

# Reconstruction of the lower lip with a fan-shaped flap based on the facial artery

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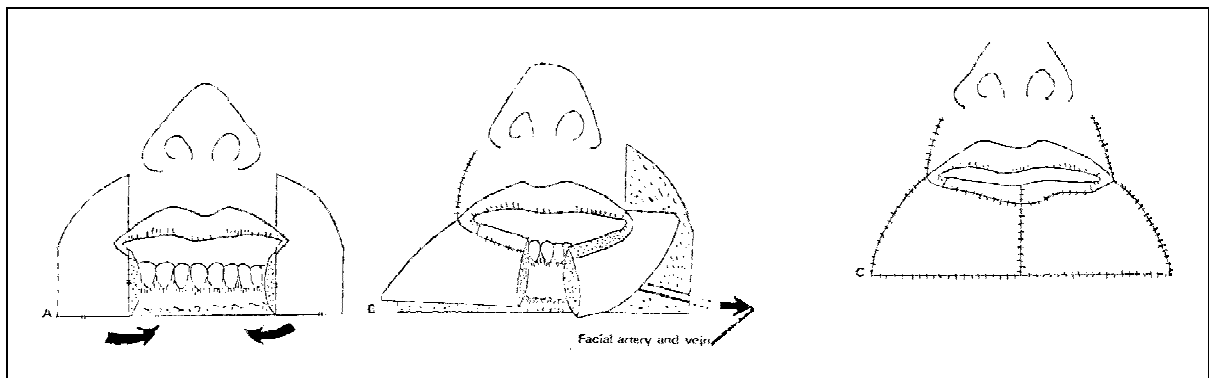
## Summary

A modification of McGregor's fan-shaped flap is described, based on the facial artery instead of the labial artery. The flap appears to have some advantages when compared with McGregor's original flap. A case of squamous cell carcinoma of the lower lip is presented in which the excisional defect was repaired with this flap.

We wish to report a modification of McGregor's fan-shaped flap. The blood supply of this modified flap is provided not by the labial artery but by the facial artery. For this reason the amount of tissue that must be preserved intact along the line of the labial artery at the angle of mouth is much less than that with McGregor's original flap. This also helps to minimize the formation of a "dog ear" and avoids the wide open deformity that may appear at the angle of the mouth. Finally, since the facial artery has a greater diameter than the labial artery, a larger fan flap can be designed with safety.

## Operative procedure

After excision of the affected segment of the lower lip, a full-thickness incision is made along each side of the planned fan-shaped flaps (Figure 1). The facial artery and vein are retained to serve as the main nutrient vessels of this flap (Stranc, 1983). The branches of the facial nerve that run close to the facial artery are preserved as far as possible by careful dissection under magnification using loupes. At the angle of the mouth, the skin incision is extended down to the vermilion border of the lip. The pedicle of each fan flap contains the facial artery and vein with a small amount of the mucous membrane. If necessary, the cutaneous vermilion border of the upper lip and the labial vessels are divided to avoid "dog ear" formation. The tissue defect of the lower lip is then closed by rotating both fan-shaped flaps. Reconstruction of the vermilion border is provided by skin to mucosa suture along the line of resection.



## Case report

The patient was a 72-year-old woman with a proved squamous cell carcinoma of the lower lip. After a radical neck dissection, almost three-quarters of the lower lip was excised. Two fan-shaped flaps, based on the facial artery and vein, were mobilized and approximated to close the defect. Nearly 3 years have elapsed since the operation without any recurrence of the tumor. The reconstructed lower lip is of adequate size and there is no drooling of saliva. Progressive recovery of muscle function in the repaired lower lip has been observed on clinical examination.

## Discussion

In the reconstruction of full-thickness defects of the lower lip, the following points must be remembered (Fujimori, 1980).

- (i) The angle of the mouth and the continuity of the orbicularis oris muscle must be maintained.
- (ii) The newly reconstructed mouth should not be excessively reduced in size.
- (iii) The newly reconstructed lip should contain whole elements of lip tissue.
- (iv) Local flaps are preferable, since the quality and texture of the tissues resemble that of the lip itself.
- (v) Suture lines should be sited along the wrinkle lines.

The fan-shaped flap reported by McGregor (1980) satisfies many of the above conditions and is suitable for closing large defects of the lower lip. However, the blood supply of McGregor's flap is based on the superior labial artery and vein. Therefore, it requires preservation intact of a larger pedicle at the angle of the mouth. This tends to produce a slight opening at the corner of the mouth. With this in mind, we have devised this modification of McGregor's fan flap and have obtained favorable results with the technique in clinical practice.

## References

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