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Total reconstruction of the lower lip using different local flap techniques simultaneously. A case report

Reconstrucción total del labio inferior mediante diferentes técnicas de colgajo local simultáneamente. Reporte de un caso

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SOLANO N, CASTRO B, LÓPEZ P, CANELÓN S. Total Reconstruction of the Lower Lip Using Different Local Flap Techniques Simultaneously. A Case Report. *Craniofac Res. 2024; 3(2)*:118-122.

ABSTRACT: Squamous cell carcinoma (SCC) arises from dysplastic surface epithelium and is clinically characterized by irregular invasion destroying normal tissue. When we consider reconstructing the lower lip after oncological ablation, the "stepped reconstruction" begins with simpler procedures to the most complex ones. The objective of this article is to demonstrate the total reconstruction of the lower lip using different simultaneous local flap techniques. This is a 58-year-old male patient who attended the Oral and Maxillofacial Surgery Service of the University Hospital of Maracaibo due to a lesion on his lower lip that had been present for 10 months. The extraoral clinical examination revealed an ulcerated, exophytic lesion, indurated on palpation, painful and bleeding that involved almost 3 thirds of the lower lip. After clinical evaluation it was decided to perform an incisional biopsy, resulting in squamous cell carcinoma. Subsequently, a surgical approach using two different reconstruction techniques were performed to eliminate the lesion and reconstruct the lower lip using simultaneous techniques of different local flaps, preserving the adjacent anatomical repairs. We recommend this technique for near-total lower lip defects encompassing over 75 % of lip loss as reliable, straightforward and superior to other techniques used for similar defects in terms of function and aesthetics.

KEY WORDS: Squamous cell carcinoma, local flaps, oral cancer, surgical technique, advancement flap.

INTRODUCTION

Head and neck cancer is the sixth most common type of cancer in the world. Squamous cell carcinoma (SCC) of the lower lip accounts for more than 25 % of oral cancers. According to the medical literature, SCC of the lips is more common in male patients over 45 years of age, with chronic sun exposure, tobacco and alcohol consumption habits, and systemic lupus erythematosus. (Nguyen *et al*., 2018)

Among the histological types observed, SCC is identified in 95 % of all cases, while the most common basal cell carcinoma of the upper lip and adenocarcinomas arising in the minor salivary glands constitute the rarest types. The prognosis and cure rates have been progressively increasing with early diagnosis and adequate treatment planning (Supreet *et al*., 2019).

Lip cancer reconstruction includes primary closure, local flap, and free flaps. Compared with free flaps, primary closure and local flap are advantageous because they have less scar tissue after reconstruction, better cosmetic benefits, and no risk of donor site morbidity. Although primary closure is a simpler surgical method and the scar has a linear shape, it may not be suitable for large resections in lip cancer surgery (Nguyen *et al*., 2018).

When we consider reconstructing the lower lip after an oncological ablation, the "stepped reconstruction" begins with simpler procedures to the most complex (Ogino *et al*., 2017). However, the objectives of lip reconstruction should always be to maintain oral competence, maintain maximum oral opening, maintain mobility, maintain sensation when possible, and maximize aesthetics (Supreet *et al*., 2019). The objective of this study is to describe the excision of a squamous cell carcinoma of the lower lip and its reconstruction using a bilateral cheek advancement flap.

CASE REPORT

A 58-year-old male patient who attended the Oral and Maxillofacial Surgery Unit of the University Hospital of Maracaibo, whose chief complain was a lesion on the lower lip that had been developing for 10 months. Referring presence of burning and itching, without prior effective treatment.

Within his medical record, the patient reported a medical history of controlled high blood pressure, and a long-standing smoking habit and occasional drinking. Providing results from a previous biopsy performed at another institution in the lower labial region, with histopathological results of fibroma with areas of hyalinization and collagenization.

The extraoral clinical examination revealed an ulcerated lesion on the lower lip, involving skin, muscle and mucous membranes, indurated, bleeding, crusted and painless on palpation, with an irregular surface, which occupied 2 thirds of the lower lip (Fig. 1), without palpable cervical lymphadenopathy. Intraorally, no apparent lesions were evident.

Given inconclusive results from a previous biopsy, an incisional biopsy was performed under local anesthesia, which resulted in a well-differentiated, infiltrating squamous cell carcinoma.

Based on the diagnosis provided by histopathological study, a total resection of the lesion with oncological margins plus total reconstruction of the lower lip was performed using two different surgical techniques (The Abbe-Estlander and the Webster Flap) allowing a functional and esthetic reconstruction.

Surgical technique

We performed radical surgical excision of the lesion, resulting in a full-thickness defect with preservation of only 10% of the lower lip near the left commissure. Reconstruction was performed upon this extensive lesion using a combination of two well-established and effective flaps for reconstructing the lower lip: The Abbe-Estlander and the Webster Flap.

After performing the tumor resection, the reconstructive phase was carried along using the Abbe-Estlander flap technique to rebuild 1/3 of the lower lip and the right commissure.

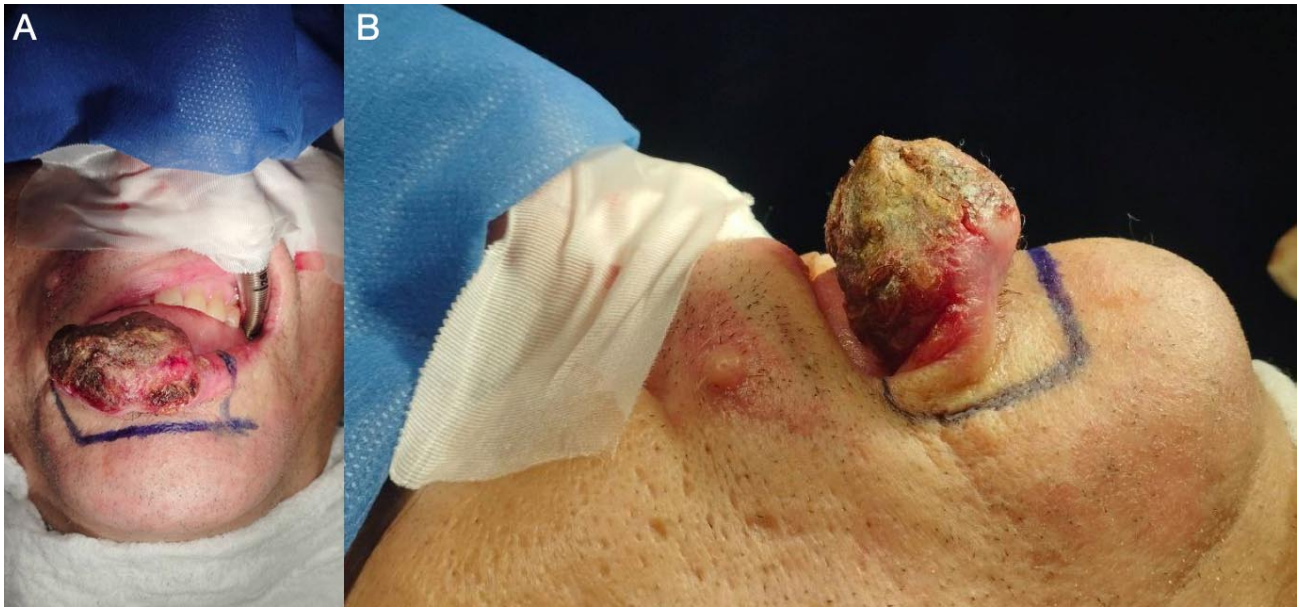

Fig 1. Preoperative photograph frontal (A) and sagittal profile (B) with proposed the incisions.

The Abbe-Estlander flap is drawn and dissected along the left nasolabial fold, obtaining a rotation flap dependent of the superior labial artery. At this stage, it is important to free as much muscle as possible by blunt dissection (to not harm the pedicle) to have a good arc of rotation. The flap is rotated, and both flaps are sutured together starting with the mucosa and finishing with the skin. On the left side because there was no preserved lip, we drew the Webster flap, with two parallel lines on the superior and inferior excision margins and two curvilinear Burrow triangles superiorly and inferiorly The Webster flap was also incised. The Burrow triangle along the nasolabial crease was excised, preserving the deepest mucosa layer. The mucosa of the superior triangle was incised to create a mucosal flap (Fig. 2). The mucosal flap was then medially mobilized and approached to the upper border of the myocutaneous flap to reconstruct the vermillion border. Both flaps were medially approached and closed in three successive layers (mucosa, orbicularis oris, and skin) in a tension-free manner. With the combination of these flaps we were able to rebuild the total length of the lower lip, restoring in a satisfactory manner the functional and esthetic requirements. Nowadays the patient has shown satisfactory results following 8 postoperative months (Fig. 3), where the esthetic lip subunit preserved the oral sphincter function and esthetic results.

Postoperative care

As postoperative recommendations, wound massage was indicated from the 6th postoperative week with pressotherapy through the application of adhesives with micropore bands and application of sunscreen indefinitely, thus minimizing risks of wound dehiscence and pigmentation, hypertrophy and/or keloids and thus, promoting the healing process.

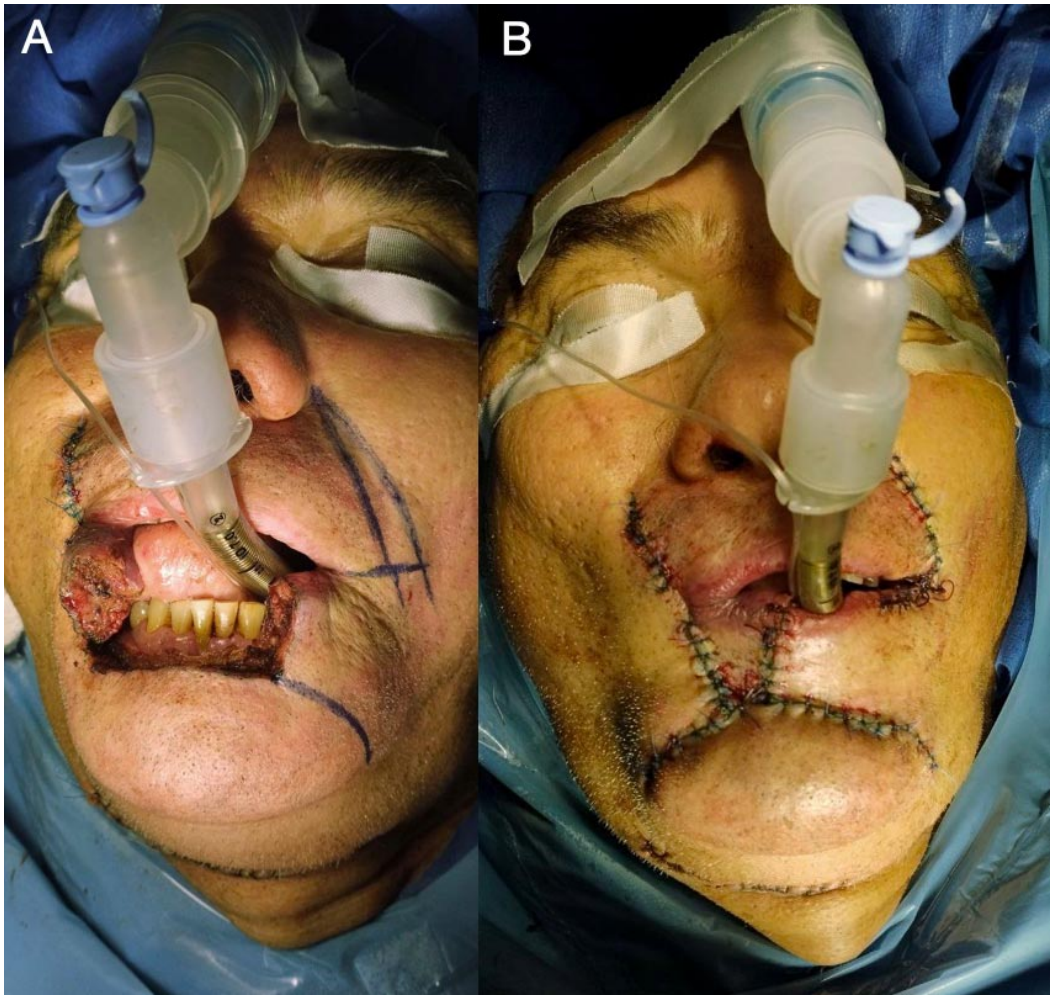

Fig 2. Intraoperative photograph surgical Defect (A) and total lower lip reconstruction (B)

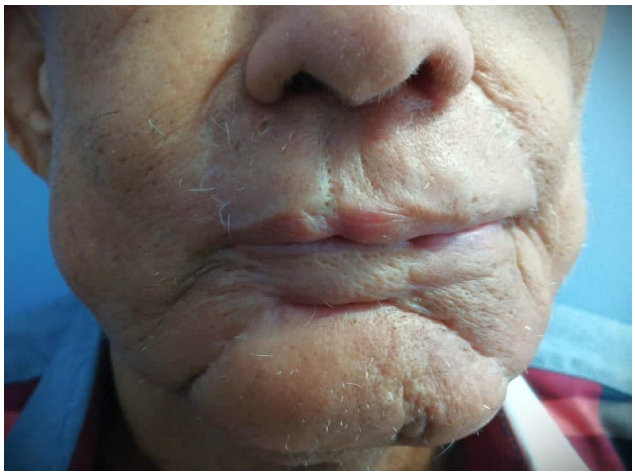

Fig 3. Postoperative photograph 8 moths.

DISCUSSION

Lip cancer can occur in any position along the upper or lower lip, but 90 % of all cases affect the lower lip. Lip cancer is a common malignancy of the head and neck region and accounts for approximately 12 % of all cancers of this region, as well as 25 % of cancers of the oral cavity. There are many risk factors for developing lip cancer, including age (especially between 60 and 70 years), sex, chronic exposure to solar radiation, tobacco, alcohol consumption, viral factors Human Papillomavirus (HPV) 16 and 24, Herpes Virus (HSV) 1 and 2), autoimmune diseases and use of immunosuppressive medications (Nguyen *et al*., 2018). In the present case, the patient reported a long-standing smoking history.

Lip cancer remains one of the most curable malignancies in the head and neck region, as the 10-year survival rate can reach 98 % and the recurrence-free survival rate is over 90 % (Mathes, 2006; Ogino *et al*., 2017).

Its prognosis depends on the size of the tumor, degree of invasion and lymph node involvement, and its treatment is mainly surgical (Costa-Gonzalez *et al*., 2021). In the present case, due to the absence of lymph node involvement and staging, it was decided to institute immediate surgical treatment.

The goals of surgery are total resection, lymph node dissection, and simultaneous reconstruction Surgical methods mainly depend on the location and size of the tumor. Lesions involving up to one-third of the lower lip are typically treated with type V or type W excisions. Lesions involving one-third to two-thirds of the lower lip are typically treated with regional flaps such as the Abbe flap or Estlander flap (Hasson, 2008; Frunza *et al*., 2015).

The use of the term "Abbé flap" has been originally described for ‘cross lip flap’ where the border of the flap was the border of the defect, which was lateral. Abbe flap is based on the labial artery with pivot point that's sits at the midpoint of opposing lip defect. On the contrary, medially based cross-lip flap was described by Estlander, who, however, described his flap for commissural defects, based on the medial pedicle. Therefore, we felt that the term "Abbé-Estlander flap" would be more appropriate to describe our combined technique.

Many flaps have been described for lip reconstruction. These flaps work very well in those patients with defects ranging from one to two thirds of the lip. Simple closure is applicable when the width of the lip defect is less than 1/3, but reconstruction with a local or free flap is necessary for larger defects, for which several methods have been reported. Gillies reported on a fan flap, in which a posterior cut was added to a flap centered on the angle of the mouth and rotated to advance the lateral side of the upper lip continuously to the residual lower lip, and then the lower lip with it. Karapandzic adjusted the distance with Burow's triangle instead of posterior cut or Z-plasty and advanced the flap using the facial artery and vein as the pedicle (Ogino *et al*., 2017). These methods have the disadvantage that the lower lip must be preserved to some extent and the reconstructed angle of the mouth becomes round. Although they can be used to reconstruct the entire lip, they often do not provide enough tissue for this purpose, resulting in a tight lower lip that tends to curl under the upper lip. In other cases, it is necessary to recruit adjacent cheek tissue during reconstruction to avoid microstomia. Von Burow and Bernard presented the concept of using cheek tissue to restore major defects or total loss of the upper or lower lips. Bernard-Webster flaps recruit adjacent cheek skin to resurface large lower lip defects, however, without important sensation and maintained orbicularis function control, hence affecting oral competence, speech and facial expressions.

Lower lip reconstruction remains a challenging task due to multi-functional and high aesthetic requirements that must be achieved for successful outcome. This is particularly true to near total lower lip defects, encompassing over 70 % of lower lip loss due to cancer, trauma or burns. Despite the fact that numerous flaps and their modifications have been described over the past century, only a few valuable techniques and concepts withstood the test of time for sub-total lower lip defects, each having their own drawbacks. In our opinion, this technique is an excellent choice in large lower lip defects,

combining extended Bernard-Webster flaps with Abbe/ Estlander flaps provides an innervated sensate functional reconstruction in 2 stages.

CONCLUSION

SCC is one of the most common malignant tumors, with its presentation on the lower lip being among the most common. The surgical management of these patients is essential, and the choice of reconstructive technique is imperative respecting the objectives of restoring oral competence, allowing intelligible speech and creating an aesthetically acceptable result. In the present study, a lower lip reconstruction technique using a combination of two different techniques has been described that can be used to repair important defects after oncological resections, obtaining satisfactory results.

We recommend this technique for near-total lower lip defects encompassing over 75% of lip loss as reliable, straightforward and superior to other techniques used for similar defects in terms of function and aesthetics.

According to our review, there are no reported cases of total lower lip reconstruction using the surgical techniques, therefore given the satisfactory results is imperative to continue appropriately selecting cases, according to the patient's requirement, and in those where the total reconstruction is needed, performing two simultaneous flap techniques specifically Bernard-Webster flaps with Abbe/ Estlander flaps, have proven effective.

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Conflict of Interest: The authors declare that they have no conflicts of interest.

Ethical Approval: The study was conducted in accordance with the Declaration of Helsinki. Informed consent was obtained from the subjects involved in the study.

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RESUMEN: El carcinoma escamocelular (CEC) surge del epitelio superficial displásico y se caracteriza clínicamente por invasión irregular destruyendo el tejido normal. Cuando consideramos la reconstrucción del labio inferior después de una ablación oncológica, la reconstrucción escalonada comienza con los procedimientos más simples hasta los más complejos. El objetivo de este artículo fue demostrar la reconstrucción total del labio inferior mediante diferentes técnicas de colgajo local simultáneo. Se trató de un paciente masculino de 58 años de edad que acudió al Servicio de Cirugía Oral y Maxilofacial del Hospital Universitario de Maracaibo por una lesión en el labio inferior de 10 meses de evolución. Al examen clínico extraoral se encontró una lesión ulcerada, exofítica, indurada a la palpación, dolorosa y sangrante que involucraba casi 3 tercios del labio inferior. Luego de la evaluación clínica se decidió realizar una biopsia incisional, resultando carcinoma escamocelular. Se realizó un abordaje quirúrgico mediante dos técnicas de reconstrucción diferentes para eliminar la lesión y reconstruir el labio inferior mediante técnicas simultáneas de diferentes colgajos locales, conservando las reparaciones anatómicas adyacentes. Recomendamos esta técnica para defectos casi totales del labio inferior que abarcan más del 75 % de la pérdida del labio como confiable, sencilla y superior a otras técnicas utilizadas para defectos similares en términos de función y estética.

PALABRAS CLAVE: Carcinoma de células escamosas, colgajos locales, cáncer oral, técnica quirúrgica, colgajo de avance.

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