

Case Report

A rare case of bilateral buccal lesions reconstructed with bipaddle submental artery island flap and buccal fat pad flap along with review of literature

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ABSTRACT

Reconstruction of full-thickness buccal defect involving oral commissure which demanding, which requires restoring competency of commissure besides providing lining for two surfaces simultaneously. Such defects prerequisites a pedicled flap each for mucosal and cutaneous surfaces else a free flap with double-paddle skin is needed. We present a case of a 45-year-old gentleman with bilateral buccal mucosa lesions; left side proliferative squamous cell carcinoma (T4N0M0) infiltrating into the cheek and right-sided large verrucous lesion. Reconstruction of verrucous lesion defect was done with buccal fat pad flap following wide local excision, while the SCC lesion resulting defect was reconstructed with de-epithelized bipaddle submental artery island flap (SAIF). Postoperatively patient had an uneventful recovery. The bipaddled SAIF has emerged as innovative modification of the conventional submental flap for reconstruction of composite oro-facial wounds provides lining for both surfaces, requires a shorter operative time than a free flap and avoids donor site deformity associated with double paddled Pectoralis cutaneous flap. The complexity of bilateral buccal defects and utilization of bipaddled design for reconstruction warrants submission of this case with just two cases reported in the literature.

Keywords: Buccal carcinoma, Submental artery island flap, Bippaddle flap, Cheek

INTRODUCTION

Oral cancers involving buccal mucosa is a common occurrence in India and reconstructive strategies depend on the size and location of the defect. Reconstruction of full-thickness buccal defect involving oral commissure becomes challenging while addressing competency of the commissure. Deltopectoral flap, supraclavicular artery flap, nasolabial flap, submental flap, platysmal flap are some of the reconstructive options for oral cavity lesions, but these provide cover only for one surface.¹ Bipaddle Free flap reconstruction requires option microvascular expertise, which may not available at a center and a

longer general anesthesia could be peripheral contraindicated peripheral because of related comorbidities.² A growing interest in the use of submental artery flap for advanced orofacial cancers has been advocated when other pedicled flaps could be an alternate option with limited options of free flaps.^{3,4} However, most of while the reported cases have described the flap for two-dimensional defect reconstruction.

Good texture and color match with facial skin, adequate tissue cover, flap's reliability and concealed donor site are its advantages. Shorter operative time, decreased

post-operative morbidity shorter hospital stay are its additional benefits compared to radial free forearm (RFA) flap makes it as a better sought option.⁵ Submental flaps have been reported in the literature for reconstructing two dimensional orofacial cancer defects, and use of bipaddle SAIF flap for a full thickness defect has been documented in just two cases.^{6,7} Here we discuss reconstructive surgical techniques and outcome.

CASE REPORT

A 45-year-old gentleman presented to the otorhinolaryngology clinic with bilateral buccal mucosa lesions. He was a chronic smoker with an average of 25-pack years, consumed alcohol occasionally. His past medical history was significant of receiving anti-tubercular treatment for pulmonary tuberculosis 8 years ago. He was hypertensive and diabetic on medications.

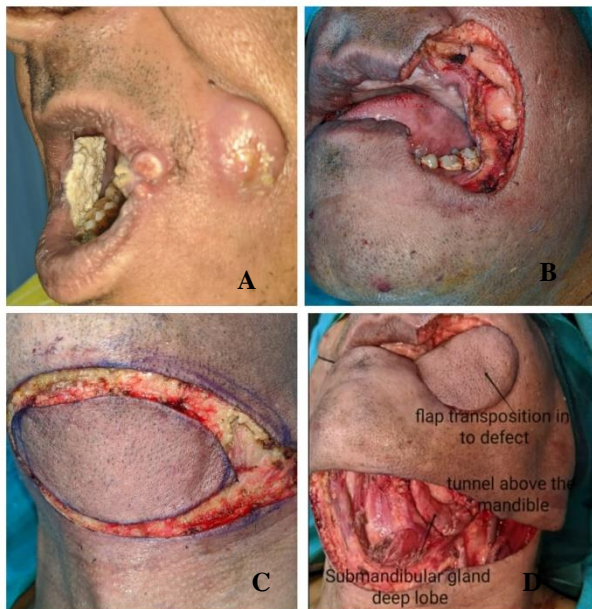


Figure 1: (A) bilateral buccal lesion showing verrucous lesion on the right side and proliferative lesion on left side invading the cheek skin (B) full thickness wide local excision of the lesion on the left side involving the oral commissure (C) ellipsoidal skin paddle 6cm marked between the angles of mandible. (D) the bipaddle submental artery flap transferred through subcutaneous tunnel onto the defect.

Examination revealed a left 5.0×4.0 cm proliferative buccal lesion infiltrating left commissure into cheek skin with 3.5×4.0 cm verrucous lesion on right side extending up to the commissure. Neck examination was clinically negative. A CT scan of neck and chest with contrast staged left side as T4N0M0. Biopsies were taken which reported left side as squamous cell carcinoma and right-side lesion as verrucous carcinoma. Patient was planned full thickness excision of SCC and reconstruction with submental bipaddled flap along with ipsilateral MND III

because of T4 primary and partial thickness wide local resection (WLE) for verrucous lesion (Figure 1).

SCC lesion was excised including the stenson's duct orifice, cheek skin and oral commissure including 1 cm margin, beyond the tumor. Resulting defect shown in Figure 1. Resected specimen sent for frozen section confirmed tumor free margins. A submental flap was designed as an ellipsoidal skin paddle measuring 6 cm in diameter between the angles of mandible on either side. (Figure 1) The skin and subcutaneous tissue were incised till the platysma and sub-platysmal flap was raised. The left submental artery and facial artery were identified at superior border and deep to submandibular gland respectively. The vasculature of the flap pedicle was traced towards the midline and dissected. Perforators from the submental artery running between the anterior belly of digastric muscle while mylohyoid muscle were included in the flap by detaching these muscles while preserving facial artery and vein. The flap was then transposed through the subcutaneous tunnel created over the mandible onto the defect. (Figure1).

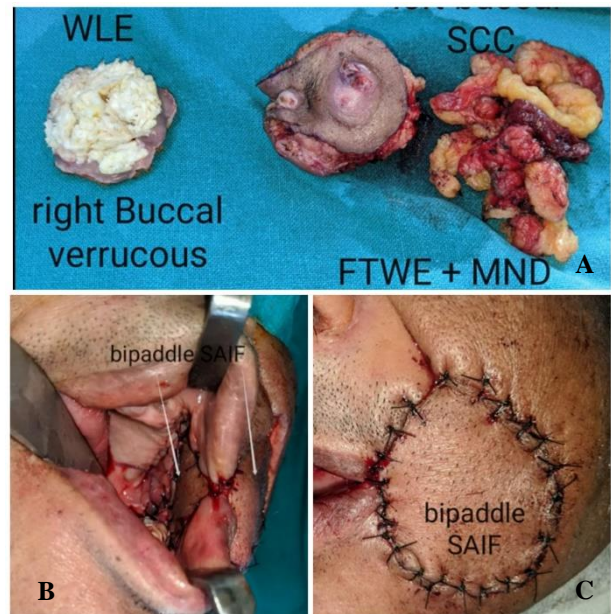


Figure 2: (A) gross excised specimen showing right side verrucous lesion and left buccal squamous lesion with MND (B, C) bipaddle submental artery island flap (SAIF) shown covering the mucosal and outer skin defect.

Left Modified neck dissection (MNDIII) was performed utilizing the same incision with sub-platysmal flap raised inferiorly towards the clavicle and nodal dissection was done. Depithelisation of the flap was done 1.0 cm in length to delineate two skin paddles to accommodate a newly created oral commissure. The larger paddle was utilized to cover the skin defect with smaller one providing the mucosal lining. (Figure 2).

Right side verrucous lesion was excised partial thickness with 1 cm margins around the lesion (Figure 3). Reconstruction of the defect was done with buccal fat pad, which was delivered through the horizontal incision given on the buccal mucosa 2 cm below the horizontal Stenson's duct upto second molar. The buccinator muscle fibers were separated until the buccal fat was seen which was gently teased out and sutured onto the defect. Immediate post-operative period was uneventful (Figure 3). The patient was allowed orally on 3rd post-operative day with good acceptance. The patient also received adjuvant 55 Gy radiotherapy 6 weeks later.

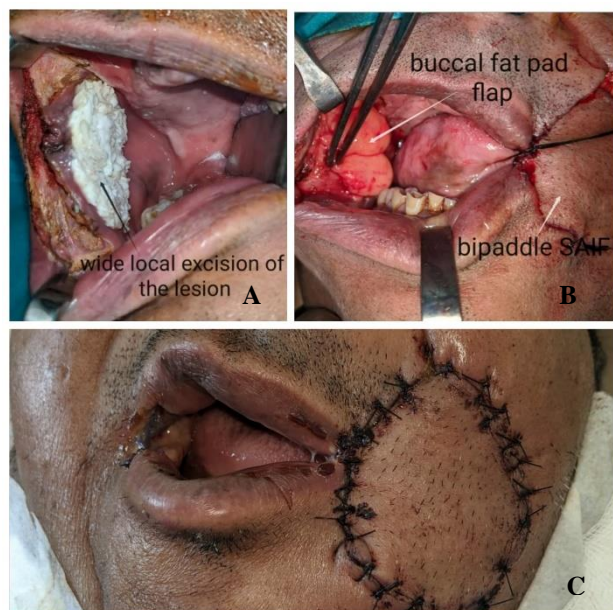


Figure 3: (A) wide local excision of the lesion on the right side sparing the oral commissure (B) buccal fat pad flap delivered for defect reconstruction (C) final postoperative outcome.

DISCUSSION

Submental artery flap was first described in 1993 by Martin et al and since then its usage in varied applications have been described.⁸⁻¹¹ Advantages of using SAIF include good color and texture match to the skin of the face, suppleness and concealed donor site. Its usage for reconstructing full thickness oral cavity defects as big as 40 cm² has been recommended over microvascular RFA free flap in terms of a shorter post-operative hospital stay and recovery.^{5,12} A modification of the conventional submental artery flap by converting into a bipaddle flap has been documented.

Two methods of harvesting a bipaddle SAIF have been described in literature one is de-epithelialisation of the part of the flap to create two cutaneous paddles, while in the other technique, the flap is split into two paddles by giving a incision on the skin of full thickness flap. The deciding factor for both the incision and the de-epithelialisation involves the critical perforator which is

located lateral to the anterior belly of digastric muscle thus dividing the flap into a bigger distal paddle and a smaller proximal paddle. The former is used for covering the mucosal defect whilst the latter is used for skin coverage. Disadvantages of split skin incision technique have been documented including skin wastage as a part of de-epithelialisation, limited mobility of the paddles independent to each other and formation of inclusion cysts. We preferred using de-epithelialisation technique since it avoids the above-mentioned problems. As with any skin flap, the problem of intra-oral hair growth remains hair bearing, although depilation, laser can be used to manage it.¹² It is not necessitated where adjuvant radiotherapy is used ultimately leading to the total hair loss in the irradiated area.

Full thickness reconstruction of cheek is technically challenging. Free flaps such as Anterolateral thigh flap and RFA free flap have been commonly employed for this purpose. However, usage of free flaps is limited by the patient's profile. Patients with significant comorbidities such as diabetes mellitus, peripheral vascular disease, microvascular angiopathies are not good candidates for the same.² Cigarette smoking, corticosteroids, and immunosuppressants may lead to complications in wound healing.^{13,14} In such scenarios pedicled flaps like pectoralis major myocutaneous flap can be used to provide a lining for both surface, but because being a bulky flap, with associated comorbidity resulting from chest deformity and loss of shoulder function, with a separate incision deters its use.¹⁵ Submental artery flap for a three dimensional defect reconstruction is a useful alternative since it provides supple skin which harmonizes with the defect to be reconstructed.

In a resource limited setting with lacking expertise for micro vascular reconstruction, renders a free flap as non-viable option. Decision to use bipaddled SAIF in view of patient's perspective with a long smoking history and coexisting diabetes mellitus. Reconstructive surgeries by restoring functionality and an aesthetic outcome play a pivotal role in improving the quality of life of patients. To the best of our knowledge, just two other cases utilizing bipaddle SAIF have been documented in the available literature.^{6,7}

CONCLUSION

Occurrence of bilateral lesions is rarely encountered. Reconstruction of full-thickness buccal defect with neo oral commissure is demanding. The bipaddled SAIF has emerged as an innovative modification of the conventional submental flap and bilateral defects utilizing bipaddled flap warrants submission.

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REFERENCES

1. Yadav P. Reconstructive surgery in oral cancers. *Indian J Plast Surg.* 2007;40:22.
2. Genden EM, Rinaldo A, Sua´rez C, Wei WI, Bradley PJ, Ferlito A. Complications of free flap transfers for head and neck reconstruction following cancer resection. *Oral Oncol.* 2004;40:979-84.
3. Chow TL, Chan TTF, Chow TK, Fung SC, Lam SH. Reconstruction with submental flap for aggressive orofacial cancer. *Plast Reconstr Surg.* 2007;120:431-6
4. Sebastian P, Thomas S, Varghese BT, Iype EM, Balagopal PG, Mathew PC. The submental island flap for reconstruction of defects in oral cancer patients. *Oral Oncol.* 2008;44:1014-18
5. Paydarfar JA, Patel UA. Submental island pedicled flap vs radial forearm free flap for oral reconstruction. Comparison of outcomes. *Arch Otolaryngol Head Neck Surg.* 2011;137:82-7.
6. Ramkumar A, Francis NJ, Senthil Kumar R, Dinesh Kumar S. Bipaddled submental artery flap. *Oral Maxillofac Surg.* 2012;41:458-60.
7. Chow TL, Choi CY, Ho LI, Fung SC. The use of bipaddled submental flap for reconstructing composite buccal defect. *J Maxillofac Oral Surg.* 2014;13:75-7.
8. Martin D, Pascal JF, Baudet J, Mondie JM, Farhat JB, Athoum A, Le Gaillard P, Peri G. The submental island flap: a new donor site. Anatomy and clinical applications as a free or pedicled flap. *Plast Reconstr Surg.* 1993;92:867-73.
9. Chen WL, Yang ZH, Li JS, Huang ZQ, Wang JG, Zhang B. Submental flap for reconstructing tongue defect with V-Y advancement flap for repairing submental defect. *Otolaryngol Head Neck Surg.* 2009;141:202-6.
10. Curran AJ, Neligan P, Gullane PJ. Submental artery island flap. *Laryngoscope.* 1997;107:1545-9.
11. Pistre V, Pelissier P, Martin D, Lim A, Baudet J. Ten years of experience with the submental flap. *Plast Reconstr Surg.* 2001;08:1576-81
12. Conroy FJ, Mahaffey PJ. Intraoral flap depilation using the pulsed alexandrite laser. *J Plast Reconstr Aesthet Surg.* 2009;62:e421-3
13. Reus WF III, Colen LB, Straker DJ. Tobacco smoking and complications in elective microsurgery. *Plast Reconstr Surg.* 1992;89:490-4.
14. Chang LD, Buncke G, Slezak S, Buncke HJ. Cigarette smoking, plastic surgery, and microsurgery. *J Reconstr Microsurg.* 1996;12:467-74.
15. Liu M, Liu W, Yang X, Guo H, Peng H. Pectoralis Major Myocutaneous Flap for Head and Neck Defects in the Era of Free Flaps: Harvesting Techniques and Indications. *Sci Rep.* 2017;7:46256.

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