

# Karapandzic flap and Bernard-Burrow-Webster flap for reconstruction of the lower lip \*

## Retalho de Karapandzic e retalho de Bernard-Burrow-Webster na reconstrução do lábio inferior

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**Abstract:** Squamous cell carcinoma is the most common malignant neoplasm of the lips, and in about 90% of cases it is located on the lower lip due to higher cumulative exposure to ultraviolet radiation. The authors present two surgical techniques for reconstruction of large lower lip defects, resulting from surgical excision of tumors, exemplifying and comparing them with two clinical cases.

**Keywords:** Carcinoma, squamous cell; Lip neoplasms; Surgical flaps

**Resumo:** O carcinoma de células escamosas é a neoplasia maligna mais frequente dos lábios, e em cerca de 90% dos casos, localiza-se no lábio inferior, por causa da maior exposição cumulativa à radiação ultravioleta. Os autores apresentam duas técnicas cirúrgicas para a reconstrução de grandes defeitos do lábio inferior, resultantes da excisão cirúrgica tumoral, exemplificando-as e comparando-as através de dois casos clínicos.

**Palavras-chave:** Carcinoma de células escamosas; Neoplasias labiais; Retalhos cirúrgicos

### INTRODUCTION

Squamous cell carcinoma is the most common malignant neoplasia of the lips and in 90% of the cases it is located on the lower lip, due to higher cumulative exposure to ultraviolet radiation, the main etiopathogenic aspect.<sup>1,2</sup> Other possible contributing factors are smoking and drinking habits, immunosuppression and chronic infection by the human papilloma virus. The mainstream treatment is surgical excision with adequate clear margin. Due to the functional and cosmetic importance of the lips, the reconstruction of resulting defects is a challenge. There are various reconstructive procedures to be selected from, according to the size and location of the defect, characteristics per-

inent to the patient (associated morbidities) and experience of the surgeon.<sup>3-5</sup>

For small tumors surgery is the preferred treatment, as it results in good cosmetic and functional outcomes and provides material for histological analysis, thus allowing for the evaluation of the complete excision of the neoplasia, which is not possible with radiotherapy. The most commonly used technique is the excision in ellipse with direct closing, with or without associated vermilionectomy. For bigger tumors, when the surgical excision will result in a defect of more than 50% of the length of the lip, other techniques are used, like the Karapandzic flap<sup>6-8</sup> and

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the Bernard-Burrow-Webster flap<sup>9,10</sup>, the methods chosen by the authors in the present cases. Both methods are used to treat the defect caused the excision of squamous cell carcinoma of the lower lip and both show good clinical, functional and cosmetic results, thus being considered good therapeutic options.

#### CASES REPORT

**CASE 1:** 57 year old male, smoker since the age of 7 years, with a history of 40 units-pack-year, with moderate alcohol consumption and poor dentition. He presented with an infiltrated, ill defined, slightly raised plaque, with irregular borders and an eroded, crusty surface, measuring 2.5 cm along the longest axis, covering the medial third of the *vermillion* of the lower lip (Figure 1). The lesion had been present for 6 months. There was no palpable regional adenopathy. The clinical diagnosis of squamous cell carcinoma was confirmed by incisional biopsy.

The patient was submitted to radical surgical excision of the lesion, resulting in a full-thickness defect of more than 50% of the length of the lower lip. The reconstruction was performed using the Karapandzic technique, based in two sliding-rotation flaps. The technique consists of making two incisions on either side of the mouth, beginning on the inferior borders of the surgical defect and prolonged by the mentolabial and nasolabial creases (Figure 2). The *orbicularis oris* muscle was freed from the neurovascular structures on either side of the commissures, allowing the rotation of two myocutaneous flaps, thus preserving the sensibility and mobility of the lip (Figure 3).

The flaps were mobilized medially and the mucosa, the *orbicularis oris* and the skin were closed in three successive layers, preserving the continuity of

the *orbicularis oris*, and thus the function of the oral sphincter.

The cosmetic and functional results were satisfactory, as the sutures followed the natural creases; the oral function was preserved as well as the sensibility and mobility of the lips (Figure 4). However, there was a slight microstomy, without any functional impact (Figure 4).

The patient was followed by three years without any sign of local recurrence or loco regional metastases.

**CASE 2:** 43 years old male, 35 units-pack-year smoker, with marked alcohol consumption, referred to the consultation because of an ulcerated 3cm tumor located on the median third of the lower lip *vermillion*, which was present for 7 months (Figure 1). The incisional biopsy showed a squamous cell carcinoma. There was no palpable regional adenopathy.

The radical excision of the lesion resulted in a full thickness median defect involving around 60% of the length of the lower lip. In this case, because the defect was bigger, the reconstruction using the Bernard-Burrow-Webster technique was chosen, using two sliding flaps (Figure 5). Two full thickness incisions were made laterally to the commissures, slightly curved upwards, each one around half the length of the surgical defect. Two other smaller incisions were made from the inferior extremities of the surgical defect, at the level of the mentolabial crease, slightly curved downwards (Figure 5). This resulted in two roughly square flaps that were then sutured at the median line, by layers (mucosa, muscle, skin). The Burrow triangles over the nasolabial creases were excised, however the deepest layer, the mucosa, was preserved and sutured to the superior border of the myocutaneous flap in order to rebuild the new *vermil-*



FIGURE 1: 1<sup>st</sup> Case: squamous cell carcinoma of the lower lip. 2<sup>nd</sup> Case: squamous cell carcinoma of the lower lip



FIGURE 2: Surgical defect and planning of the Karapandzic flap



FIGURE 4: 2 years after surgery: presence of microstomy

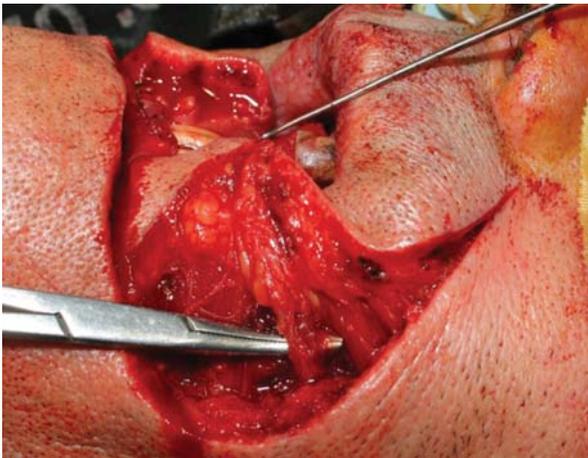


FIGURE 3: Preservation of the neurovascular structures

*lion*. Before excising the lateral and medial sides of the mucosal triangle the opening of the Stenon canal was identified, this way avoiding its accidental damage (Figure 5).

In this second case we observed a contraction of the lower lip as a complication of the surgical procedure (Figure 6).

So far the patient has had a 4 years follow-up and has been free of the disease, local recurrence and loco regional metastases.

#### DISCUSSION

The Karapandzic flap<sup>6-8</sup> and the Bernard-Burrow-Webster flap<sup>9-11</sup> are two of the most used techniques for the reconstruction of big lip defects, having the advantage of being one-step surgical procedures. The Karapandzic flap is suitable for defects that take

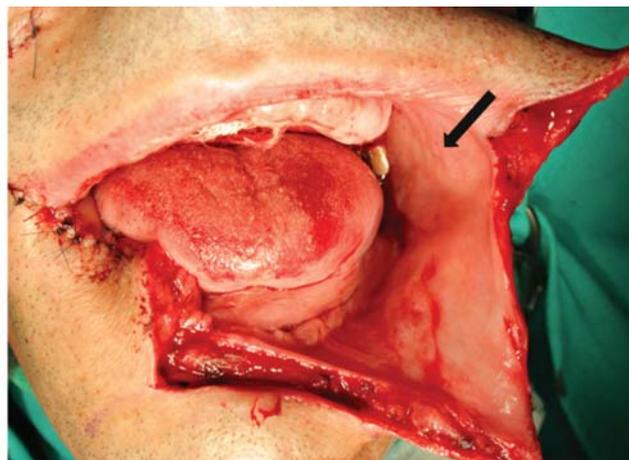


FIGURE 5: Left: surgical defect and planning of the Bernard-Burrow-Webster flap. Right: identification of the parotid papillae, place of the drainage of the Stenon canal



FIGURE 6: 2 years after surgery: presence of shrinking of the lower lip and distortion of the commissures

1/3 to 2/3 of the length of the lower lip. With bigger defects, the resulting microstomy limits the procedure. With total or subtotal lip defects, unlike the former technique, the Bernard-Burrow-Webster flap is a good option for reconstruction. While the Bernard-Burrow-Webster flap usually requires general anaesthesia, the Karapandzic flap can eventually be performed under loco regional anaesthesia.

The biggest advantage of the Karapandzic flap is the preservation of the mobility and the sensibility of the lower lip, as well as of the oral continence. However, it can cause microstomy (which can require corrective plastic surgery of the commissures in case it has a big impact on the patient's life or in those with dental prosthesis) and distortion of the oral commissures.<sup>12</sup> The Bernard-Burrow-Webster flap, despite not causing microstomy, usually results in some incontinence of the oral sphincter<sup>11</sup>, particularly at the commissures. Besides, it can cause a misplacement of the lower lip in relation to the expected position. □

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