CASE REPORT

Karapandzic and Bernard Burrow Webster Flap Amalgamation in Reconstruction of Near-Total Defect of the Lower Lip

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ABSTRACT

Carcinoma of the lip is a common head-and-neck region malignancy more commonly affecting the lower lip (>90%) with squamous cell variant being the most common (95%). Surgical excision of the tumor is the choice of treatment with reconstruction of the ensuing defect. Although various techniques are prescribed, the pick of surgery for reconstruction of full thickness defect in lower lip remains to contest. In this case account, a 65-year-old elderly female, who presented with near-total involvement of the lower lip to squamous cell carcinoma, underwent full thickness lip defect reconstruction combining two classical flaps: The Karapandzic Flap (KF) and Bernard Burrow Webster Flap (BBWF). KF being a single stage procedure has the advantage of being fully innervated with the preservation of sensation and motor function. The BBWF is an excellent procedure for repairing defects that affect more than one-third of the lower lip. It allows use of similar local tissue in a single sitting to cover the defect though at the cost of attaining a dynamic continuity. Thus combining both these flaps in our case advantages of both flaps has been utilized.

KEY WORDS: Karapandzic flap, Bernard Burrow Webster flap, lower lip reconstruction, squamous cell carcinoma.

Introduction

The lips are dynamic structures and have a vital key not only in eating, drinking, speech but also play a key role in an individual's appearance, self-esteem, facial harmony, and expression.[1] Squamous cell carcinoma (SCC) of the lip is second only to skin cancer in terms of frequency in the head and neck.[2] Wide excision of the tumor with negative margins,[3] followed by reconstruction of the subsequent tissue deficit with variable thickness flap, is the gold standard treatment.[4]

Meticulous planning and careful selection of a suitable reconstruction procedure are necessary to recreate the tissue lost to be drawn from elsewhere, in treating tumors of large sizes that may have become infiltrative and destructive. Functional and aesthetic restoration of the lip structure is essential while reconstructing a new lip. Furthermore, it is necessary to preserve skin sensitivity as far as possible to provide a proprioceptive mechanism to lip movement, speech, and salivary continence.[1]

However, as in any other plastic surgery procedure, it is elemental to choose the right procedure for reconstruction of the lower defect adapted to the individual depending on lip defect extension, location, and thickness with factors such as defect size, availability of healthy tissue, and involvement of the commissures.[5] Thus, it is crucial for the operating surgeon to attain a balance in aesthetic appearance with proper function of the oral sphincter.

To simplify things, lip defects have been divided into – defect only (a) at the cutaneous part of the lip;

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(b) in the lip vermilion; and (c) full-thickness defect; varying according to the size of the defect area – (a) < 1/3rd, (b) between 1/3 and 2/3, and (c) near-total or total.[6] The latter defects of >2/3 of the lower lip may be favorably closed with Karapandzic Flap (KF) or Bernard Burrow Webster Flap (BBWF).

Karapandzic was the first to describe innervated muco – musculocutaneous flaps that provided post-operative functionality.[7] Christian Bernard, in 1853, described a surgical technique using full-thickness Burrow triangles in the nasolabial sulcus to enable medial advancement of the malar flaps. In 1960, this was modified by Webster *et al*.[8] The Bernard Webster flap is used to reconstruct large lower lip defects recreating the commissures by means of medial cheek advancement along with the remaining lip tissue.[9] Over time, there have been many modifications of the technique with preservation of the innervated muscle fibers of orbicularis muscle by careful tissue dissection without full muscle transection at the commissure level.[10]

Here, we present our experience to reconstruct a near-total lower lip defect using both KF and BBWF together.

Case Report

This case is of a 65-year-old lady presenting with ulceroproliferative lesion occupying almost the entire lower lip which grew rapidly over a period of 6–7 weeks. Patient had a H/O tobacco and betel nut chewing over past 40 years. Examination revealed that ulceroproliferative growth was occupying 80–85% on the mucosal side of the lower lip extending from white roll to alveolar ridge and bleed on touch [Figure 1]. No palpable regional lymphadenopathy was noted. Tissue biopsy suggested well-differentiated SCC. Metastatic workup yielded negative yielded negative. Patient had no comorbidities.

Full thickness, near-total, and wide excision of tumor were done with visible tumor free margin of 1 cm allowed on mucosal side of the lower lip and induration free margin of same length on cutaneous side. Excision of the lip ranged from gingivobuccal sulcus on the mucosal side to the labiomental crease on the cutaneous side. The specimen included the left commissure along with nearly 85% of the lower lip.

In view of age of the patient, a single stage surgery was planned for the reconstruction of the lower lip using local flaps to give functionality for the neoconstructed lip with aesthetic acceptance. Hence, for reconstruction a combination of two well-established and effective bilateral local flaps were planned. To utilize the remnant lower lip (~15%) on right side, KF, to retain dynamicity; and BBWF on left side to advance the cheek tissue medially and to create new commissure were planned [Figure 2].

The incisions were done on the marked areas. The KF was done on the right side first to establish the degree of advancement required for the BBWF on the left side. This was performed by removal of ipsilateral melolabial triangle and measuring remaining defect size after KF mobilization. Burrow compensation triangles were made in nasolabial sulcus and labiomental sulcus. Care was taken to preserve the underlying vascular-nervous-muscle

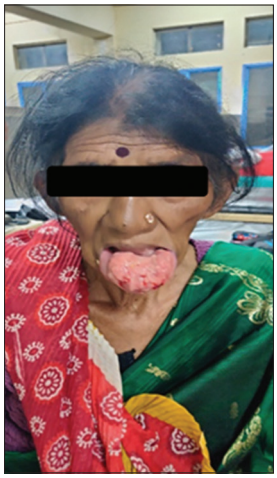

Figure 1: Ulceroproliferative growth on the mucosal side of the lower lip occupying more than 80% of the area

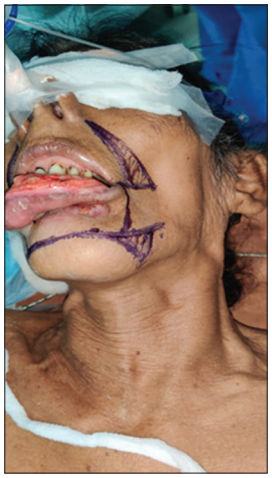

Figure 2: Incision markings peroperatively

system. Mucosal cuts were made for further mobility as required. The incision was closed in layers [Figure 3].

Postoperatively patient was advised not to conduct any open mouthed activities for 4 weeks. Functional outcome including adequate mouth opening, continence, lip closure, phonation, and sensitivity along with facial movements was assessed during follow-up period. Patient restarted her regular diet after 3 weeks.

The surgical specimen revealed a well-differentiated SCC with perineural invasion (pT3NxMx). No lymphovascular invasion was observed.

Patient underwent five cycles of radiotherapy with no suture line breakage. Patient maintained nearly complete sphincteric function and lip mobility at end of 3 months follow-up, postoperatively. Our patient and her attenders were pleased with surgical outcome, both in-terms of cosmetics and functional result [Figure 4].

Discussion

In SCC of the lip, radical excision with clear microscopic margins is the treatment of choice as it is associated with satisfactory disease-free survival.[11] KF and the BBWF are 2, time tested techniques in reconstruction of the lower lip. Each of these flaps has their own advantages and disadvantages. However, by combining both, we can reap advantage of preservation of the sensibility and motility of the lower lip given by KF and also take advantage of the larger side mobilization of BBWF, especially because in our case the defect occupied about 85% of the lower lip. Use of local flaps for reconstruction in full thickness defects of facial area, especially the lip, rather than regional or free flaps, is preferred. This is because of the advantages of retaining sensation, better motility of the reconstructed area, commissure preservation and tissue matching for functionality and esthetics that the local flaps offer.

KF has potential risks of microstomy as well as misalignment of the mouth commissure[12] while BBWF causes some incontinence of the oral sphincter. It can be applied for extensive full-thickness defects including defects with a limited residual lip. With malar advancement risk of microstomy is considerably reduced.[1] It is ideal in the lower lip reconstruction for elders due to their flaccid skin and use of dental prostheses in these individuals. Incision notch in the region of the lower lip and alveobuccal sulcus erasure are potential drawbacks of BBWF.[1]

The use of either of the flaps in standalone or combination provides immediate and complete functionality. One key step in the above mentioned procedure is to start with KF so that the degree of advancement required for the BBWF can be determined. Primary advantage of use of these flaps is that reconstruction can be done in a single stage with acceptable cosmetics of the neoconstructed lip while maintaining oral sphincter action for functionality. This combination reduces risks of microstomia in case of use of 2 KFs or loss of dynamicity with commissure loss when 2 BBWFs are used.

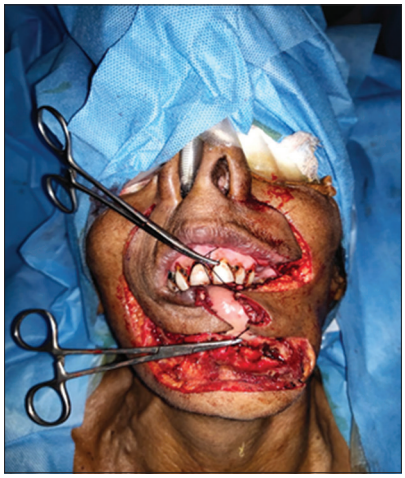

Figure 3: Tumor excised, incision done, and the flaps approximated

Figure 4: Post-operative appearance at the end of 1 month

Thus we conclude, through the above case account that combination of KF and BBWF provides an excellent option in reconstruction of large lower lip defects with total or near total involvement with satisfactory esthetic and functional result. Mobility of the lip and near complete sphincteric function can be achieved by end of 2 weeks postoperatively. Furthermore, in our case, there was no microstomia at the end of 3 months follow-up.

Consent of the patient and her attenders was obtained for use of de-identified photographs.

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