Partial Upper Lip Reconstruction Using Fujimori Flap: A Case Report

Zakia Berjaou, Samir Cherboub, Ilyass Moustakbal, Jawad Hafidi, Noureddine Gharib, Abdallah Abbassi, Samir Mazzouz

Plastic Surgery Department, Ibn Sina University Hospital, Mohammed V University, Rabat, Morocco

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Abstract

The Fujimori gate flap is known and used for the reconstruction of defects resulting from oncologic surgery. This case report describes the use of this flap to reconstruct the upper lip of a patient who had a defect following lip carcinoma, resulting in a loss of 2/3 of the upper lip tissue. The case involves a 34-year-old woman presenting a partial lip defect after upper lip carcinoma. She underwent a unilateral gate flap procedure, which allowed the authors to reconstruct the three levels of skin, muscle, and mucosa. Following surgery, no complications were observed. The patient was followed up at three months and a year later. She was able to speak and chew without any trouble after the flap restored oral competency. The patient's treatment objectives, which included regaining oral competency and achieving an acceptable aesthetic result, were met thanks to the use of the Fujimori gate flap in this case. Compared to the use of other local, regional, or remote flaps, the flap also provides good color matching. The Fujimori flap ensures the restoration of the oral sphincter, in contrast to the typical flaps used to reconstruct the upper and lower lip, thereby promoting oral competence.

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Introduction

Lip cancer, one of the most common malignancies of the head and neck, accounts for approximately 25–30% of all cancers of the oral cavity [1]. The most significant risk factors in its etiology are solar exposure, smoking, and viral agents like the human papillomavirus [2].

Carcinoma of the upper lip is less common as the upper lip does not receive direct actinic radiation like the lower lip does [3]. For the upper lip, it is crucial to achieve a reconstruction that is both functional and aesthetically pleasing.

There are numerous techniques for reconstructing the upper lip [1, 4]. However, with these traditional techniques, it can occasionally be challenging to produce a satisfactory reconstruction, especially when the upper lip defect is extensive and involves composite tissues including skin, red lips, mucosa, and muscle [5].

The original purpose of the Fujimori flap was to address the lower lip's soft tissue loss following oncologic surgery [6]. In 2003, Aytekin and colleagues employed the Fujimori gate flap to restore a total upper lip defect in a patient after upper lip cancer [7]. Compared to alternative techniques for reconstructing the upper and lower lips, the Fujimori flap offers a better aesthetic and functional solution.

The authors report a case of partial upper lip reconstruction using the Fujimori Gate flap.

Case presentation

The patient was a 34-year-old woman, a housewife, and a mother of three. She had a large tumor on the upper lip that encompassed 2/3 of the lip. An initial anatomopathological exam revealed a basal cell carcinoma. Upon examination, all three planes were infiltrated. There were no positive nodes.

Under general anesthesia, the tumor resection

*** Corresponding author**: Zakia Berjaou

Plastic Surgery Department, Ibn Sina Hospital, Rabat, Morocco.

Tel: +212696902777; Email: berjaouzakia@gmail.com

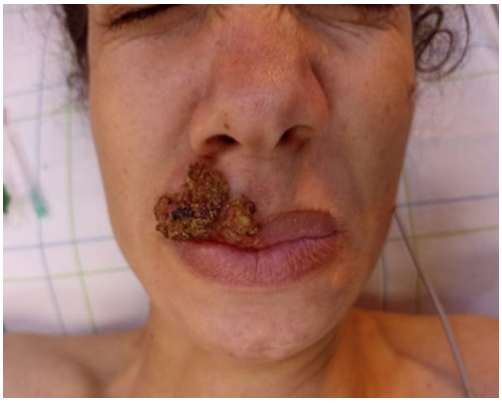

Fig. 1: basal cell carcinoma of the upper lip

Fig. 2: Fujimori Flap Dissection

Fig. 3: Result after three weeks

was performed with 1 cm side margins. After the anatomopathological confirmation of the complete excision of the tumor, the reconstruction was carried out under general anesthesia in a second step.

A unilateral Fujimori gate flap was used as it preserves the mouth sphincter. Care was taken during flap dissection to prevent harm to the right angular artery and to keep the Stensen's duct opening open. Afterward, the flap was rotated 90 degrees medially.

The flap was attached to the contralateral

orbicularis oris, the remaining gingiva-buccal mucosa cuff, and the remainder of the upper cutaneous lip by sutures. Skin, muscle, and mucosa were all closed in three layers.

Following surgery, the patient experienced no complications. The flap was also observed and determined to be viable. On the fifth day following surgery, flap sutures were removed.

With no dehiscence or flap loss, the patient was followed up on three weeks and one month after surgery. The flap was deemed to be visually acceptable after a year.

She had a wide enough mouth opening to purse her lips and control her lip closure. She also didn't have any trouble articulating her words when speaking.

Discussion

Lip cancers should be completely removed, and the resulting defect can be quite significant. Depending on the size of the defect, various reconstruction techniques may be used, such as primary closure or local, distant, or free flaps. The reconstruction technique should aim to create a functional oral sphincter and an aesthetically pleasing appearance while avoiding microstomia [3, 8].

Common examples of traditional local flaps preferred by most surgeons include the Abbé flap, Gillies fan flap, and Estlander flap. With these techniques, it can take a year to achieve sphincter function through reinnervation of the orbicularis oris muscle from the same facial nerve [9-11]. However, the displaced modiolus caused by these flaps can have both functional and cosmetic drawbacks.

The Fujimori gate flap technique, originally developed by Fujimori in 1980 [12], allows for the transfer of tissues in the nasolabial region that are perfused by the angular artery and innervated by the facial and trigeminal nerves. The original design used two island flaps from the nasolabial area to reconstruct the lower lip after total resection.

In 2003, Aytekin et al [13] used the gate flap to reconstruct upper lip defects after upper lip carcinoma excision. They also proposed to mesh the mucosa of the flap to allow vermilion reconstruction [14].

According to El-Din, a bilateral Fujimori was used to treat lower lip microstomia caused by an electrical burn [15].

In 2021, Poncio [16] explained how this flap was applied to reconstruct the upper lip of a patient whose electrical burn damage caused 70% of the upper lip's tissue to be lost, leaving alveolar bone exposed.

In the authors' case, a two-thirds deformity of the upper lip was repaired using a unilateral gate flap. No dog ear deformity was noticed as the flap was easily moved. The flap showed good perfusion, a rapid healing time, and the aesthetic outcome was good. Additionally, it provides restoration in three layers in a single procedure.

Conclusion

The Fujimori gate flap can be used for the reconstruction of soft tissue loss after tumor surgery on the upper lip. It is a reliable flap for repairing an almost complete upper lip deformity. Additionally, it has a respectable visual appeal and excellent functional results.

As a result, using the unilateral Fujimori gate flap is a practical and effective choice for treating defects left behind following carcinoma excision that have nearly complete lip deficiencies. This technique provides both aesthetic and functional benefits, making it a valuable option in reconstructive surgery.

Conflict of Interests

All authors declare that they have no conflicts of interest.

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