International Journal of Otorhinolaryngology and Head and Neck Surgery
Narayana ML et al. Int J Otorhinolaryngol Head Neck Surg. 2020 Feb;6(2):428-430
http://www.ijorl.com
pISSN 2454-5929 | eISSN 2454-5937

DOI: http://dx.doi.org/10.18203/issn.2454-5929.ijohns20200165

Case Report

Bilateral Karapandzic flap: a work horse for carcinoma of lower lip

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Received: 21 September 2019
Revised: 29 November 2019
Accepted: 03 December 2019

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ABSTRACT

The lips are major aesthetic components of the face, which are also necessary for facial expression, speech, and eating. In oncological resections, the main goal in lip reconstruction is achieving oral competence than speech and facial expressions. Malignant lesions involving lip warrant a wide excision to ensure a disease-free margin, which usually results in large defects. Defects up to 1/3rd of lips are closed primarily. Defects measuring 1/3rd to 2/3rd of the lower lip may be closed with Karapandzic, Abbe or Estlander flaps. A 45-year-old male presented with an exophytic lesion in the lower lip involving the facial skin with bilateral level 1b cervical lymphadenopathy. Contrast-enhanced computed tomography scan showed heterogeneous irregular lesion over the lower lip with bilateral enlarged necrotic level 1b cervical lymphadenopathy. Biopsy from the lesion was suggestive of moderately differentiated squamous cell carcinoma. Wide local excision with left modified radical neck dissection and right supraomohyoid neck dissection was done. The central lower lip defect was reconstructed with bilateral Karapandzic flap. The postoperative period was uneventful, although the patient had microstomia. The patient was advised adjuvant radiotherapy based on histopathology and was in regular follow up.

Keywords: Carcinoma, Lip, Surgical flaps

INTRODUCTION

Lips are not only an important aesthetic component of the face but are also necessary for facial expression, speech, and eating. Malignant lesions involving the midline of the lower lip warrant a wide excision to ensure a disease-free margin. The resultant defects are usually large and often involve two-thirds or more of the lower lip. Larger defects require the use of local/distant flaps. An ideal reconstruction technique would involve a single-stage procedure that replaces the defect with similar tissue, restore aesthesis, maintaining oral competence, function, and is reliable.[1] There are various techniques for reconstruction of these techniques like Abee, Estlander, Bernard-Burrow, Gilles, Karapandzic or combinations. Karapandzic flap is a neurovascular myocutaneous flap that offers a very satisfactory result and was described by Karapandzic in 1974. In this case, we have chosen Karapandzic flap as it has been proved to have a clear advantage because of maintaining oral competence by preservation of orbicularis oris muscle, facial artery, sensory and motor nerves.[2]

CASE REPORT

A 45-year-old male presented to the ENT department with complaints of growth over lower lip who noticed before two months, which was initially small in size over the center of the lower lip and later progressed to present size. On clinical examination, a 5×2 cm exophytic growth was noted in the lower lip extending inferiorly 1 cm from gingivolabial sulcus, laterally reaching 2 cms short off from right angle of lip and 5 mm short of the left angle of lip. The lesion crossed the vermilion border of the lower

lip and involved the facial skin (Figure 1a). Neck examination showed enlarged level 1b nodes measuring 1×1 cm, mobile, and firm in consistency on both sides (cT3N2cM0). Wedge biopsy from the lesion came as moderately differentiated squamous cell carcinoma. Contrast-enhanced computed tomography (CECT) showed a heterogeneous, irregular ulcero-proliferative mass lesion measuring 4.6×2.1×2.0 cms in lower lip involving inferior orbicularis oris, and few non-enhancing central portions suggestive of necrotic changes. CECT neck showed an enlarged necrotic lymph node in left level 1B measuring 2.8×1.8 cm with peripheral enhancement. Enlarged right level 1B lymph node measuring 1×1 cm showing heterogenous enhancement with minimal internal necrotic changes. The patient was then taken up for wide local excision with left modified radical neck dissection and right supraomohyoid neck dissection and reconstruction. After surgical resection of the tumor, the lower lip defect was assessed and planned for bilateral Karapandzic flap. In this case, right Karapandzic flap was raised based on the facial artery, but the left Karapandzic flap was raised on a random blood supply as the facial vessels were ligated to achieve tumor clearance from the left submandibular area. In our case, before suturing the flap, both the upper central incisor teeth were removed to facilitate the food intake. Postoperative period was uneventful but had microstomia which the patient was able to manage by taking feeds with a spoon. Histopathology showed moderately differentiated squamous cell carcinoma pT3N1 with close margins and without lymphovascular invasion. The patient was advised adjuvant radiotherapy and was in regular follow up after radiotherapy.

Figure 1: Karapandzic flap procedure, (a) tumor involving more than two-thirds of the lower lip, (b) incision given along the nasolabial folds, (c) Karapandzic flap with its preserved neurovascular bundle, (d) Bilateral Karapandzic flap after harvesting, (e) Sutured Karapandzic flap and the cervical incision, (f) postoperative picture at 4 months follow up.

DISCUSSION

Lips have aesthetic appeal and play an essential role in maintaining oral competence, which in turn depends on normal morphology with intact sensory and motor nerve supply.[1] The risk factors for the development of squamous cell carcinoma in the lower lip are UV rays from chronic sun exposure, previous radiotherapy, and old age. Squamous cell carcinoma is more common in the lower lip than the upper lip. Oncological resection is the most common cause of large lip defects. Other etiology include trauma, burns, infectious diseases, hemangioma, and congenital clefts.[3] The resulting defects usually involve two-thirds or more of the lower lip. These defects are reconstructed using local flaps and free flaps.

Abbe flap is a full-thickness flap, which is raised based on the labial artery. The height of the flap should be similar to the height of the defect, and the width of the defect should be half that of the defect.[4] The main advantage is the ability to replace mucosal and vermillion surface of lips. The demerits of this flap are microstomia, and it is a 2-staged procedure with less patient compliance.[1] Estlander flap is suitable for commissural defects, and it is done as a single-stage procedure. Gilles flap is also a full-thickness flap which projects lower lip lateral commissure to cover the defect of the lower lip.[4] Webster Bernard Burrow flap is also used to reconstruct lower lip defects.[5] In this flap, the cheek and remaining lip were rotated medially, and the buccal mucosa was advanced to create the vermilion surface. As the advanced new tissue lacks sensation and sphincteric action, there will be loss of oral competence.[6]

Karapandzic flap is a neurovascular myocutaneous flap based on superior and inferior labial arteries. It has the advantage of preserving motor and sensory nerve supply with intact orbicularis oris muscle fibers, which provide good oral competence.[7] Preserved blood supply improves the survival of the flap. It is ideal in situations where no new lip tissue is required in central defects or lateral defects that involve the Commissure. Cases with the previous history of radiotherapy might have interference with blood supply. So, the preirradiated area may not be ideal for this reconstruction.[1,3] As no new lip tissue is recruited, microstomia may result after the closure of larger defects. Loss of commissure is also a disadvantage in this reconstruction method. [8]

Free flaps like radial forearm flap, parascapular flap, anterolateral thigh, and lateral arm flap are commonly used when there is insufficient adjacent cheek tissue because of their excellent color match with facial skin, pliability, and thin tissue mass. Disadvantages are lack of functional muscles, lack of motor innervation, and voluntary tightening of the lip.[9]

For defects involving the central lip of more than two-thirds, there is a need for raising bilateral Karapandzic

flap. If there is involvement of commissure on one side, only unilateral Karapandzic flap is sufficient.

Lip anatomy and operative technique

The oral sphincter is composed of the circumferential fibers of the orbicularis oris muscle and the radial orientation of the elevators and depressors from its outer margins. The sensory and motor nerve supply and labial vessels of lips also enter into this area in a radial fashion, which forms the basis of Karapandzic flap.

A curvilinear incision was given, extending from the defect towards alar base along nasolabial folds, with the width of flap equal to the height of defect (Figure 1b). The incision was deepened through the skin and subcutaneous tissues, after which blunt dissection was done in a radial fashion along the incoming nerves and vessels that should be preserved, to detach the lateral margin of the orbicularis oris from its attachments to obtain the required mobility. Although Karapandzic flap is based on facial vessel branches, in our case, because of the need for tumor clearance from the submandibular area on the left side, the flap was raised on random blood supply (Figure 1c). On the right side, it is harvested based on the facial artery. Mucosal incisions were given near the margins of the defect to enable closure. Upper incisors were removed to facilitate food intake later on. Then the flaps were mobilized and rotated medially into the defect. (Figure 1d), and closed in the center by tension-free sutures (Figure 1e). In a prospective study of 7 patients who underwent Karapandzic flap reconstruction for carcinomas with defects ranged from 40% to 75% of lip circumference, the functional and aesthetic outcome was considered excellent/good in 85% of cases.[10] If there is post-operative microstomia with functional compromise, then the patient can be advised for commisuroplasty.[11] In this case, postoperatively, there were no wound complications, and the outcome was considered satisfactory except for microstomia (Figure 1f).

CONCLUSION

Karapandzic flap is the workhorse for all central lower lip defects. Karapandzic flap could survive on random blood supply even if the facial vessels are ligated. The upper tooth can be removed to facilitate the food intake in all cases of bilateral Karapandzic flap. Microstomia is one of the major drawbacks of this bilateral Karapandzic flap.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not Required

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Cite this article as: Narayana ML, Pramod D, Lavanya T, Viswambharan V, Gaur U. Bilateral Karapandzic flap: a work horse for carcinoma of lower lip. Int J Otorhinolaryngol Head Neck Surg 2020;6:428-30.