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Case Report

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Total Reconstruction of the Upper Lip Using Bilateral Modified Gillies Fan Flaps following Complete Resection for Squamous Cell Carcinoma

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Abstract

The upper lip plays a key role in oral function as well as facial expressions. The surgical treatment of a large rapidly growing tumor, such as squamous cell carcinoma (SCC), of the upper lip is challenging. The resection of the tumor must be radical, despite the outcome of radical surgery and the following reconstruction surgery may impair the functional as well as the aesthetic outcome. We present a case of a SCC including the entire upper lip and resection leading to a total full thickness defect followed by reconstruction with modified Gillies fan flaps in a two-stage procedure. The case illustrates that total reconstruction of the upper lip can be done successfully by bilateral modified Gillies fan flaps. Furthermore, the case shows the importance of a multidisciplinary approach, the importance of communication with the patient and the seriousness and possible fatal outcome of the disease.

Keywords: Squamous cell carcinoma; SCC; facial tumor; upper lip tumor; flap reconstruction

Abbreviations: SCC: Squamous Cell Carcinoma; PET: Positron Emission Tomography

Introduction

The upper lip plays a key role in oral function as well as facial expressions. The surgical treatment of a large rapidly growing tumor, such as squamous cell carcinoma (SCC), in of the upper lip is challenging. The resection of the tumor must be radical, despite the outcome of radical surgery and the following reconstruction surgery may impair the functional as well as the aesthetic outcome.

A variety of methods for reconstruction of full thickness upper lip defects are suggested in the literature; Gillies fan flap, von Bruns, Karapandzic, Estlander - Abbe, Bilateral advancement flap [1]. We present a case of a SCC including the entire upper lip and resection leading to a total full thickness defect followed by reconstruction with a modified Gillies fan flaps in a two-stage procedure.



Case Presentation

Case Presentation

An 80-year-old male was referred to the Department of Plastic and Reconstructive Surgery in June 2021 with a histologically verified moderately differentiated SCC by a practicing specialist in dermatology. The patient describes having a non-healing wound on his upper lip for many years. Clinical examination in June 2021 revealed a two-centimeter-wide ulcerated tumor on the left side of the upper lip, starting from the midline and spreading to vermillion

and the peristomal area with full thickness involvement (Figure 1). Clinical examination revealed a palpable lymph node in the left side of the neck. The following preoperative ultrasound, however, showed no pathologic lymph nodes. Consequently, the patient was planned to a one-stage surgical procedure with marginal excision of the tumor and reconstruction with an Abbe flap or direct closure, in general anesthesia. However, at the time of surgery, eight weeks after referral to the department, the tumor had unexpectedly grown to include the entire upper lip sparing only the oral commissures (Figure 2). Therefore, another surgical approach was required.



Figure 1: Clinical picture from June 2021 (22.06).



Figure 2: Clinical picture from August 2021 (11.8).

Surgical treatment

Due to the size of the tumor which involved the entire upper lip, we decided to perform a radical excision and reconstruction in a two-stage fashion. In the first procedure, under general anesthesia, excision of the tumor included the total upper lip except for the oral commissures was performed leaving a wide full thickness defect with an intact columella (Figure 3). The defect was temporarily closed

with a dressing of paraffin mesh (Jelonet) and foam while waiting for the pathology examination of the specimen. Postoperatively, the patient had a nasogastric feeding tube to secure sufficient nutrition and remained hospitalized until the secondary procedure, the reconstruction. The final histopathological evaluation revealed free margins. The reconstruction of the upper lip including vermilion were performed by utilizing two modified Gillies fan flaps with the patient in general anesthesia in a secondary procedure.



Figure 3: Clinical picture of primary defect after tumor resection.



Figure 4: Peroperative flap design for upper lip reconstruction, after pathology verified cancer free margins.

The flaps were full thickness nasolabial flaps consisting of skin, subcutaneous tissue including muscle and mucosa with an inferior (Figure 4) to (Figures 4&5), thus perfused by branches of facial artery (Figures 4&5). The flaps met in the midline giving the height of the central upper lip under columella and the mucosa was mobilized for the reconstruction of vermillion. The reconstruction was closed in four layers: 4-0 monofilament in the mucosa, 4-0 polyfilament absorbable (Maxon) in the muscle and subcutaneous tissue, 5-0 monofilament in the dermis, 5-0 monofilament (SurgiPro) in an

over-and-over technique in the skin and the mucosa was sutured to the skin at the preoperatively determined location of the upper lip (Figures 4&5). The donor sites were closed directly in two layers with 4-0 monofilament with and 5-0 SurgiPro sutures in subcutis and skin, respectively (Figure 6). The patient stayed hospitalized after the operation for 5 days. The patient's diet was administered postoperatively by nasogastric tube the first 4 days and afterwards, he started gradually with a liquid and soft diet. There were no postoperative complications.



Figure 5: Raising the flap.

Outcome and follow-up



Figure 6: Peroperative picture of reconstruction.



Figure 7: Appearance after 3 months follow-up.

The patient was followed for four months postoperatively with satisfactory cosmetic and functional outcomes (Figures 6&7). The patient was able to talk satisfactorily without serious articulation problems and was able to eat and drink with mild saliva leakage which he had adjusted to as the leakage was significantly worse preoperatively. There was adequate coverage of the teeth, except for teeth 11, 21 and partially 22. The patient was able to smile. Due to high-risk SCC, a PET-CT scanning was performed for follow-up, postoperatively. The PET-CT scan revealed a necrotic lymph node on the left side of the neck, which by a later biopsy showed to be a metastatic SCC. The patient was scheduled for a left side lymph node dissection of the neck, but a second PET-CT scan revealed rapid progression of the disease with metastases to lymph nodes on the right side of neck as well as mediastinum, and the left lung. Consequently, the neck dissection was canceled due to distant metastasis. The patient unfortunately died four and a half months after the primary surgery.

Discussion

Several techniques for reconstruction of the upper lip after cancer surgery is described in the literature [2]. The defect after resection of cancer at the upper lip often includes skin, subcutaneous fat, muscle and mucosa as a full thickness defect and the reconstruction can be challenging due to the importance of the cosmetic and functional outcome. When planning the reconstruction after tumor resection the first consideration must be the width of the upper lip defect. Defects less than one-third of the upper lip width, can be closed directly or with help of z- or w-plasty [2-4]. For defects between one- and two-thirds of the total width of the lip, an A bbe flap [5], or local advancement flaps in

a one-stage procedure may suffice [2,6]. For more complicated defects, i.e. defects more than two-thirds or including columella and peninsula, free flaps can be indicated [7]. Many authors suggest free tissue flaps as the most preferred method for peristomal or dentofacial defects [3,8]. However, taking age and comorbidity into account, reconstruction with local flaps should be considered whenever possible.

Learning points

This case-report presents a case of a rapidly growing SCC involving the entire upper lip and the surgical treatment. The case illustrates that total reconstruction of the upper lip can be done successfully by bilateral modified Gilles fan flaps. Furthermore, the case shows the importance of multidisciplinary approach, the importance of awareness from both the patient and surgeons if the tumor unexpectedly progresses rapidly, and the seriousness and possible fatal outcome of the disease.

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Conflict of interest

The authors declare that they have no conflicts of interest related to this case report.

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