A New Method for Reconstruction of the Lower Lip After Tumor Resection

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Summary. A new operative technique is described for the reconstruction of a defect of the lower lip following carcinoma resection. This method combines the advantages of reconstruction using both rotation and advancement flaps. The technique is suitable for a half or subtotal defect and has been performed on 12 patients, yielding successful results in form and function.

Key words: Lower lip - Reconstruction - Local flaps - Tumor resection

Squamous carcinoma of the lower lip is a common tumor and is best treated surgically. After resection of the carcinoma, immediate reconstruction of the lip is indicated. Approximately 80 different methods for the reconstruction of the lower lip have been described over the past 200 years. These operations may be classified as 1) direct closure, 2) local flap (rotation flap, advancement flap, etc.), and 3) distant flap (pedicle flap, free flap, etc.). The local flap method is most commonly used. The early Bernard procedure [1] created a V-form defect after the excision. The defect was reconstructed by advancing a full thickness flap from each cheek and then excising triangular skin muscle flaps of equal length in the nasolabial folds. A tight lower lip and a very full upper lip were produced.

Gillies and Millard [4] created a rectangular defect and reconstructed it with a fan flap encircling the corner of the mouth. This procedure results in a dog-ear at the oral commissure and a reduced mouth opening that usually needs to be enlarged at some time. There is, however, an advantage to this procedure; the soft tissue in the nasolabial fold is rotated into the lower lip defect and this balances the soft tissue of the upper lip and the lower lip.

A new technique has been designed which combines flap rotation and flap advancement. In this procedure the orbicularis oris muscle is only partially cut. Twelve patients have been operated on using this method. Both the esthetic and functional results have been satisfactory.

Operative Technique

The tumor is excised completely using a full thickness, heart-shaped design (Fig. 1a). Point J is located at the apex of the defect. Line A-B is a horizontal incision running laterally from the corner of the mouth. This should be slightly longer than half the width of the surgical defect. The line D-C lies in the nasolabial sulcus and should be slightly curved and crosses point B. The line B-C is about 1.5 cm long. D-E runs perpendicular to A-B and has a length corresponding to one-half the length of the distance D-A. Point G is the point of intersection between the heart-shaped incision and the vermilion margin of the lower lip. The skin in A-B-G will later be excised. Point F is almost a mirror image of point G, but the line A-F is slightly longer than the line A-G. The dotted line, C-B-F-A, represents the corresponding mucous membrane flap to be used to cover the wound after the skin incision in A-B-G for reconstruction of the lower lip vermilion. The same incisions are performed on the opposite side of the mouth.

Figure 1b shows incisions A-B, D-C and D-E after the tumor excision. The resulting skin flap A'-B'-C and A-B''-D'-E can then be mobilized, exposing the underlying muscles (orbicularis oris, zygomaticus major, risorius, depressor anguli oris).

Figure 1c shows the incision of the mucous membrane. It is performed along the dotted lines A, F-B, C. This mucous membrane flap A'-F'-B'-C serves to reconstruct the lower lip vermilion.

Figure 1d shows that the medial part of the orbicularis oris is cut at the commissure; the lateral part of the muscle is kept intact. The orbicularis is then split along the line H-I, following the grain of the muscle. If the defect measures more than half the lip, H-I is longer than 1 cm; if the defect is less than half the lip, H-I is less than 1 cm. The result is a composite muscle and skin flap in the medial area (I, H-K, J) and a pure skin flap in the lateral area (C, B'-H, I).
Fig. 1 a-f. Diagram of the method used for lower lip reconstruction. This is carefully explained under operative technique, and the diagrams should be related to the relative sections, clearly enumerated in the description of the procedure.