

## Free vertical abdominal fasciocutaneous flap

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**Summary**—The use of a free vertical fasciocutaneous flap in total cheek reconstruction is described. The technique has been successfully used in three patients and the advantage of such a free flap in head and neck reconstruction is described.

The free flap is an established procedure in head and neck reconstruction, and numerous types of donor flaps can be designed, depending upon the defect to be corrected and the ingenuity of the surgeon.

Maruyama *et al.* (1985) reported on the vertical abdominal fasciocutaneous flap in the reconstruction of chest wall defects and suggested it could also be a free flap donor site. The purpose of this paper is to describe the free vertical abdominal fasciocutaneous flap in the reconstruction of total cheek defects.

### Case reports

#### Case 1

A 43-year-old male was admitted to our hospital for the repair of a large defect on the left side of his face (Fig. 1A). He had undergone radical removal of cancer of the left maxillary sinus with orbital exenteration 3 years previously.

We decided to attempt to repair the defect with a free vertical abdominal fasciocutaneous flap. Preoperative angiography revealed that the facial and internal thoracic arteries would be appropriate for anastomosis.

In the operating room the scars surrounding the



Fig. 1

Figure 1—Case 1. (A) Preoperative view of facial defect after radical removal of maxillary carcinoma with orbital exenteration. (B) The result 14 months after surgery demonstrating the entire flap survival.

defect were excised and recipient facial vessels were prepared.

The vertical abdominal fasciocutaneous flap was prepared and the elevation of the flap was started distally. The anterior rectus sheath was included in the flap and dissected proximally (Fig. 2). A small part of the rectus muscle was taken with the flap below the costal margin to preserve the perforators in this area (Fig. 3).

The internal thoracic vessels were dissected for 2 to 3 cm above the costal margin to provide an adequate pedicle. (It is difficult to dissect further without dividing costal cartilages and if a long pedicle is needed we make the skin island lower.)

The distal part of the flap was designed to provide lining and an incision was made through the skin, down to subcutaneous fat, at the junction of the two skin paddles. The flap was then folded, microvascular anastomosis carried out and the flap sutured into place. Healing was uneventful (Fig. 1B).

### Case 2

A 43-year-old male presented with a history of a carcinoma of the maxillary antrum. He had had preoperative infusion of 5000 mg 5-Fluorouracil and irradiation with 5000 rad in total, followed by a total maxillectomy with orbital exenteration. He was referred to our department for cheek reconstruction 5 years after initial surgery (Fig. 4A).

One week prior to surgery angiography was done and facial and internal thoracic vessels were identified.

At surgery, recipient vessels and the free vertical abdominal fasciocutaneous flap were prepared. The flap was designed to provide lining and was incised and folded as in Case 1. Facial-internal thoracic microvascular anastomoses were performed. The flap was sutured to the inner side of the maxillary cavity first and then the outer surface of the maxillary cavity was closed. The postoperative course was uneventful and the patient was discharged from hospital 2 weeks after surgery (Fig. 4B).

### Case 3

A 56-year-old male presented with a history of a squamous cell carcinoma of the cheek. After preoperative irradiation, he underwent a radical resection of the tumour. Six months postoperatively he was referred to our department for reconstruction of the missing cheek (Fig. 5A).

Reconstruction was carried out using a vertical abdominal fasciocutaneous flap for cover and hinged flaps from the margins of the defect for lining. The flap survived completely and the patient was discharged from hospital 2 weeks later.

Three months after initial surgery, the patient was given minor touch-up surgery (defatting and marginal Z-plasty) (Fig. 5B).

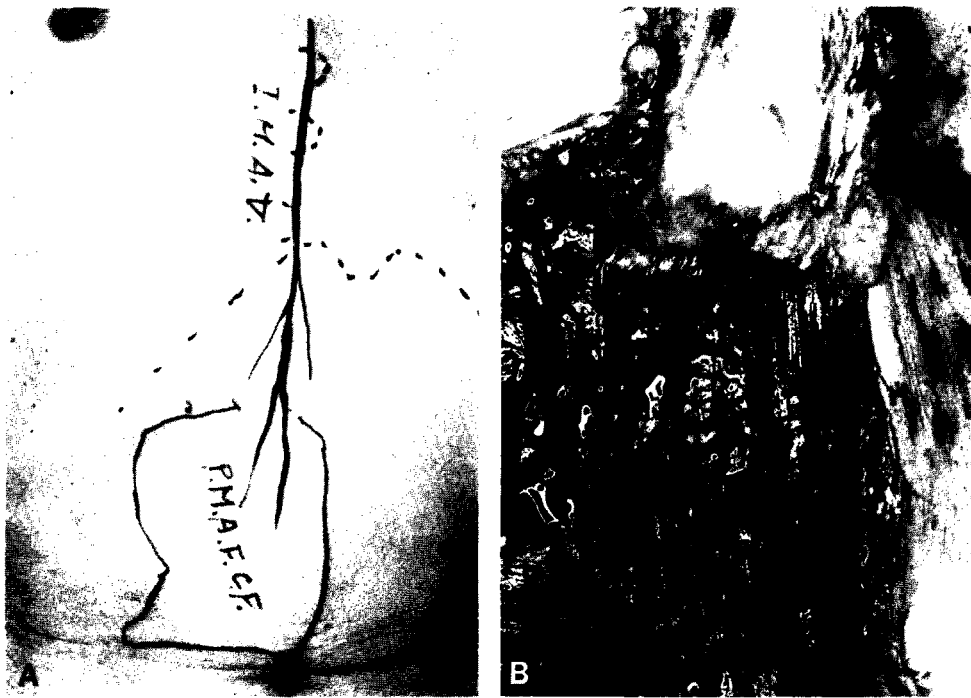
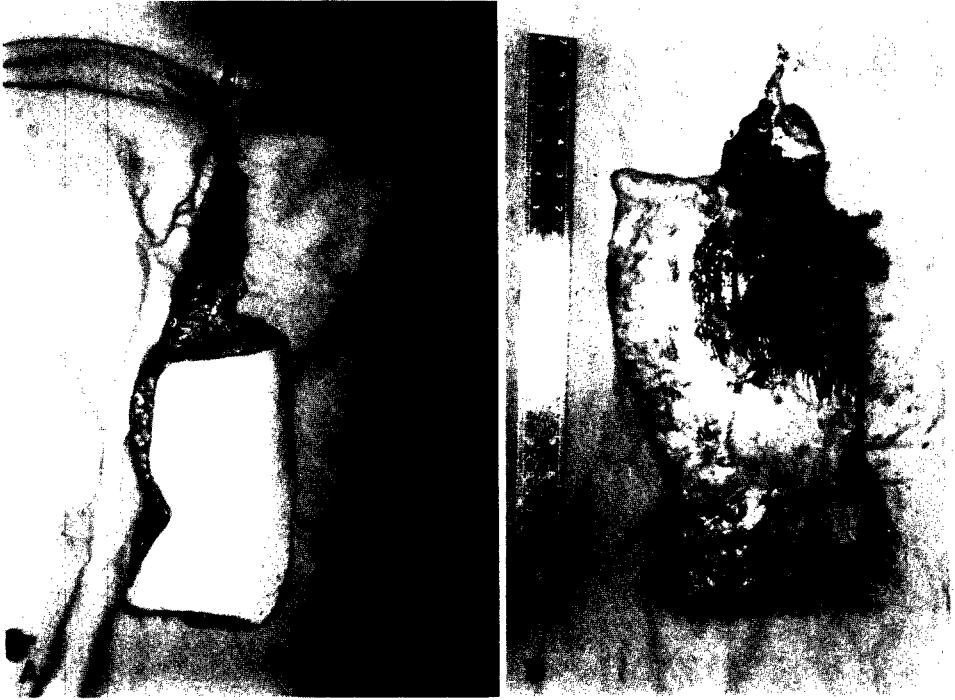


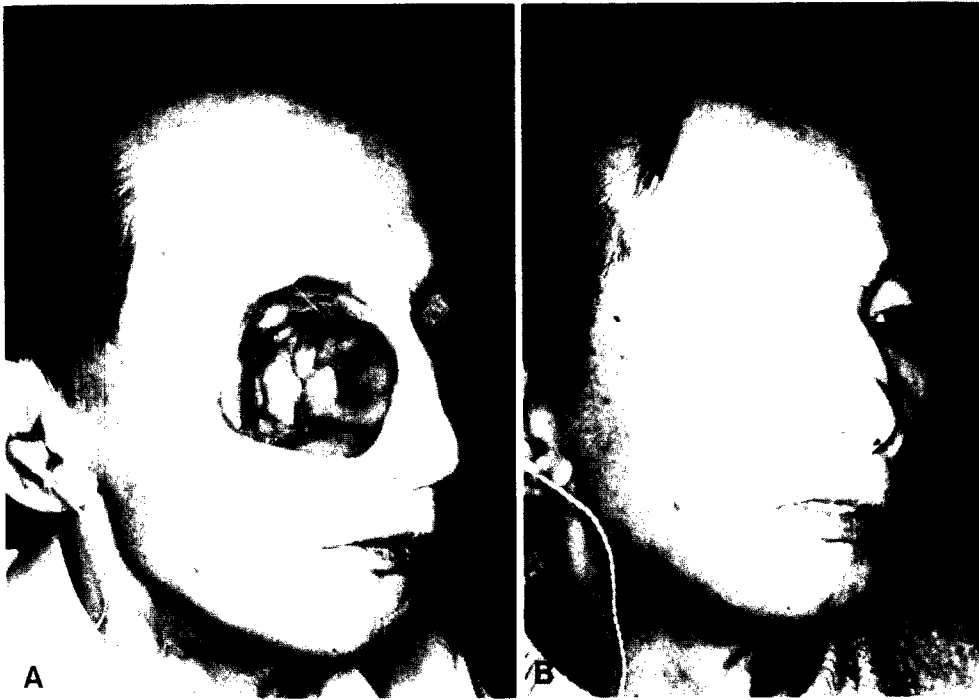
Fig. 2

Figure 2—Case 1. (A) Preoperative design of the donor site showing the fasciocutaneous flap and nutrient internal thoracic vessels. (B) Intraoperative photograph of flap elevation. Distal portion of flap was elevated without underlying rectus muscle.



**Fig. 3**

Figure 3 Case 1. (A and B) Free flap including small part of rectus muscle and internal thoracic vessels at proximal portion of flap.



**Fig. 4**

Figure 4 Case 2. (A) Preoperative view of orbito-facial defect. (B) Postoperative view repaired by free vertical abdominal fascio-cutaneous flap.



Fig. 5

Figure 5—Case 3. (A) Cheek defect after excision of squamous cell carcinoma. (B) Result a year after reconstruction. Marginal Z-plasty and defatting have also been carried out.

### Discussion

Patients who have undergone a radical maxillectomy with orbital exenteration suffer from extensive disfigurement of the face and malodorous daily dressing changes.

Secondary reconstruction of the total cheek defect is a difficult problem. In order to reach the upper portion of the orbital region, a deltopectoral flap requires a long pedicle and a multi-staged delay procedure (McGregor and Reid, 1970). With the island trapezius or the latissimus dorsi flap, the orbital region is too remote to be reached by the flap (Bertotti, 1980). A one-stage reconstruction method is preferable because of the early rehabilitation and short hospitalisation time and therefore a free flap is the procedure of choice.

The vertical abdominal fasciocutaneous flap (Maruyama *et al.*, 1985) is a useful addition to the flaps that are available. It can be raised without the rectus abdominis muscular component and because the rectus muscle and the posterior rectus sheath remain intact motor disability, abdominal weakness and ventral hernias are largely prevented. The patient does not need to be turned over on the operating table and the abdominal donor defect

can be closed primarily. This compares favourably with the free or pedicled latissimus or trapezius flaps, for which the patient may have to be moved during the operation (Fujino *et al.*, 1981).

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