

Reconstruction of a Soft-Tissue Defect Following Resection of a Sweat Gland Carcinoma

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Abstract

Excision of a scirrhous carcinoma in this female patient had produced a soft-tissue defect involving the lower lip and chin: because primary repair had twice been unsuccessful, the patient was scheduled to undergo plastic reconstructive surgery. The previous surgical procedures had left the patient with incomplete lip closure and resultant difficulties with deglutition and speech. Aesthetic appearance was characterized by disturbances that were extensive and impossible to camouflage. Defect repair was planned using a folded radial forearm flap. To prevent ptosis of the lower lip, the free microvascular pedicled graft was suspended bilaterally on the zygomatic arch using a fascial sling technique. The vermilion border, which was still intact after the previous surgical procedures, was incorporated into the graft. The gingival mucosa of the oral vestibulum was covered with a free mucosal graft. Both the functional and the cosmetic result are highly satisfactory one year and six years after surgery.

Keywords: Cancer – Reconstruction – Lower Lip -Free Radial Forearm Flap

Case Report

In January 2001 a lower-lip tumor was detected in this 70-year-old woman during the course of dental treatment. Following excision, examination of the biopsy specimen revealed a diagnosis of scirrhous carcinoma of the lower lip. At the time of the initial diagnosis, the patient had already been treated for a right-sided renal cell carcinoma in 1995, and other comorbidity comprised arterial hypertension and multinodular goiter, grade III.

Clinical examination revealed an indurated tumor of 3 x 4cm in the plane of the chin. Axillary as well as cervical lymph nodes were palpable bilaterally, and thyroid examination revealed focal autonomy. The treatment plan agreed by the surgical clinic with the patient was to involve complete tumor resection with primary reconstruction of the defect, bilateral functional neck dissection and axillary lymph node clearance. Thyroidectomy was scheduled for a later date.

In March 2001 the tumor was excised to a clear margin (R0). Tumor resection was complemented by bilateral neck dissection (20 tumor-free lymph nodes right, 21 tumor-free lymph nodes left). A platysma flap prepared during neck dissection with its pedicle based at the mandible was used to cover the defect [1, 2]. The flap was positioned without tension, and the course of wound healing was unexceptional at first. Histopathological examination disclosed a desmoplastic, blue-cell tumor with superficial tubular growth, and a microcystic adnexal carcinoma (= sclerosing sweat gland carcinoma) was diagnosed.

In May 2001, 45 days after surgery, a wound-healing disturbance necessitating local measures was noted in the vicinity of the platysma flap. Despite revision, scar contracture developed involving the entire lower lip, which lost its function increasingly over time.

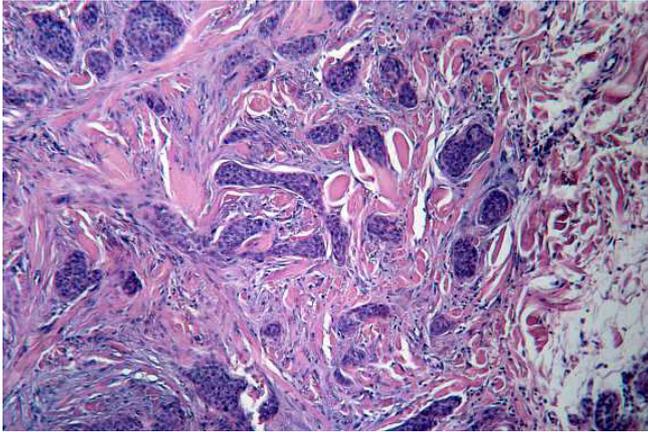


Figure 1: Histology.



Figure 2: preoperative site (Lower lip distortion and loss of oral vestibule).

De-glutition, speech and facial expression were severely impaired due to non-closure of the lips. At the end of August 2001 the original surgeon performed a revision with a mucosal flap from the oral vestibule. The required depth of the oral vestibule could not be achieved by this measure and the functional and aesthetic aspects remained unchanged.

The operative strategy involved complete resection of scarring, and replacement of the missing tissue using a 5.5 x 8.5 cm fasciocutaneous radial forearm flap. The lower-lip vermilion was retained as a bridge because it was intact and the continuity of the orbicularis oris muscle could thus be preserved. Particular attention was paid to sparing the facial nerve. Intraoperative neuromonitoring showed that the (facial) nerve was not damaged along its course.

The radial forearm flap was folded cranially and its free ends at the chin were sutured in two layers to the

preserved skin of the face. At the cranial convexity a strip of epidermis approximately 1 cm wide was removed, and the vermilion was inserted and attached to the radial forearm flap by two suture lines. The vascular supply of the lip was uninterrupted. Despite the preservation of the oral orbicularis muscle, postoperative alteration of the graft was feared, due in particular to the effects of gravity and of the muscles controlling facial expression. A fascial sling procedure was performed on the lower lip to counteract these effects⁴. A 5 x 15 cm strip of fascia lata was raised from the thigh, divided lengthwise and positioned in a subcutaneous tunnel from the zygomatic arch to the mandible. It was attached with a resorbable 2x0 suture to the periosteum of the zygomatic arch and sewn along the caudal margin of the radial forearm flap. Deliberate slight over-correction initially caused the patient to smile involuntarily; however, this gave way to a natural facial expression over the course of the first postoperative year.

A free mucosal graft harvested from the intercanthal region of the left cheek was glued to the denuded mandibular regions and was sutured at its margins with the intact buccal mucosa.

After 2 days' observation in the intensive care unit, the patient was transferred to a general medical ward. Apart from an adverse reaction to the suture material, the course of wound healing was uneventful. Wound healing by primary intention was accompanied increasingly by a return to normal function, which has continued to the present time.

Discussion

Reconstruction of the facial soft tissues following tumor resection always requires management that is tailored to the individual situation, with the result that generally applicable recommendations cannot be made [5,6]. Local and locoregional flap procedures are usually preferred because they offer promise of maximum textura match, low morbidity at the flap elevation site and good modelling characteristics [1, 6, 7–11]. Myocutaneous platysma flaps [12, 13] and submental island flaps [11, 14, 15] are particularly important for lower-face reconstruction in cases where local rotation and transposition flaps contribute insufficient material to the defect.

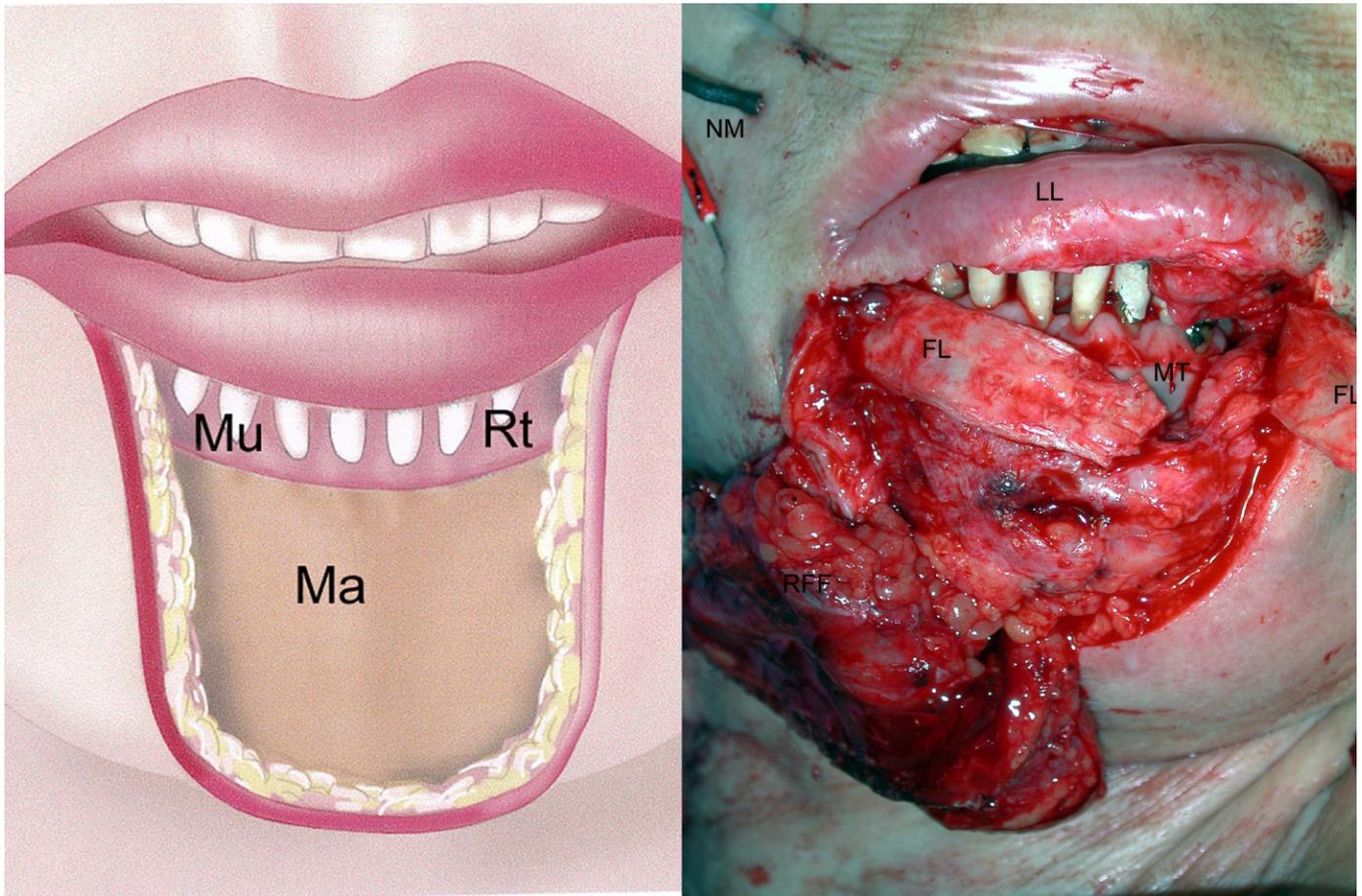


Figure 3: a) Schematic illustration of the resection: Ma = mandible, Mu = mucosa, Rt = root of teeth b) LL = lower-lip vermilion, MT = mucosal graft sutured in place, FL = fascia lata sling, RFF = radial forearm flap, NM = electrodes used for facial nerve monitoring.

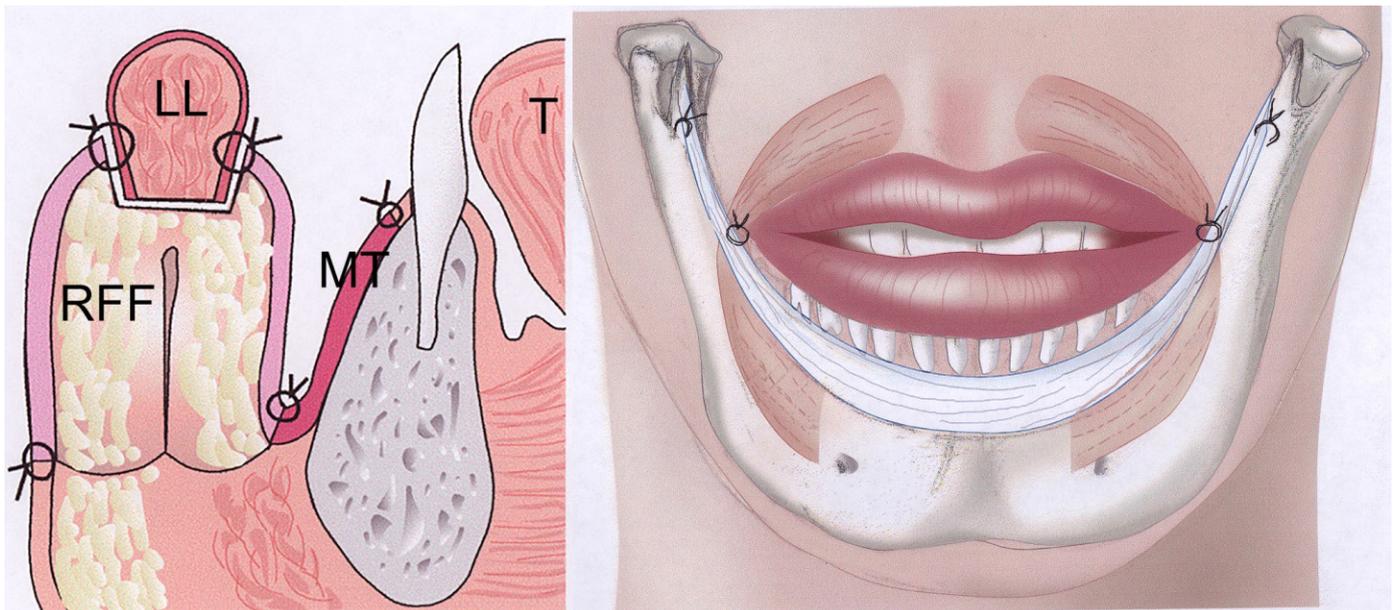


Figure 4: a) Schematic lateral view: T = tongue, RFF = radial forearm flap, MT = mucosal graft, LL = lower lip. 4b) Suspension of the lower lip by fascia.



Figure 5: a) Immediate postoperative frontal view and b) lateral view at 6 months.

We recommend the fasciocutaneous radial forearm flap for use in cases where such procedures are inadequate or where the inherent scarring potential of previous surgery renders local flap procedures disadvantageous [16]. The flap is characterized by excellent modelling characteristics, stability, safety and its texture is favourable for the facial region [3]. In contrast with the pectoralis major flap that is also commonly used in the lower face and is a standard graft for reconstructive surgery, the radial forearm flap has definitely superior modelling characteristics and is without disadvantages in terms of safety. The pedicle of the pectoralis major flap not only commonly produces adverse cosmetic results but is also regularly the cause of graft traction that interferes with function [17].

Despite using a microvascular distant flap technique, the described procedure achieved good graft adaptation to its environment, the sensation of the lower lip in particular was preserved and masticator function was restored.

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