

Use of Versatile Platysma Flap in Oral and Maxillofacial Surgery: Our Experience

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Received: December 31, 2018; Published: February 20, 2019

Abstract

The main objective of oral and facial reconstruction is to restore adequate form and function thereby improving patients quality of life. Different procedures have been described for reconstructing defects of the oral mucosa or skin of the lower one-third of the face. The platysma myocutaneous flap (PMF) was first used for intraoral reconstruction in 1978 by Futrell. The increasing use of microvascular free tissue transfer has led to this flap being used less often, even though it provides satisfactory results with an acceptable level of morbidity. The platysma flap is an attractive reconstructive option and offers several advantages: it is thin and pliable with no excessive bulk. Its easy accessibility to the oral cavity allows for reconstruction of various intraoral areas such as buccal mucosa, floor of mouth and tongue. However the limitations for use of the platysma myocutaneous flap are previous surgical scarring or previous neck radiation therapy, when there is need of tissue bulk in the defect zone, defect size larger than 7 × 10 cm. According to our experience we feel that it is very technique sensitive procedure and requires expertise to separate platysma flap by supraplatysmal and subplatysmal dissection. Though, it can be considered as one of the option for reconstruction of intraoral defect.

Keywords: Oral Submucous Fibrosis; Squamous Cell Carcinoma; Platysma Myocutaneous Flap; Fibrotomy; Functional Outcome; Reconstruction

Introduction

In recent years tremendous progress has been made in head and neck reconstructive surgery by introducing microvascular free tissue transfer from various donor sites for restoring extensive defects in the head and neck area [1,2]. Factors to be considered by surgeon for reconstruction of defect includes location and size of the defect, aesthetic concerns including color match, restoration of function, condition of donor site, donor site morbidity, the patient's ability to withstand prolonged general anesthesia and the surgeon's experience [3].

Oral and facial reconstruction may be achieved in a variety of ways, including split-thickness skin grafts, pedicle myocutaneous flaps and free-flaps. However, skin grafts usually undergoes contraction over a period of time, especially after postoperative radiotherapy, which often results in reduced mouth opening and limits the use of this procedure for reconstruction of intraoral defects.

In recent years, the emphasis appears to have shifted to the radial forearm flap, which may provide thin, pliable tissue for the reconstruction of many oral defects [8]. However, the drawback of this flap is since the donor site and recipient site are at distinct places, so two operating teams are required, and the complex techniques necessary for this type of flap extends operating time of surgeon. In addition, the flap is hairy and donor site morbidity may occur when harvesting the flap. The pedicle pectoralis major flap, or trapezius myocutaneous flap, which can provide enough transplant tissue, is suitable for the reconstruction of large defects in oral soft tissue. However, this flap is too bulky for the reconstruction of medium-sized or small defects in oral and facial regions. Moreover, the greatest disadvantage of the trapezius myocutaneous flap for oral cavity reconstruction is that repositioning of the patient on the operating table is necessary [4].

In case of reconstruction of smaller defect, of an island palatal flap can be used. But it has limitations including involvement of donor tissue with the limited reach of the flap. The bilateral tongue flap causes severe dysphagia and disarticulation, and carries the risk of postoperative aspiration. It also provides a limited amount of donor tissue as its reach is inadequate. The doubtful stability of a tongue flap and dehiscence are the common postoperative complications of uncontrolled tongue movements. Buccal fat pads may also be used in patient with oral submucous fibrosis to cover the defects after excision of fibrous bands, since it is easy to harvest. However, the anterior reach of buccal fat pads is inadequate leaving raw area in anterior region which heals by secondary intention and subsequent fibrosis leads to gradual relapse. Complications such as extraoral scarring on the face and intraoral growth of hair are common observations when extended nasolabial flaps were used for reconstruction of defects.

Of all these methods, the platysma myocutaneous flap is a good candidate for oral reconstruction for several reasons: since it is proximal to the surgical area, it is a thin and pliable flap and does not require a second donor site; and, in addition, the donor site can be directly closed with an acceptable scar which can hide beneath the collar [4].

The purpose of this report is to examine the experience and results obtained with the use of reconstruction of intraoral defects with platysma myocutaneous flap. When considering the complications that can occur when adopting this technique one has to include total or partial necrosis of skin island, fistula, dehiscence, hematoma, and cellulitis with rates ranging from 18% to 45% [5].

Anatomy

The paired platysma muscles are thin, broad, and quadrangular in shape, lying in the superficial fascia of the neck. The muscle runs obliquely from the clavicle, originating in the superficial fascia of the pectoral and deltoid muscles, to its insertion at the corner of mouth and inferior part of cheek. Platysma fibers interdigitate with angle and depressor muscles of the lip and chin. Muscle fibers from each side decussate over the chin. The platysma muscle is innervated by the cervical branch of cranial nerve VII. The Platysma muscle has multiple arterial sources for its blood supply. Superiorly, the muscle receives arterial blood from the submental branch of the facial artery. Inferiorly, branches of the transverse cervical artery supply the muscle (Figure 1). Posteriorly, the muscle receives its arterial supply from the posterior cervical triangle, specifically the branches of the occipital and posterior auricular arteries. Anteriorly, branches of the superior thyroid artery provide perfusion. The muscle itself provides perforators to the overlying skin. Venous drainage is accomplished through the external jugular vein, which usually lies at the posterior extent of the muscle. The anterior jugular veins and the anterior communicating veins, which lie deep to the platysma, also contribute to the venous drainage [3].

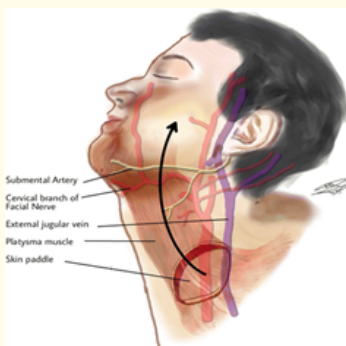


Figure 1: Showing vascular supply of the platysma myocutaneous flap.

Case Report 1

A 34 year female came to the department of oral and maxillofacial surgery at Pravara Rural Hospital with difficulty in opening the mouth and burning sensation while eating spicy food with no other dermatological or systemic problem since 9 months. She had the habit of chewing flavoured areca nut and tobacco, 1 packets/day since 3 year.

On intra oral examination, blanching was seen in the right and left buccal mucosa. The oral mucosa was white and pale (Figure 2B). Reduced mouth opening was observed, with the interincisal width being 10 mm (Figure 2A). The buccal mucosa was rubbery and inelastic. Severe fibrous bands were palpable in buccal mucosa from just inside the commissure of the mouth upto the pterygomandibular raphe bilaterally. Soft palate, tongue and floor of mouth were not involved.



Figure 2A: Clinical photograph showing reduced mouth opening (10 mm).



Figure 2B: Showing Blanching of buccal mucosa.

Surgery including Fibrotomy followed by reconstruction with platysma flap was planned.

This surgical procedure was done under general anaesthetic with all aseptic conditions. Incisions was given from the corner of the mouth to retromolar region at the level of the linea alba avoiding injury to Stenson’s duct. The fibrous bands were excised and the inter-incisal opening was recorded. The coronoid processes was approached through the same incision and bilateral coronoidectomy was done. Mouth opening was measured again after coronoidectomy.

With the neck hyperextended the skin paddle was outlined on the ipsilateral side of neck. The superior incision was made 3 - 4 cm below the inferior border of mandible in the skin crease with the intention of hiding the extra-oral scar and a supraplatysmal skin dissection was carried out. A skin incision was then made at the inferior line of the skin paddle, with additional exposure of the platysma muscle inferiorly. The platysma muscle was transected sharply at least 1 cm inferior to the edge of the skin paddle, and a subplatysmal plane of dissection was done just below the inferior border of the mandible. After the plane of dissection was completely developed, the platysma flap was separated vertically, anteriorly and posteriorly for full mobilization. The flap was introduced into the oral defect by creating an approximately sized soft tissue tunnel. The harvested flap was sutured to the defect which was created by the release of fibrous band (Figure 2C). The donor site was easily closed in layers to obtain an acceptable cosmetic result. Patient was asked to start physiotherapy postoperatively to prevent contracture and relapse. Patients were evaluated for both immediate and delayed postoperative complications, with follow up ranging from postoperative 1 week to 2 months (Figure 2D).



Figure 2C: Showing Platysma flap secured in position after suturing.



Figure 2D: Post-operative 2 month follow up.

Case Report 2

A 36 year old male came to the department of oral and maxillofacial surgery at Pravara Rural Hospital with a chief complain of proliferative growth with left buccal mucosa since 10 months. Patient had habit of cigarette smoking since 8 years (2 packets/day). On clinical examination a whitish sessile oral mass of approximately 3x4 cm was observed with a warty cauliflower like growth having clearly defined borders (Figure 3A). It was firm in consistency and non- tender on palpation. No evidence of discharge was observed and surrounding mucosa appeared normal. An extraoral examination revealed an enlarged left submandibular lymph node which was mobile and non- tender on palpation.



Figure 3A: Showing whitish growth over left posterior part of buccal mucosa.

Histopathologic examination of the biopsy specimen was suggestive of verrucous hyperplasia.

Wide surgical excision of the lesion and reconstruction of intraoral defect with platysma flap was planned (Figure 3B). Patients was evaluated for both immediate and delayed postoperative complications, with follow up ranging from postoperative 1 week to 1 months (Figure 3C).



Figure 3B: Showing intraoperative photograph of platysma flap harvested into the defect.



Figure 3C: Postoperative 1 month follow up.

Case Report 3

A 26 year old patient reported to our hospital with a painless swelling over right side of lower lip extending posteriorly upto anterior border of ramus which was present for time duration of one year (Figure 4A). The colour of overlying skin was normal extraorally and appeared bluish red intraorally. The swelling was soft on palpation and did not show any changes in size during mouth opening



Figure 4A: Showing clinical picture of slow flow vascular formation.

The lesion was treated by wide excision, which was followed by reconstruction of buccal mucosa by platysma flap under general anaesthesia (Figure 4B). Very minimal bleeding was noted during the excision. The patient was followed up for 6 months and there was good take at recipient site and also there was no evidence of recurrence (Figure 4C and 4D).



Figure 4B: Intra operative picture of platysma flap.



Figure 4C: Intra-oral photograph after 6 months follow up.



Figure 4D: Extra-oral photograph after 6 months follow up.

Discussion

The important goal of oral and facial reconstruction is to restore adequate form and function thereby improving patients quality of life. During past few decades various advances in head and neck reconstructive surgery have been achieved including regional pedicled flaps and of course microvascular free tissue transfer. According to the literature pedicled flaps are mostly reserved for small to medium-sized defects [2].

Historically the use of the platysma myocutaneous flap can be traced back to 1887, when Robert Gersuny, a surgeon from Austria described a reconstruction of a full-thickness cheek defect with a cervical skin/platysma flap which was rotated inward to provide a new lining for the buccal mucosa. This was probably the first description of the platysma myocutaneous flap used for head and neck reconstruction. However, it was not until 1978 that the platysma myocutaneous flap was introduced by Futrell, *et al.* [6] as an attractive reconstructive option with several advantages. The arc of rotation is suitable for reconstruction of the anterior and lateral floor of mouth, buccal mucosa, retromolar trigone, and skin of the lower cheek and parotid region [5]. Despite these advantages the platysma myocutaneous flap has not gained widespread acceptance most probably due to a lack of its reliability and a high rate of complications. Reviewing the literature shows large variety of indications to use the platysma myocutaneous flap for reconstruction of defects of the anterior floor of mouth, tongue, cheek, oropharynx, and facial skin [2].

Relative contraindications to harvest the platysma flap are previously operated site, facial artery ligation, prior radiation or neck dissection, in the need of tissue bulk in the defect zone, defect size larger than 7 × 10 cm, and when there is radiologic suspicion or evidence of neck metastases with extracapsular spread. These factors are probably associated with impaired postoperative perfusion and were thought to be responsible for an increased flap failure rate [7,9].

Conclusion

The reconstruction has a variety of options for surgical defect of the oral cavity and face. As compared to other alternative flaps, PMF can be considered as an alternative for reconstruction of the optimal buccal mucosa with small to medium-sized defects ranging between 4 to 7 cm. The PMF is simple, versatile and could be valued as a reconstructive alternative, with acceptable visual qualities. However we feel that it is very technique sensitive procedure and requires expertise to separate out thin platysma flap by supra-platysmal and sub-platysmal dissection. Further study of many more cases including reconstruction of defect with platysma flap should be encouraged and their outcomes should be critically evaluated, and a protocol should be formulated to minimise the possible complications.

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Volume 18 Issue 3 March 2019

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