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When the Combination of a Chinese Flap and Dufourmentel Makes It Possible to Treat a Hopeless Case of Squamous Cell Carcinoma of the Upper Lip

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Abstract

Cancers of the lip are the leading cause of labial defects, and treatment is essentially surgical. The success of a repair is assessed by two essential criteria: The functional character of the lip (restoration of continence allowing feeding) and the aesthetic quality of the repair. However, for many patients from countries whose medical infrastructure does not allow them to undertake complex reconstructions locally, medical transfers represent their only chance of treatment. The aim of this article is to share with you an extreme clinical case of labial reconstruction, the management of which was a real challenge, using two major flaps: the free ante-brachial flap and the DUFOURMENTEL-type bi-pediculated scalp flap.

Keywords

Surgical Flap, Reconstruction, Aesthetic, Lip Cancer-Plastic Surgery

1. Introduction

Cancers of the lip are the leading cause of lip defects [1]. Treatment is essentially surgical [1]. Reconstructive surgery, which is a real challenge, must follow some basic rules in order to guarantee an optimal result [1]-[3]. Repair can be carried out using simple sutures, but more often than not local flaps are used [1] or free flaps, with the advent of microsurgery [4]. The success of a repair is assessed by two essential criteria: the functional character of the lip (restoration of continence

allowing feeding) and the aesthetic quality of the repair [1]. Few studies have compared the results of different repair procedures [1]. We report on an extreme clinical case of labial reconstruction in which management is a real challenge using two major flaps: the free ante-brachial flap and the DUFOURMENTEL-type bi-pediculated flap of the scalp.

2. Observation

Mr. AB, 43 years old, a skilled plumber, married with three (03) children, presented with an ulcerating lesion in the middle section of the face that had been evolving for 10 years and for which the biopsy was consistent with squamous cell carcinoma (SCC). His medical history was unremarkable. The stomatological examination revealed a voluminous ulcerating-bourgeoning lesion on a purulent necrotic background located in the upper labial region (**Figure 1**), taking in the commissures and coming into contact with the columella, obstructing the nostril orifices (**Figure 2**). Endobuccal examination showed a highly inflamed ginigivo-vetibular mucosa. The patient was evacuated to France for better management, where he underwent an initial extensive, transfixing soft-tissue resection resulting in subtotal loss of substance in the labial and perioral region (**Figures 3-5**) involving distant margins. After tumor removal and for an acceptable cosmetic result, temporary reconstruction by epithesis was performed, in an attempt to hide the scars (**Figure 6**). Covering this large defect also requires an additional surgical procedure. In this case double type flaps have been found to be useful for reconstruction with the association of two major flaps, the ante-brachial free flap and the Dufourmentel-type bi-pediculated flap of the scalp (**Figures 7-12**). Free flap is an excellent technique for closing defects which are wider. All flaps may fail. The two most common reasons for flap failure are torsion of the pedicle and tension when insetting the flap. Torsion of the pedicle can result in loss of the entire flap. Activities were limited for the first postoperative month to prevent the most common postoperative complications as wound dehiscence, and surgical site necrosis and infection. Functional sequelae were dominated by macrosomia, food and salivary leakage. No repair procedure was significantly associated with suture loosening apart from a semi-liquid diet. Follow-up was straightforward for the rest. These reconstructive techniques were combined with concomitant radio-chemotherapy (RCC). Long-term follow-up of this surgical treatment has a major impact on their quality of life and their ability to integrate into society. After more than 13 years of follow-up, aesthetic results were good and no recurrence was observed. The patient has since resumed his activities with good social integration (**Figure 13**). All this could not have been achieved without the commitment of two teams and a motivated patient.

3. Discussion

Repairing the lips constitutes a double challenge for the surgeon, both aesthetic and above all functional [1]. In our patient, this is an extreme clinical case whose ECP is a challenge with mutilating excision surgery to ensure healthy margins

followed by reconstruction in several stages. Generally, these defects can be reconstructed with local flaps or free flaps [1]. However, for many patients from countries whose medical infrastructure does not yet allow for this type of intervention, medical transfers represent their only chance of being treated [5]. Indeed, due to limited medical infrastructure and the short duration of humanitarian missions, it was not possible to undertake complex reconstructions at the local level [5]. The decision was made to evacuate the patient to France for better care.

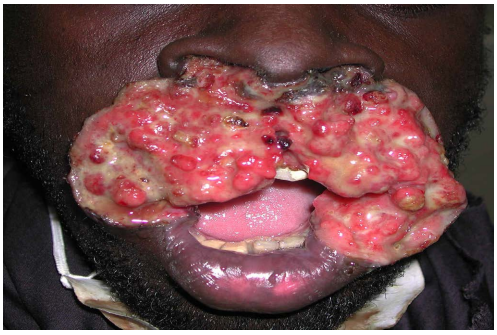

Figure 1. Front view: Central upper labial squamous cell carcinoma.

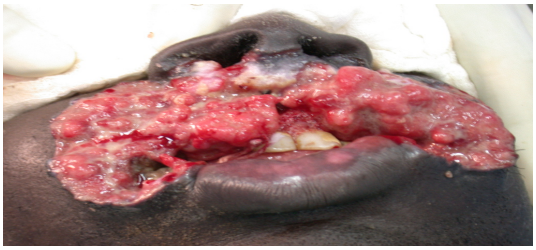

Figure 2. Lower view: Central upper labial squamous cell carcinoma.

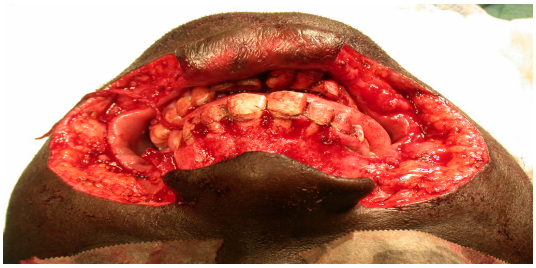

Figure 3. Intraoperative view after wide upper labial transfixing resection.

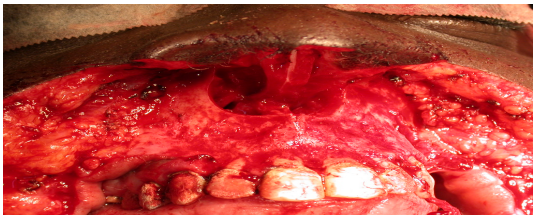

Figure 4. Intraoperative view after resection.

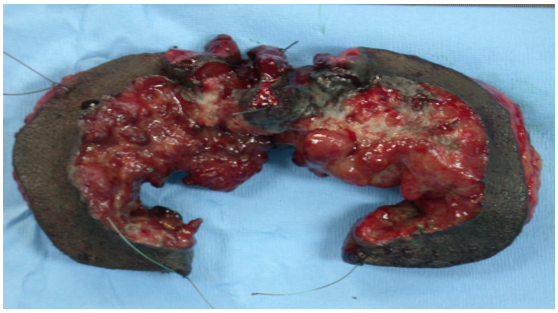

Figure 5. Operating specimen oriented for histological study.

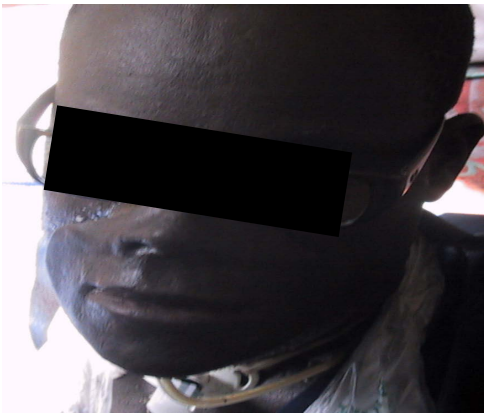

Figure 6. Surgical specimen oriented for histological study.

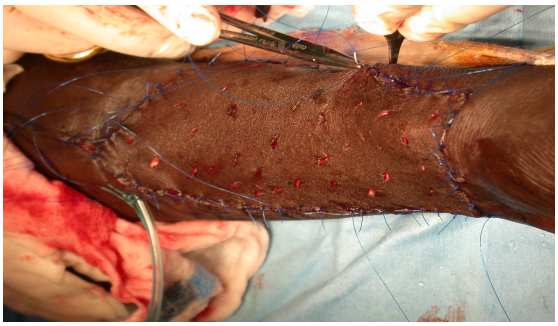

Figure 7. Closure of the antebrachial flap donor site.

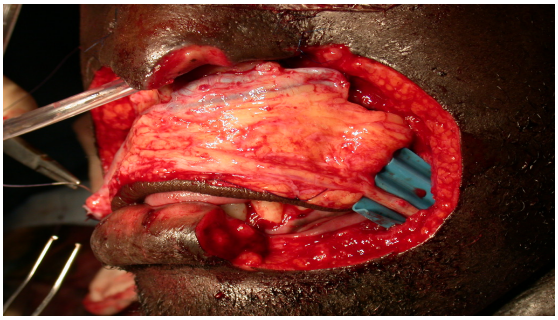

Figure 8. Vestibuloplasty reconstruction using a free antebrachial flap.

Figure 9. Intraoperative view: Labial reconstruction using a DUFOURMENTEL-type bipediculated scalp flap.

Figure 10. Placement of the scalp flap after transposition.

Figure 11. Weaning of the DUFOURMENTEL-type scalp flap.

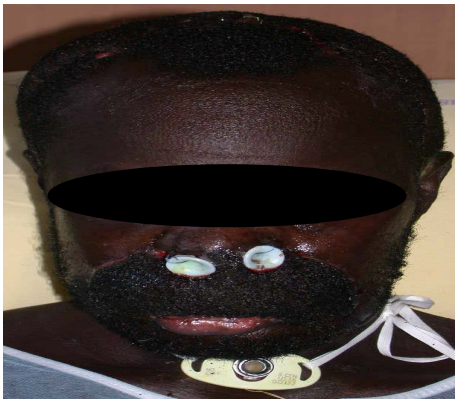

Figure 12. Post-operative results.

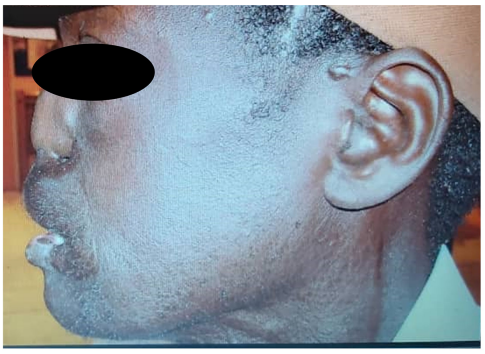

Figure 13. Profile view after several years'/profile view after several years of follow-up: Result after 5 years.

Repairing the lips is a twofold challenge for the surgeon, both aesthetically and above all functionally [1]. In our patient, this is an extreme clinical case whose treatment is a challenge, with mutilating excision surgery to ensure healthy margins, followed by reconstruction in several stages. Generally, these defects can be reconstructed using local flaps or free flaps [1]. However, for many patients from countries where the medical infrastructure does not yet allow this type of operation to be carried out, medical transfers represent their only chance of being treated [5]. Because of the limited medical infrastructure and the short duration of humanitarian missions, it was not possible to undertake complex reconstructive surgery locally [5]. The decision was taken to evacuate the patient to France for better treatment.

The lips, aesthetic units of the face, are involved in several complex functions such as emotional expression, phonation and mastication. Lip reconstruction has always been a challenge for the surgeon because of the need to preserve lip function while achieving a satisfactory result [3]-[7]. Carcinological resection can cause orofacial SDB with functional and aesthetic repercussions. Generally, these defects can be reconstructed with local flaps or free flaps [6]. Our patient had undergone an extensive transfixing resection which left a large loss of substance in the face, involving anatomical structures such as the upper lip, the two commissures and the nasal columella. When the loss of substance involves the entire thickness of the lip, the repair is tritissular, including the muscles, mucosa and skin [1]. When the loss of substance extends beyond the lip, towards the cheek or chin, a combination of several flaps is most often necessary [1]. The lateral units of the upper lip or the wings of the nose are also difficult to cover [8]. Nevertheless, no pre-established scheme can resolve the various defects encountered at the commissural level, for which several types of procedures exist [9].

Before any reconstruction, it is important to ensure that the carcinological margins are healthy [7]-[10]. If there is any doubt, the surgeon should refrain from mobilising/raising regional or free flaps [4]. These flaps may be either locoregional flaps [1] such as the deltopectoral flap or the pectoralis major mus-

culocutaneous flap, possibly harvested in composite with a fragment of the fourth rib for the chin region, or free flaps if the loss of substance is very extensive [1]. When the size of the SDB exceeds 80% of the lip, complex reconstruction techniques are required [1]. In these cases, a combination of several flaps may be proposed. After a mutilating excision and confirmation of healthy margins, several reconstruction options were available for our patient. Few reconstructions require the use of flaps outside the framework of local reconstruction [9].

However, some cases have progressed to the point where reconstruction using the remaining labial and jugal tissues is no longer possible. The strategy then becomes more complex, aiming both to recreate function despite the lack of orbicular muscle tissue, and to recreate tolerable aesthetics. Although free flaps, most of the time connected cervically, can provide the necessary tissue, their sheer weight, together with the lack of superior anchorage, or traction along the pedicle, can lead to massive lower labial incompetence. Certain regional solutions can occasionally be used to avoid these pitfalls, such as the fascia temporalis superficialis or Dufourmontel scalp flaps [9]. The use of this soft DUFOURMENTEL flap enabled the entire upper lip to be covered/reconstructed, as well as the commissures and columella. However, it requires a second weaning operation three weeks later.

Microvascular free flaps remain the gold standard for reconstruction of large tissue loss and require an experienced surgeon, high cost and longer operating time [4]. Ante-brachial free flap (ABF) reconstruction is the flap of choice for carcinological reconstruction of small to medium-sized oral cavity SDL [11]. When vital tissues or bone are exposed, or areas at risk of contamination, fasciocutaneous flaps are more robust and therefore more protective than skin flaps [12]. Developed by Yang (1981) [4], the LAB free flap is commonly used as a fasciocutaneous flap, particularly for intraoral defects, with reliable success [11]. Some laboratories offer biomaterials such as porcine collagen matrix used in procedures such as vestibuloplasty, pre-prosthetic tissue augmentation and replacement of missing tissues in the alveolus, tongue, palate and buccal mucosa [13].

Their use is well documented in the periodontal literature [13]. In our patient, wide resection exposed the premaxilla, piriform sinus and nasal cartilage septum. Vestibuloplasty was performed by placing the skin paddle of the antebrachial flap intraorally to reconstruct the defect in the buccal mucosa, then rolling it up [2]. The LAB flap is used in our context to reconstruct the mucosal side using the same procedure. The LAB is easy to harvest because of its superficial location and allows a compact flap of variable shape to be obtained with a minimum of volume and hair [11]. It should also be noted that fasciocutaneous flaps, such as the antebrachial or anterolateral thigh flap, have proved reliable for total lower labial reconstruction [1]. Labial incontinence is more frequent in cases of lower lip damage, and is manifested by salivary leakage, sometimes accompanied by speech impairment [1]. It occurs when the lip is insensitive or too

loose, or when repair of the muscular plane is lacking [1]. Food leakage can lead to the inability to have an effective liquid or semi-liquid diet [1]. We did not find this type of complication apart from a residual microstomy. Treatment of flap cellulitis requires intravenous antibiotics under the direction of an infectious disease specialist. If improvement is not rapid, treatment may also require debridement of all necrotic tissue, a process that may require re-elevation of the flaps for identification of necrotic tissue, followed by debridement and thorough irrigation [13].

4. Conclusion

Lip cancer surgery is relatively well-codified and reconstruction represents a double challenge for the surgeon. However, it may be difficult to choose the best repairing technique, especially in case of large lip defects considering functional and aesthetic prejudices. The combination of a free and bi-pedicled flap remains a challenge.

Ethical Considerations

The study patient had given informed consent and anonymity was an obligation. The confidentiality of the patient's clinical and paraclinical data was respected.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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