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CASE REPORT

Use of a Versatile Buccinator Myomucosal Flap in the Palatal Defect

Madan Mishra[1] · **Sapna Tandon**[2]

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Introduction

Inferiorly based buccinator myomucosal island flap (inferiorly based BUMIF) was introduced by Zhao in 2003 [1–3]. Buccinator myomucosal flap is an axial-pattern flap and includes some fibers of orbicularis oris muscle and part of buccinators muscle, covered with the buccal mucosa. It is a vascular island variant of inferiorly pedicled facial artery musculomucosal flap (FAMM), in which the facial artery and vein are skeletonized. This flap has been reported for reconstruction of the mouth floor, tongue and pharynx [4].

The buccinator muscle is a thin, quadrilateral muscle in the cheek. It originates from the outer surfaces of the alveolar processes of the maxilla and mandible (Tables 1, 2) [5, 6].

Mucosal sensory innervation is by the long buccal nerve, a branch of the maxillary division of the trigeminal nerve, which courses with the buccal branch of the internal maxillary artery. *Motor innervation* of the buccinator muscle is via the temporal and cervical divisions of the facial nerve laterally in the buccal fat pad. [5] [7].

Case Report

A 50-year-old male patient reported with non-tender firm swelling on left side of posterior palate measured about 2.5 × 3 cm since 3 months (Fig. 1). It was misdiagnosed as a palatal abscess. Aspiration was negative. Diagnosis of pleomorphic adenoma was confirmed via incisional biopsy. The whole lesion was excised (Fig. 1), and the defect was reconstructed using a buccinators myomucosal flap. The size of the buccinator myomucosal flap measured about 7 cm × 5 cm (Fig. 1). The flap was transposed inferiorly to cover the defect. Missing second premolar and molar of the same side made the transport of the flap relatively easier. The donor site was primarily closed (Fig. 2). The flap was completely re-epithelialized after 4 weeks. No infection or flap resorption was observed after 4 months of follow-up (Fig. 3) He had no limitations with respect to mouth opening or trismus. The esthetic results were good without cheek depression. The flap pedicle is sectioned, 4 weeks after surgery (Fig. 3).

Discussion

Buccal mucosa is thin and pliable with the capacity of saliva production [6, 8]. It is supported by the buccinator muscle. Dental state has paramount importance in selecting the appropriate type of buccinator myomucosal flap If the posterior teeth are present in the dental arch, then inferiorly based FAMM flap cannot be used for reconstruction of mouth otherwise, these teeth should be extracted or a bite block should be used to separate the occluding teeth. In this situation, inferiorly based BUMIF is the flap of choice. Even in edentulous patients, this flap is more appropriate than FAMM flap because nourishing vessels are passed

✉ Madan Mishra
mm.15mds@gmail.com

[1] Department of Oral and Maxillofacial Surgery, Sardar Patel Post Graduate Institute of Dental and Medical Sciences, Lucknow, Uttar Pradesh, India

[2] Department of Oral and Maxillofacial Surgery, BHU, IMS Trauma Centre, Varanasi, Uttar Pradesh, India

Table 1 Buccinator muscle origin [5, 6]

Anteriorly	Posteriorly	Laterally	Medially
It inserts into the orbicularis oris muscle	It arises from the pterygomandibular raphe	It is related to the ramus of the mandible, the masseter and medial pterygoid muscles, the buccal fat pad, and the buccopharyngeal fascia	It is covered by the submucosa and mucosa of the cheek. It forms part of the pharyngeal-buccal-orbicularis sphincter system and functions to facilitate whistling, sucking, propelling food during mastication, and voiding the buccal cavity

Table 2 Arterial supply and venous drainage of buccinator muscle [5, 6]

Arterial supply	The muscle is supplied with blood through the facial artery, which enters the face and courses on the surface of the buccinator. The buccal artery, a branch of the internal maxillary artery, also supplies the muscle. The buccal artery with a neurovascular pedicle posteriorly supplies the buccinators muscle [6]
Venous drainage	The venous drainage departs from the buccal and facial artery around the oral commissure, courses along the posterior end of the buccal muscle, and drains into the pterygoid plexus and the internal maxillary vein through the buccal vein (concomitant to the buccal artery). Finding the course and drainage of the buccal artery and vein is useful for harvesting the flap and for vascular pedicle dissection [6]

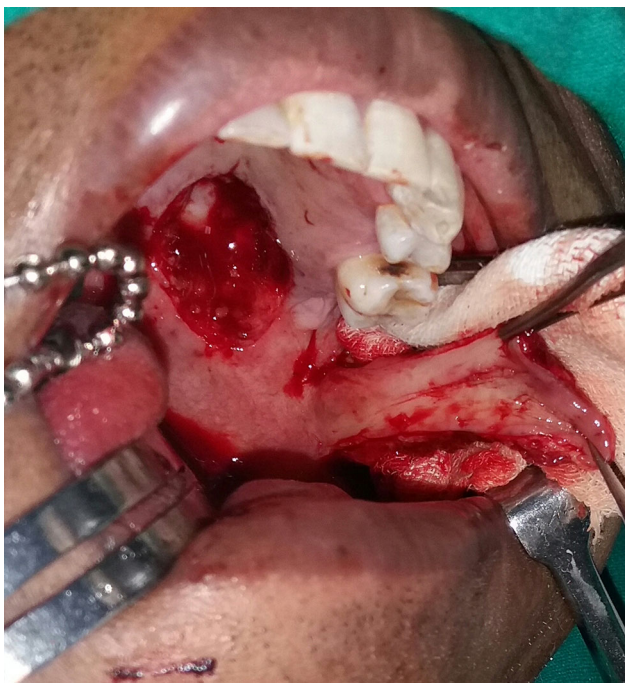

Fig. 1 Defect in posterior palate and flap elevation

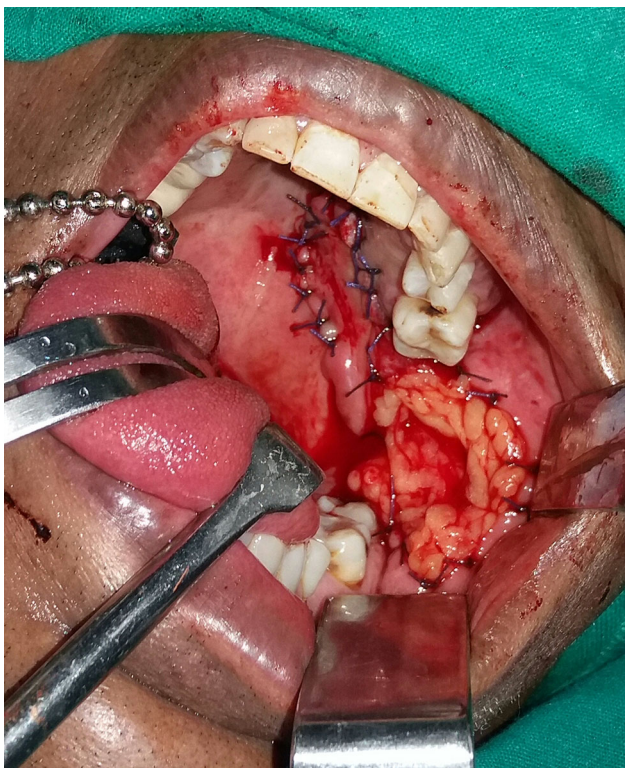

Fig. 2 Immediate post-operative view

under the inferior mandibular border without the need for pedicle division for further prosthetic reconstruction. The donor site is managed by direct suturing or mobilization of the buccal fat pad [8]. Morbidity of the donor site is low by this technique [9].

Zhao et al. [1] reported that a buccinator myomucosal flap can be harvested as a pedicled flap or axial flap based on the buccal or facial artery and can be based anteriorly, posteriorly, or superiorly. The posteriorly based flap is useful for the coverage of the tonsil bed, soft and hard palate, and retromolar trigone, while the anteriorly based flap is good for the reconstruction of the lip, floor of the mouth, and tongue. The superiorly based flap has been described in the repair of defects in the anterior hard palate, alveolus, and lips, as well as the orbit.

Fig. 3 Fourth-week post-operative view showing pedicle

Based on the experience of the authors, superiorly based masseter flap is a good alternative for reconstruction of the buccal donor site in such situations. The thin nature of this flap makes it suitable for reconstruction of the tongue, mouth floor and pharynx. Bulky flaps like pectoralis major and deltopectoral with added volume result in difficulty in functions such as speaking, eating and deglutition [9, 10].

Conclusion

The buccinator flap is a versatile flap that can be used to reconstruct a variety of defects. It is very reliable, simple and quick to raise, replaces mucosa with mucosa, is sensate, and has very little donor site morbidity. Most importantly, it is similar to the original tissues in terms of texture, color, and sensitivity. The buccinator flaps maintain mucous secretion and sensitivity and oral functions such as speaking and swallowing. It is remarkably elastic and malleable, and can be stretched to conform to complexly shaped defects and is an excellent alternative to radial free forearm flaps for reconstruction of small and moderate sized defects of the oral cavity and oropharynx.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Human and Animal Rights This article does not contain any studies with animals.

Informed Consent Identifying information about participants not available in the article.

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