

Karapandzic Flap for Esthetic and Functional Reconstruction of Large Defect of Lower Lip

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Abstract

Squamous cell carcinoma is the most common cancer occurring in the oral cavity. The lips are one of the most common sites of occurrence with involvement, lower lip being more common than upper. Reconstruction of large defects of lower lip with good functional and esthetic outcome is the biggest challenge faced by the surgeon. Karapandzic flap is one the most commonly used technique for reconstruction of large defects of the lower lip.

Keywords: Karapandzic flap, lips, squamous cell carcinoma

INTRODUCTION

The skin of the lip containing pilosebaceous follicles and the inner mucous membrane are the two ends between which the vermilion lies. The vermilion is devoid of adnexa and salivary glands leading to rare presentation of squamous cell carcinomas, basal cell carcinoma, malignant melanomas, or tumors of salivary glands; however, secondary involvement of vermilion through the unimpeded spread of tumor of adjoining skin or mucosa is much more frequent presentation to encounter. Squamous cell carcinoma is the most common neoplasm of the lips with only 5% involvement of upper lip, and in almost 95% cases, the lower lip is involved. This pertains to the excessive exposure to ultraviolet rays and smoking particularly pipe smoking. Immunosuppression and chronic infection by human papilloma virus are also listed among the etiological factors for squamous cell carcinoma. The clinical appearance and behavior of tumor is a prognostic marker and an important consideration to be marked by surgeon as infiltration to the underlying orbicularis muscle and metastasis to draining lymph nodes is comparatively at a slower pace in slow-growing tumors than in tumors with high malignant potential. Based on the extent of the tumor, excision and reconstruction is considered. The challenge of reconstructing larger defect of lip often limits the surgeon to excise the tumor generously which actually should not be the case as tumor is likely to be more extensive than it

appears requiring complete excision to prevent postoperative recurrences. This anatomical area is of great functional and cosmetic importance; impairment of which grants more miserable life to the patient.^[2]

A wide spectrum of lower lip reconstruction available to restore the function of oral sphincter as far as possible depending on the size of the lesion, location of the lesion and surgeon's expertise, stretches from wedge excision to bilateral advancement flaps, Abbe flap, Estlander flap, and/or the Bernard Burrow repair. Karapandzic flap was the choice of selection for our case as this provides repair of defects of one-half to two-thirds of lower lip utilizing the decrease in perioral elasticity secondary to aging while maintaining the nerves and blood vessels supplying the flap largely intact. The purpose of this paper is to bring forth the excellent Clinical, Functional, and Cosmetic outcome of Karapandzic flap used for reconstruction of large defect of lower lip due to tumor excision.^[3-5]

CASE REPORT

A 52-year-old male patient reported to Department of Oral and Maxillofacial Surgery with a history of ulceroproliferative

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Figure 1: Squamous cell carcinoma of lower lip



Figure 2: Markings for Karapandzic flap

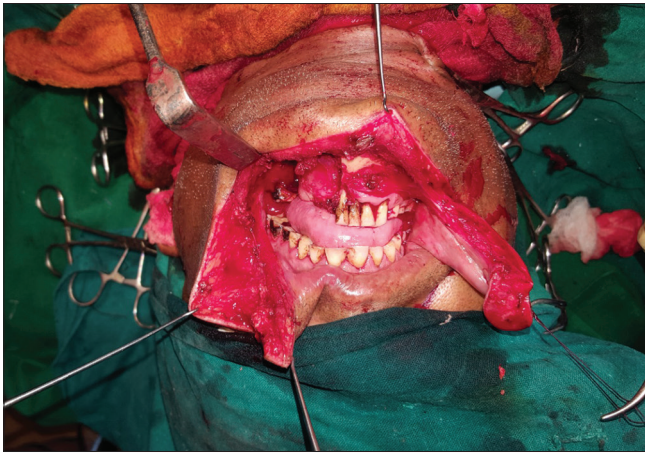


Figure 3: Flaps raised



Figure 4: Closure of the defect



Figure 5: Six months postoperative showing excellent esthetic outcome



Figure 6: Postoperative mouth opening

lesion involving the lower lip for the last 5 months. He had a habit of smoking 15 cigarettes/day for last 12–13 years and had habits of alcohol consumption 2–3 times a week for last 10 years. The lesion extended from left commissure of mouth upto midline of lower lip involving the labial and

buccal mucosa till left 1st molar region [Figure 1]. The oral hygiene was a bit compromised and foul odor was present. The ipsilateral Level IB (Submandibular) group and Level IA (Submental) group of lymph nodes were palpable, enlarged, and not fixed to underlying structure. The provisional diagnosis of malignant neoplasm was made which was confirmed

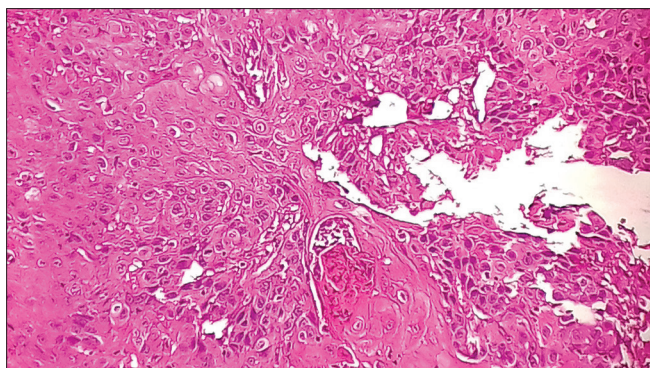


Figure 7: Histopathology: Stain used Hematoxylin & Eosin. Magnification 4X

by incisional biopsy which was suggestive of moderately differentiated type of squamous cell carcinoma.

Magnetic resonance imaging and contrasted computed tomography were the preferred radiography to rule out the extent of lesion in soft and hard tissue, respectively. The infiltration was seen deep into the orbicularis muscle and part of buccal mucosa; however, no bony erosions were noted. The patient was informed about his condition, and surgical procedure was explained enumerating the possible risks and complications of it before surgery. Informed consent for the use of photographs relating to the case, for medical, scientific, or educational purposes, was likewise secured. The ethical committee approval was taken from the local institutional ethical committee approval board.

Under general anesthesia, the patient was subjected to the left side supraomohyoid neck dissection and full thickness excision of lower lip with safe margins of 1 cm. The defect was reconstructed with Karapandzic flap. The flap consists of a horizontal incision along the lower border of the defect in the mentolabial sulcus and bilateral perioral incision in nasolabial fold [Figure 2]. The neurovascular bundle was preserved to maintain flap viability. When sufficient mobilization has been accomplished, the flaps were medially oriented to allow closure in 3 planes, namely, oral mucosa, orbicularis muscle, and skin maintaining the integrity of oral sphincter [Figures 3 and 4]. The esthetic and functional outcomes were satisfactory; however, there is some microstomia, but it has no impact on the function. Six months after surgery and radiation, the patient has no signs of local recurrence or regional metastasis [Figures 5 and 6]. The excisional biopsy report was confirmatory for Moderately differentiated squamous cell carcinoma [Figure 7].

DISCUSSION

Lips are the predominant portion of the lower third of the face which serve an important esthetic unit of face, as the focal point for communication and expression, and maintain competence of the oral cavity preventing the drooling of saliva.^[6] The lips and the surrounding perioral region form the facial esthetic unit. Unlike upper lip region which consists of two lateral nasolabial subunits and one medial philtrum subunit contributing to relative complexity of upper lip reconstruction, lower lip is composed of one subunit with no structure at its

center to necessitate symmetrical lip repair and thus presents a much simpler situation.

Of the many procedures described to reconstruct the lower lip, V-excision with lip shave, Gillies fan flap, Abbe flap, Abbe-Estlander flap, Karapandzic flap, and Bernard Webster flap are some of the most common flaps which can be used for reconstruction of lips.^[2,3,4,7] The Karapandzic flap is one of the useful techniques for reconstruction of large defects of the lower lip and was first described by Karapandzic in 1974. This flap was used as a modification of Gillies fan flap which resulted in denervation to lips. This deficiency of the classical version was overcome by Karapandzic flap also known as neurovascular fan flap. In this modification, the supply of nerves, both sensory and motor along with the blood vessels to the flap, is largely maintained intact. Although retaining these structures might limit the degree of advancement, two flaps are routinely designed, one on each side of the defect to advance simultaneously and join at the center. This flap is useful for large defects of one-half to two-thirds of the lower lip and can be used for total lower lip defects. The reconstruction is achieved by rotating the bilateral flap of the upper lip and perioral tissue, both inferiorly and medially. The perioral elasticity and the thickness of skin are decreased as a result of aging. The resulting lip redundancy is accentuated by loss of dentition and premaxillary bone which aids in providing excess tissue for reconstruction as was in our case.

The major advantage of this flap over other techniques is that it can be utilized for repair of as large as complete lower lip loss in a single-stage surgical procedure. The fact of vascularity on the prognosis of flap cannot be overemphasized, and the rich blood supply by superior and inferior labial arteries of the lips permits large volumes of lip tissue to be regularly and successfully transferred to reconstruct lip defects. The Karapandzic flap stands out when reconstruction of lower lip is considered as it spares the blood vessels and retains the sensations of lip by preserving mental nerve as well as motor functions by preserving marginal mandibular branch of facial nerve, allowing advancement of the flaps on each side of the defect to repair lower lip. In our case, care was taken while dissecting through the tissues to maintain the viability of the flap which enabled uneventful healing with immediate muscular functions and sensibility of lower lip postoperatively. As every procedure has its specific pros and cons, the major disadvantage of Karapandzic flap is that it can cause microstomia when used for larger defects of lip, but this can be corrected with corrective commissuroplasty.^[8] In our case, microstomia was evident but was not intervened yet as the patient was not concerned about the minor problem as this was not affecting his oral functions.

CONCLUSION

Although various lip reconstructive techniques can be employed, Karapandzic flap serves the sufficient mobilization of tissues to reconstruct large lip defects while considering

prime requirements of flap by maintaining the vascularity, nerve supply of lip, and simplicity of design.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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