



## Pectoralis Major Myocutaneous Flap for Oral Cavity Cancer Reconstruction - Our Experience with 30 Cases

### KEYWORDS

Pectoralis major myocutaneous flap, Reconstruction, Oral cavity cancer

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### ABSTRACT

Surgery forms the mainstay of treatment in the oral cavity cancer. Pectoralis major myocutaneous flap was used in 30 cases after resection for malignancy of the oral cavity in our institute. Partial flap necrosis was seen in 1(3.33%) patient, 1(3.33%) patient had hematoma under the flap that was re-explored and evacuated, 6(20%) patients had flap suture line gape, 2(6.66%) patients had donor site wound infection and 2(6.66%) patients developed oro-cutaneous fistula. Two (6.66%) patients complained hair growth in the flap, 4(13.3%) patients had poor dental occlusion due to the traction of the flap, 3 (10%) patients developed trismus following radiotherapy. The pectoralis major myocutaneous flap is a sturdy flap and can be performed with relative ease and minimum morbidity.

### Introduction:

Oral cavity cancers form the major bulk of the cancers seen in the head and neck services [1]. Surgical excision of the primary and the cervical lymph nodes remains the mainstay of the treatment followed by adjuvant radiotherapy and or chemotherapy. Extensive resection defects cause functional, cosmetic and psychological effects on the patients. A variety of functions like speech, deglutition, and mastication may be affected that needs to be managed with proper reconstructive options and rehabilitation. The goals of reconstruction are to achieve oral competence, cosmesis and maintenance of dynamic function while allowing adequate access for oral hygiene [2]. Various options are available in the reconstructive ladder ranging from primary closure, split skin graft, local rotation flaps, pedicled muscle flaps and microvascular free flaps. Pectoralis major myocutaneous flap is a sturdy flap that serves as a work horse of major head and neck reconstructive defects with acceptable functional and cosmetic outcomes.

### Aim of study:

1. To assess the early and late morbidities of pectoralis major myocutaneous flap following composite resections of oral cavity cancer.
2. To evaluate the role of pectoralis major myocutaneous flap in reconstruction of oral cavity cancers defects

### Materials and methods:

This prospective study was conducted at Shrimati Kashibai Navale Medical college and General hospital, Narhe, Pune from September 2010 to August 2012 following the approval of institutional review board. Thirty patients with biopsy proven squamous cell carcinoma of oral cavity cancer subsites who presented to the outpatient department of surgery and deemed operable after metastatic work up were included in the study. A prospective analysis was done by collecting data from the case records and entered into the proforma of the study. All these patients were followed up two monthly to assess for delayed complications, recurrences and disease status. At the end of 24 months, the entire data of these patients was analysed with SPSS statistical software version 11.0.

### Results:

A total 30 cases (18 males and 12 females, age range: 35-73 years) of biopsy proven squamous cell carcinoma of oral cavity subsites underwent curative surgery with composite resection and reconstruction with pectoralis major myocutaneous flap. Sixteen patients (53.3%) were chronic tobacco chewers, 8 (26.6%) patients had associated premalignant lesions (leucoplakia in 5 and submucous fibrosis in 3 patients). Thirteen (43.3%) patients had lesions in the lower alveolus, 6(20%) in the buccal mucosa, 5(16.6%) in the retromolar

trigone, 5(16.6%) in the tongue while one (3.3%) patient had lesion in the upper lip.

(Table 1) Distribution of oral cavity subsites and their stages.

Stage	Lower Alveolus n=13	Buccal Mucosa n=06	Retromolar Trigone n=05	Tongue n=05	Lip n=01
T4N0	05(16.6%)	01(3.33%)	00	01(3.33%)	01(3.33%)
T3N0	03(10%)	00	01(3.33%)	03(10%)	00
T2N0	01(3.33%)	02(6.66%)	02(6.66%)	00	00
T4N1	03(10%)	01(3.33%)	00	00	00
T3N1	01(3.33%)	00	00	01(3.33%)	00
T2N1	00	02(6.66%)	02(6.66%)	00	00

All the 30 cases underwent composite resection that comprised of wide excision of the lesion with a 1 cm tumour free margin along with segmental/hemi-mandibulectomy and modified radical neck dissection type II (preserving the spinal accessory nerve and internal jugular vein). Four (13.3%) patients had lesions involving the arch of mandible, in these patients arch was excised and an elective tracheostomy was done. These patients underwent contralateral supraomohyoid neck dissection. All patients underwent primary reconstruction with pectoralis major myocutaneous flap after marking the skin paddle site and its distance from the vascular pedicle. Eighteen (60%) patients had single paddle flap while 12(40%) patients had a double paddle (folded) skin flap. The skin paddle size ranged from 6cm x 4cm to 14cm x 7 cm and the average time required for reconstruction was 60 minutes. The average blood loss was 200 ml.



Figure 1. Skin markings for flap elevation.



Figure 2. Reconstruction of full thickness cheek defect with folded PMMC flap

#### Early post operative complications:

Partial flap necrosis was seen in 1(3.33%) patient, 1(3.33%) patient had hematoma under the flap that was re-explored and evacuated, 6(20%) patients had flap suture line gape, 2(6.66%) patients had donor site wound infection and 2(6.66%) patients developed oro-cutaneous fistula. No patient had total flap necrosis.

(Table 2) Early post operative complications

Early post operative complications	n = 12
Partial flap necrosis	01(3.33%)
Total flap necrosis	00
Suture line wound gape	06(20%)
Hematoma	01(3.33%)
Donor site infection	02(6.66%)
Oro-cutaneous fistula	02(6.66%)

#### Late post operative complications:

The late complications were evaluated during the follow up period after patients completed the adjuvant radiotherapy. Twenty five patients were advised adjuvant radiotherapy of which 17(56.6%) patient completed the same while 8(26.6%) patients lost follow up.

Two (6.66%) patients complained hair growth in the flap, 4(13.3%) patients had poor dental occlusion due to the traction of the flap, 3 (10%) patients developed trismus following radiotherapy. No patients complained of major limitation of shoulder movements.

(Table 3)

Late post operative complications	n = 12
Hair growth in flap	02(6.66%)
Dental malocclusion	04(13.3%)
Shoulder morbidity	00
Trismus	03(10%)

#### Recurrence and follow up:

The follow up period ranged from 2 months to 22 month, during the follow up period clinical examination of oral cavity and neck was done to detect local recurrence. Six (20%) patients developed local recurrence of which two patients developed contralateral neck recurrence for which they underwent functional neck dissection. Four patients had ipsi-

lateral neck recurrence that were inoperable. These patients were subjected for palliative chemotherapy.

#### Discussion:

All our patients in the study group belonged to advanced stages, hence they had large tissue defects that required pectoralis major myocutaneous flap for reconstruction. Composite resection defects that included skin, soft tissue and bone were all reconstructed with pedicled pectoralis major myocutaneous flap and its modifications [3]. Although reconstruction of bone and skin defects are best done with microvascular free fibula and radial forearm free flap respectively, it was not done in our institute due to the lack of trained microvascular surgeons [4, 5, 6].

The pectoralis major myocutaneous flap first described by Stephen Ariyan [7] in 1979 is now the workhorse of modern head and neck reconstruction [8] largely replacing the forehead and the deltopectoral (Bakamjiaan) flap as the flap of choice. It has been used extensively and many large series have demonstrated its extremely low rate of complications including necrosis. Flap necrosis rates ranging from 0% [8] to 20% [9] have been reported in various series. A majority of these are partial losses of the skin of the flap, as in the above series, which heal with conservative therapy. Total necrosis of the flap is rare (0% [8] 15% [9]). In our study only one (3.33%) patient had partial flap necrosis while none had complete necrosis of flap, which is consistent with the reported surgical series.

In a prospective study conducted by Metha S. et al [10] out of 220 patients, 89 patients (40.5%) developed flap related complications. In our study out of 30 patients, 12 patients (40%) developed flap related complications which was similar to the above mentioned study. Another study of Shah JP. et al [11], flap related complications were seen in 63% patients. The other advantages besides the ease of technique and low complication rate include versatility and minimal donor site morbidity. The flap can be used for a very wide range of defects in the head and neck area including the oral cavity, neck, maxilla as well as temporo-orbital area. A tubed flap can also be used to reconstruct the pharynx and the cervical oesophagus. Cosmetically, the donor site scar is totally hidden by clothing; the functional loss is negligible.

Like other myocutaneous flaps, it involves a single stage reconstructive procedure and does not require flap delay or release. The flap may be employed before or subsequent to the use of chemotherapy or radiotherapy [12]. The flap poses some problems because of difficulty in elevation in view of the presence of breast tissue as well as scarring of the breast [12]. Other disadvantages of the flap include excessive bulk in obese or muscular individuals and troublesome hair growth in the oral cavity. In our study two patients (6.66%) complained of hair growth in the flap.

#### Conclusion:

Pectoralis major myocutaneous flap is the major work horse in the reconstruction head and neck defects as most of the patients present with advanced malignancy. The low complication rate as well as the ease of technique makes it possible even for general surgeons not specialised in plastic surgery to use it whenever required as demonstrated by us. This advantage is especially relevant to our country where head and neck malignancy is common.

**REFERENCE**

1. Watkinson JC. *Stel and Maran's head and neck surgery*, 4th edition. Woburn(MA), Butterworth-Heinmann, 2000.
2. Brown JS, T2 tongue: reconstruction of surgical defect, *Br J Oral Maxillfac Surg* 1999;37:194-199.
3. Ahamed QG, Navagadi S, Agarwal R, Kanhere H, Shetty KP, Prasad R, Bipaddle pectoralis major myocutaneous flap in reconstructing full thickness defects of cheek-A review of 47 cases. *J Plast Reconstr Asthet Surg* 2006;59:166-173.
4. Nayak UK, Swain B, Myocutaneous v/s microvascular free flaps in oral cavity reconstruction – A comparative study. *Indian Journal Otolaryngol* 2004;56:96-99.
5. Takushima A, Harii K, Asato H, Nakatsuka T, Kimata Y. Mandibular reconstruction using microvascular free flaps-A statistical analysis of 178 cases. *Plast Reconstr Surg* 2001; 108:1555-1563.
6. Gonzalez-Garcia R, Rodriguez-Campo FJ, Naval-Gial L, Sastre-Parez J, Munoz-Guerra MF. Radial forearm free flap for reconstruction of oral cavity – A clinical experience in 55 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2007;104:29-37.
7. Ariyan S. The pectoralis major myocutaneous flap: a versatile flap for head and neck reconstruction. *Plast Reconstr Surg* 1979; 63:73-81.
8. Magee WP, McGraw JB, Horton CE, Mcinnis WD. Pectoralis major myocutaneous flap: the workhorse of head and neck reconstruction. *Am J Surg* 1980; 140:507-510.
9. Conley JJ, Parke RB. Pectoralis major myocutaneous flap for chin augmentation. *Otolaryngol Head Neck Surg* 1981; 89: 1045-1048.
10. Metha S, Sarkar S, Kavarana N, Bhatena H, Metha A. Complications of pectoralis major myocutaneous flap in the oral cavity- a prospective evaluation of 220 cases. *Plast Reconstr Surg* 1996;98:31-37.
11. Shah JP, Haribhakti V, Loree TR, Sutaria P. Complications of pectoralis major myocutaneous flap in head and neck reconstruction. *Am J Surg* 1990;160:352-355.
12. Bailey BJ, Clark WD. Pectoralis major myocutaneous flap in head and neck reconstruction. In: Ward P, Berman W Eds. *Plastic and Reconstructive Surgery of the Head and Neck, Vol. 2. Proceedings of the fourth International Symposium.* St Louis: CV Mosby; 1984, pp 951- 955.