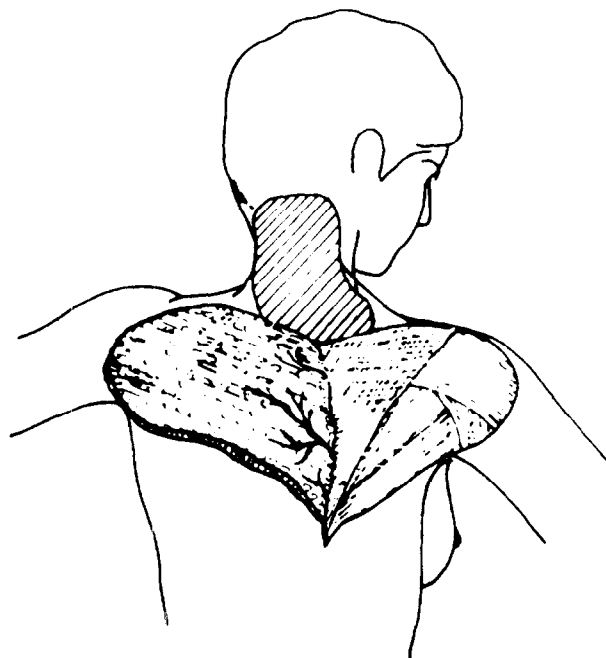


Fig. 3

**Figure 3** The flap raised with the vascular supply.

4. The flap was rotated into the defect and the donor site was partially closed by undermining and advancing the surrounding skin. The rest of the area was covered with split skin graft.

### Discussion

The deltopectoral flap,<sup>1</sup> pectoralis major myocutaneous flap<sup>2</sup> and lateral cervical flaps have been used for reconstruction of the anterior neck, but there are few reports regarding reconstruction of the posterior neck: reconstructions with split skin grafting, local rotation flaps and free flaps<sup>3</sup> have been described. Although the scapular region places a large area of skin with subcutaneous tissue at our disposal, the poor vascularity has limited its use in reconstruction. The scapular<sup>4</sup> and parascapular<sup>5</sup> free flaps have been described, but it was the concept of angiosomes<sup>6</sup> which led us to study the vascular anatomy of the scapular region in more detail and use it in the design of the new flap.

The advantages of the flap are several:

1. The scapular fasciocutaneous flap is an axial fasciocutaneous flap which renders it reliable and versatile.
2. Its large size makes it suitable for covering large defects in the posterior neck, supraclavicular region and possibly the submandibular area.
3. It is technically easy to raise and transfer the flap.
4. The skin is hairless in females.
5. It has satisfactory thickness with a moderate amount of subcutaneous tissue, and is cosmetically excellent.
6. The donor site morbidity is low because it leaves the muscular anatomy of the area undisturbed.

7. It is readily accessible, being adjacent to the operative field of the resection.
8. It maintains the neck contour, hence neck movements are easy.
9. Postoperative radiotherapy can be given.

The main disadvantage is the resultant poor cosmesis at the donor site. This does not pose problems in our Indian context as the part is covered.

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