

Submental Island Flap a Great Alternative to Radial Forearm Flap in Aspect of Reconstruction of Lower Lip Malignancy: A Case Report

Nandi S¹, Bayzid AHM², Ponir MR³, Kundu S⁴, Rahman M⁵, Hossain MM⁶

Abstract

Background: Micro vascular tissue transfer (MTT) has been established as the gold standard in oral- and maxillofacial reconstruction. However, free flap surgery may be critical in multimorbid elderly patients and after surgery or radiotherapy, which aggravate microsurgery. Following excisional surgery for head and neck cancer, most complex defects are reconstructed using micro vascular free tissue transfer. These methods offer many advantages; however, they are of increasing complexity with attendant risks of flap loss and donor site problems. The submental artery island flap is a recently described local flap that may be used for reconstruction of the lower and middle thirds of the face and oral cavity, and offers the advantages of simplicity, reliability and excellent cosmesis. We have gone through a case here with a left sided submental artery based island flap for the patient of 60 years with oral squamous cell carcinoma in lower lip having severe spread. The submental artery island flap is a useful reconstructive procedure that offers options to the reconstructive surgeon and has definite advantages over distant flaps in terms of ease of dissection and donor site appearance.

Key words: Submental Island Flap, Radial Forearm Flap.

Introduction

In the past decades, more and more important in complex oral and microvascular tissue transfer (MTT) has become maxillofacial reconstructions and is now considered the gold standard.¹ In spite of several advantages, micro vascular free flap surgery has some drawbacks, such as extended operating time, increased requirement of personal, material, and financial resources, as well as the potential risk of anastomosis failure.² The local flaps, regional flaps, or free flaps transfer might be performed for reconstructing the lip defects. However, regional flaps or free flaps are the preferred option for reconstruction of extensive lip and perioral defects when the defects were too massive and the local flaps cannot meet the requirements. These 2 kinds of flaps have the advantages of achieving reconstruction in a single stage with the possibility of restoring oral competence and facial appearance, especially for huge lip defects.³⁻⁵ Over the last few years, the submental island flap has proven to be a reliable reconstructive option in head and neck surgery.⁶ Moreover, the operative time and hospital stay are shorter than using the gold standard radial forearm free flap.⁷ This case denotes the simplicity and virtuality of the submental island flap as a real pedicle flap option for reconstruction of the lip malignancy.

Case report

The patient, lady of 60 years, with complaints of progressive potential malignant disease on labial mucosa and also lower lip for several months. After the initial diagnosis patient was advised to follow proper oral hygiene instruction with medication and followup. Unfortunately she had developed oral squamous cell carcinoma on inner aspect of lip after 6 months of the initial diagnosis. With mild pain, ulcerated lower lip, palpable level one lymph node group our team decided to do surgical excision with normal healthy margin and ipsilateral supra-omohyoid neck dissection and reconstruction by ipsilateral submental island flap. The patient is positioned with the head extended, and the upper limit of the flap is drawn just under the mandibular arch. Placing this incision too far anteriorly will result in a visible scar. The length of the skin paddle can be designed to fit between the 2 facial arteries.



Fig 1: initial pictures of oral squamous cell and PMD involving lower lip and labial mucosa

The lower limit is drawn after a pinch test, which helps assess skin laxity and determine the likelihood of performing direct closure. An inferior incision is made through skin, subcutaneous tissue, and platysma. Then the flap is raised from the distal to the proximal side, just deep enough to reach the platysma. Some authors advise raising the anterior belly of

1. Dr. Shyamal Nandi, Asst Prof, Oral And Maxillofacial Surgerty, Dhaka Dental College Hospital.
2. Dr. Al Hasan Md Bayzid, Asst Registrar, Oral And Maxillofacial Surgery, Dhaka Dental College Hospital.
3. Dr. Mukhlesur Rahman Ponir, Fcps Final Part Trainee, Oral And Maxillofacial Surgery, Dhaka Dental College Hospital.
4. Dr. Shuvassya Kundu, Honorary Medical Officer, Oral And Maxillofacial Surgery, Dhaka Dental College Hospital.
5. Dr. Md. Masuqur Rahman, Lecturer, Dhaka Dental College And Hospital.
6. Dr. Md. Mosharraf Hossain, BDS, FCPS (Oral & Maxillofacial Surgery) Consultant-Mahmuda Dental & Maxillofacial Surgery Centre, Uttara Dhaka.

the digastric muscle with the flap to protect the submental artery during harvest. We have never done this in our practice; however, the submental artery is not necessarily identified.



Fig 2: showing a) immediate post operative pictures of submental island flap reconstruction and b) 2 days post operative patient condition

If necessary, dissection continues by separating the flap from the submandibular gland until the facial artery is reached. This facilitates reaching the upper half of the face. The facial vessels are visible in the mid portion of the submandibular gland.



Fig 3: showing a) 7 days post-operative status and b) 21 days post-operative outcome with normal mouth opening

Dissection continues depending on the pedicle length. The facial artery is tortuous and always sufficiently long to provide a wide arc of rotation. The submental vein drains into the anterior facial vein. During dissection, as the anterior incision is made, care must be taken to preserve the marginal mandibular nerve. The flap is islanded on its pedicle, then tunneled and inset as necessary. The donor defect is closed primarily. Patient is followed up regularly for 21 days and the flap was so delicately taken that the texture and colour everything was appreciable.

Discussion

The submental flap has been recommended for reconstruction of defects resulting from cutaneous malignant tumor resection for aggressive basal or squamous cell carcinoma involving the cheek and underlying tissue. The submental flap can be used in traumatic sequelae, noma disease, and cleft palate/lip

sequelae. The defect is usually located in the lower half of the face, and it generally does not exceed 8 cm in diameter. The submental island flap was first reported in 1993 by Martin et al. for soft-tissue head and neck reconstruction.⁸ It is based on the submental artery, a constant branch of the facial artery, which originates 27.5 mm distal from the origin of facial artery from the external carotid artery. This artery has five main branches along its course toward the midline and anastomoses in 92% of cases with contralateral artery.⁹ It is located medially to the mandibular inferior border¹⁰ and represents the main blood supply of the floor of the mouth in 60% of cases.¹¹ The submental artery island flap could be classified according to blood supply, as pedicled flap, free flap or perforator flap and according to the composition of the flap paddle, as myocutaneous or osteocutaneous flap.¹² The submental pedicled flap can be pedicled inferiorly, i.e. orthograde variant, which depends on facial artery integrity, or superiorly, i.e. reverse flow variant, which relies on anastomosis between the external and the internal carotid arteries via the angular artery.¹³ A pedicled submental flap with orthograde blood supply is used for reconstruction of the retromolar pad, the tongue, the floor of mouth and buccal mucosa. The major mobility of the retrograde variant allows reconstruction of the palate and the maxillary alveolar ridge, such as facial skin in midface, the periorbital area, the inferior temple area, auricle and oropharynx.¹⁴ The chief benefit of this flap is undoubtedly the excellent cosmetic match with the facial skin and the well-hidden donor scar, which has the added benefit of correction of submental and neck rhytides. This is of particular advantage when compared with the frequent problem of poor healing of the radial forearm flap donor site. The relative simplicity of raising the flap gives benefit in its use where skin match may not be the prime concern, for example for intra-oral lining, and the shorter operative time and the avoidance of microsurgical free tissue transfer may be of benefit in the elderly or unwell. The flap is hair bearing in males, which can be used to advantage in reconstructing the upper lip, although this may limit its intra-oral use.¹³

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Correspondence

Dr. Shyamal Nandi, BDS, MS
Asst Prof, Oral And Maxillofacial Surgerty
Dhaka Dental College Hospital
Email: dr.shyamal.nandi@gmail.com