



The cervicopectoral rotation flap—a valuable technique for facial reconstruction

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SUMMARY. Four cases of lower cheek reconstruction using the cervicopectoral rotation-advancement flap are reported. This fasciocutaneous flap can be raised quickly, provides excellent colour and texture match for the tissues of the face, and donor site morbidity is minimal. It is an especially useful method for lower cheek reconstruction following wide excision of melanomas of the cheek and for advanced parotid tumours where skin replacement is required following resection.

Reconstruction of soft tissue facial defects should provide a good match for colour, texture, and hair-bearing characteristics, adequately restore facial contour, place scars in a favourable location and ideally accomplish these goals in a single stage with minimal donor site morbidity. The cervicopectoral rotation-advancement flap is a reliable but somewhat under used technique which fulfills many of these criteria for the reconstruction of cheek defects. This flap should be strongly considered when one is confronted with large defects of the lower cheek area.

Materials and methods

In the past six years, four patients with large soft tissue defects of the lower cheek have been reconstructed using the cervicopectoral rotation-advancement flap.^{1,2} Two patients presented with squamous cell carcinomas of the parotid gland involving the overlying skin and two patients presented with thick nodular melanomas of the lower cheek. Soft tissue defects involved the lower cheek and were greater than 25 cm² in all patients. Both patients with parotid tumours received postoperative radiation therapy within six weeks of surgery.

Operative technique

Intra-operatively, the flap is designed so that the inferior border of the resection will be the upper border of the flap. The outline of the flap is extended posteriorly around the earlobe towards the hairline behind the ear and then downward along the anterior border of the trapezius muscle. The incision is subsequently extended lateral to the acromio-clavicular joint and deltopectoral groove, and runs parallel to the lateral border of the pectoralis major muscle (Fig. 1), and is then directed medially at a level two centimetres above the nipple in the male patient.

The flap is elevated deep to the fascia of the deltoid

and pectoralis major muscles with the dissection proceeding infero-medially. The perforating branches of the internal mammary artery are easily visualised and can be protected. The horizontal incision over the pectoralis muscle acts as a back-cut, allowing excellent advancement and rotation, permitting flap inset without tension. The plane of dissection above the clavicle is beneath the platysma muscle and superficial layer of the deep cervical fascia and this plane is developed cephalad until it is contiguous with the lower limit of the cheek defect. The donor area of the flap in the lateral pectoral region is closed in a V to Y fashion (Fig. 2). Skin grafting of the flap donor area is not usually required. Although there is no tension upon inset of the flap, the patient's head is immobilised in the midline position in the recovery room using sandbags or bags of IV fluid to prevent abrupt or vigorous movement of the head to the contralateral side, which can produce tension at the point of inset.

Results

All four patients experienced uneventful primary healing and demonstrated a satisfactory cosmetic outcome. The adjuvant radiation therapy administered within six weeks of surgery to the patients with parotid malignancy did not produce any adverse effect on the flap.

Discussion

Many options are available for resurfacing large soft tissue defects of the cheek. These include split thickness and full thickness skin grafts, regional skin flaps such as the deltopectoral flap,³ the retro-auricular flap skin flap,⁴ muscle and musculocutaneous flaps such as the platysma⁵ and pectoralis major flaps⁶ and finally the transfer of a microvascular free flap.

Exposure of underlying structures such as the facial nerve or mandible made flap coverage the method of

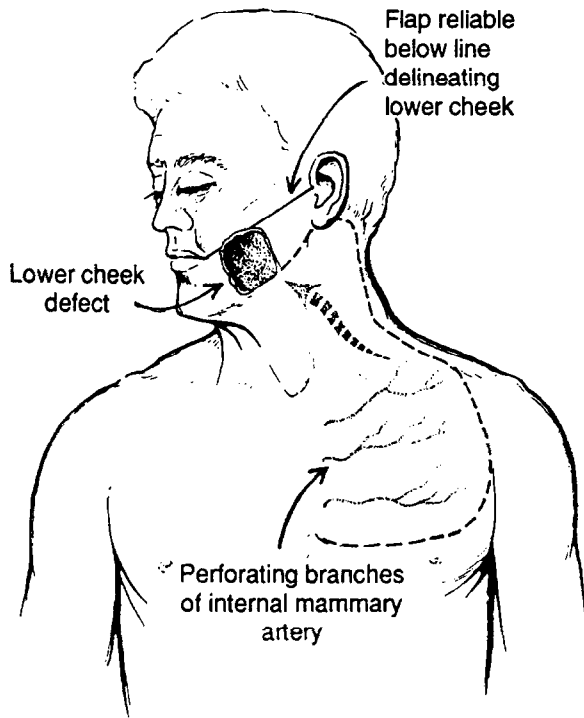


Fig. 1

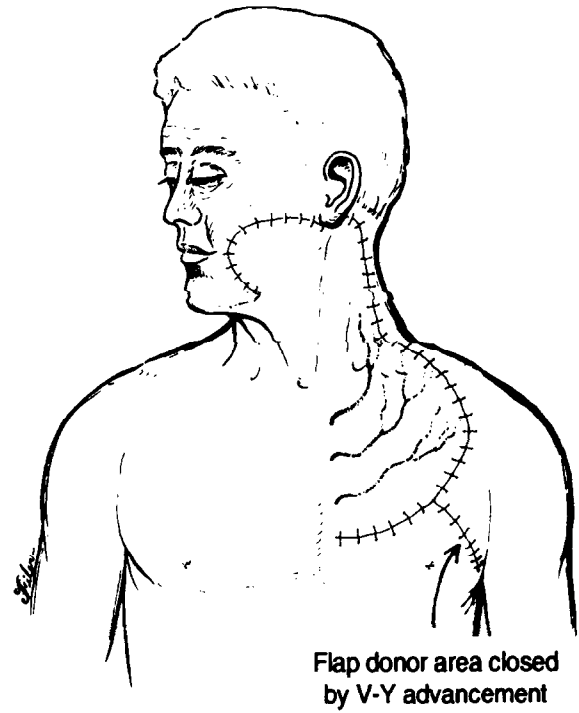


Fig. 2

Figure 1—Outline of cervicopectoral rotation advancement flap. It is very reliable for lower cheek defects, below a line connecting the lateral commissure with the tragus. **Figure 2**—Flap donor area closed by V to Y advancement.

choice for cheek reconstruction reported cases. In 1965 Bakamjian described a medially based deltopectoral flap³ for head and neck reconstruction. Ten years later Daniel and colleagues defined the primary vascular supply in the three zones of the deltopectoral area.⁷ The skin from the sternal border to the deltopectoral groove is mainly supplied by the first four perforating vessels from the internal mammary artery, with the main contribution from the second and third branches. The upper midportion of the deltopectoral flap is primarily supplied by the thoraco-acromial artery and the skin overlying the deltoid area is supplied by musculocutaneous perforators from the deltoid muscle.

In 1978 Becker described a cervical extension of this flap which he used to reconstruct large soft tissue defects involving the face.² The skin of the cervical region has numerous sources of blood supply including vessels at the base of the neck and through the platysma muscle.⁵ By developing this flap as a contiguous fasciocutaneous unit, the major supply from the internal mammary perforating vessels can be preserved and incorporated with that of the neck skin, thus providing excellent vascular perfusion to the distal aspects of the cervicopectoral flap. We have found this flap to be very reliable for the reconstruction of defects of the lower cheek below a line connecting the tragus and oral commissure (Fig. 1).

Important goals of cheek reconstruction are to simulate closely the colour, texture, hair-bearing characteristics and contour of the cheek area while placing the final incisions in the relaxed skin tension lines. The major disadvantage of the pectoralis major



Fig. 3

Figure 3—Defect from resection of ulcerated squamous cell carcinoma of lower cheek and upper cervical region.



Fig. 4



Fig. 5

Figure 4—Elevation of the flap deep to fascia with visualisation of perforating branches from internal mammary vessel. **Figure 5**—Post-operative appearance of facial and neck area.

musculocutaneous flap for cheek reconstruction is its excessive thickness. Resurfacing the pectoralis muscle alone with a skin graft often produces an unsightly colour mismatch. The vascularity of the platysma flap can be unreliable, and it cannot be used following neck dissection. If the cervicopectoral flap is used to reconstruct a lower cheek defect and a neck dissection is subsequently required, this may be safely performed by elevating the flap from posterior to anterior, allowing excellent exposure of neck structures.

In our patients the cervicopectoral rotation advancement flap has fulfilled all of the outlined criteria for cheek reconstruction. The flap's colour, skin texture and hair-bearing characteristics make it an aesthetically ideal replacement for cheek tissue (Figs 3–5). The flap has tolerated postoperative radiation therapy without untoward effect on wound healing. It should not be forgotten for reconstruction of soft tissue defects of the lower cheek.

References

1. Garrett WS, Giblin TR, Hoffman GW. Closure of skin defects of the face and neck by rotation and advancement of cervicopectoral flaps. *Plast Reconstr Surg* 1966; 38: 342–6.
2. Becker DW. A cervicopectoral rotation flap for cheek coverage. *Plast Reconstr Surg* 1978; 61: 868–70.

3. Bakamjian VY. A two stage method for pharyngoesophageal reconstruction with a primary pectoral skin flap. *Plast Reconstr Surg* 1965; 36: 173–84.
4. Washio H. Retroauricular temporal flap. *Plast Reconstr Surg* 1969; 43: 162–6.
5. Hurwitz DJ, Rabson JA, Futrell JW. The anatomical basis for the platysma skin flap. *Plast Reconstr Surg* 1983; 72: 302–12.
6. Ariyan S. The pectoralis major myocutaneous flap. A versatile flap for reconstruction in the head and neck. *Plast Reconstr Surg* 1979; 63: 73–81.
7. Daniel RK, Cunningham DM, Taylor GI. The deltopectoral flap: an anatomical and hemodynamic approach. *Plast Reconstr Surg* 1975; 55: 275–82.

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