

Unipedal pectoralis major myocutaneous flap for reconstruction of skin defects in oral cancer surgery: A prospective study of 40 cases

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Abstract: Background: Reconstruction following oral cancer is very important part of the treatment defining both aesthetic and functional aspects. Options available for reconstructions are regional pedicle flaps and microvascular free flaps. Pectoralis major myocutaneous (PMMC) flap is regarded as the workhorse for reconstruction in the area of oral cavity and neck. A unipedicle PMMC is a good option for reconstruction of full thickness defects after resection of tumors of oral cavity. **Material and Methods:** A study was undertaken on patients of soft tissue defects of head and neck region after resection of tumor of oral cavity (squamous cell carcinoma). Total 40 patients, who were treated in the department of surgical oncology were included in this study. **Results:** Gingivo-buccal complex was the most common site observed for oral malignancy and majority of patients were in TNM stage- III in this study. Flap survival was good in majority of cases excluding one case of total flap necrosis and 5 cases of minor edge necrosis. **Conclusions:** Unipedal PMMC flap is effective in reconstruction of full thickness defect of oral cavity defects even in the era of free flap reconstructions especially in developing countries. Despite few minor flap related complications PMMC flap survival rate is high and total flap necrosis rate is uncommon.

Keywords: Pectoralis major myocutaneous flap, Carcinoma, Buccal mucosa.

INTRODUCTION

Reconstruction after the resection of buccal mucosa tumors is a formidable task in maintaining the cover for the defect and maintaining the cosmesis and function. ^[1,2] Ariyan and Cuono et al, first described the clinical application of PMMC in head and neck reconstruction. ^[3] PMMC flap has multiple advantages in head and neck reconstruction: It has both axial and random blood supply, reliable vascularity and good viability, Protection of carotid artery, Acceptable cosmetic appearance, Can be easily used in irradiated areas, Even a large cutaneous island of donor site can be closed primarily, Can be used as salvage procedure after microvascular free flap, Less time consuming, so can be used even in patients with high anesthetic risk and in critically ill patients also, Less chances of necrosis and minimal wound complications. ^[1,4,5]

MATERIAL AND METHOD

A prospective study was undertaken on patients of soft tissue defects of head and neck region after resection of tumor of oral cavity (squamous cell carcinoma). Total 40 patients, who were treated in the department of surgical oncology were included in this study.

Inclusion criteria: Patients of squamous cell carcinoma of gingivo buccal sulcus, buccal mucosa and retromolar trigone, operated with composite resection and having full thickness defects in the face and neck where reconstruction with PMMC flap were included in this study.
Exclusion criteria: Patients where full thickness defects are not present.

All the patients are evaluated clinically and radiologically for stage of disease and all preoperative investigations are done to assess the fitness for surgery.

All the patients after proven histopathological carcinoma in biopsy from primary site, underwent wide local excision of the tumor (with 2 cm safety margin) with hemi-mandibulectomy with modified radical neck dissection.

In all cases after tumor resection and neck dissection, reconstruction was made by PMMC flap. All the patients were evaluated in terms of viability of the flap and restoration of function. All flap related and flap unrelated major and minor complications were analyzed.

Technique: PMMC flap is planned according to the defect in the excised part and skin paddle design is marked according to the size of the skin defect over chest wall caudally-medially to the nipple with sparing of the areola. Flap is raised along with the pectoralis major attachment and carefully dissected keeping the pedicle intact. Plane between the pectoralis major and minor is dissected and towards the clavicle the pectoralis major is made thin around the pedicle with just a few fibres around the pedicle intact.

Few tethering sutures are placed at the edge of the skin paddle and the underlying muscles to reduce the shearing damage to the perforators. Then the flap is carefully pulled through a subcutaneous tunnel into the neck. Then spiralling of the flap is done to 180 degrees and thus the skin paddle is outward and the muscle faces towards the oral cavity.

Then the edges of mucosa are sutured to the edge of the cut end of muscle of pectoralis major and the skin paddle is placed in the defect of skin and sutured with interrupted simple stitches.

The donor site was always closed primarily, which required extensive mobilization of fasciocutaneous flaps.^{6,7}

RESULT

Among 40 patients, 32 were males and 18 were females. The age distribution varied from 22 to 56 years. The distribution of the disease according to site of the primary and stage is shown in the table 1

Table 1: Distribution of the disease according to site of the primary and stage

Location	N	T1	T2	T3	T4
Gb sulcus	20	-	2	12	6
RMT	12	-	3	8	1
Buccal mucosa	8	-	1	4	3

Complete flap necrosis was seen in one of the cases. Partial necrosis was seen in 5 cases and 2 of them has orocutaneous fistulas which were treated with resuturing and did not require and reoperation. Wound infection was seen in 4 cases and conservatively managed.

Table 2: Complications

Complications	N	%
Total necrosis	1	2.5%
Partial necrosis	5	12.5%
Oro cutaneous fistula	2	5%
Wound infection	4	10%

DISCUSSION

Full thickness oral cavity defects are effectively reconstructed by PMMC flap and generally a bipedal flap with one pedal towards mucosa and one towards skin are used. In this series, we used a unipedal flap with spiralling of the flap for those defects and results are encouraging. This technique has specific advantages like

1. Less bulky flap
2. No intra oral hair growth
3. Smaller donor defect
4. Well vascularised muscle in oral cavity-better healing

According to Bhanja A et al, PMMC flap have low complication rate and high reliability of survival.⁸ In Bussu F et al, case series of 73 PMMC flap patients, total flap necrosis was reported 4%.⁹ According to Bruseti et al, 100 PMMC case series, the reported total flap necrosis rate was 2%. In our study, we had one case of total necrosis (2.5%) and 12% patients with partial necrosis which is in par with other studies.

Pinto et al, identified the factors causing complications and outcome of PMMC flap reconstruction.¹⁰ Possible reasons behind flap failure may be elevation beyond the 7th rib, long pedicle, external compression to flap, compression to vascular pedicle by lateral thoracic nerve, overuse of electrocautery, malnourishment or probable infection.

CONCLUSION

The PMMC flap is effective in reconstruction of defect after excision of oral cavity cancers and our technique of unipedal PMMC is an effective and also safe technique in head and neck reconstruction. It gives acceptable cosmesis with good cover of defect and minimal complications.

REFERENCE

1. Chaudhary R, Akhtar S, Bariar M. Use of pectoralis major myocutaneous flap for resurfacing the soft tissue defects of head and neck. *J Orofac Sci*. 2014;68:93.
2. Vos D, Burkey B. Functional outcomes after free flap reconstruction of the upper aerodigestive tract. *Curr Opin Otolaryngol Head Neck Surg*. 2004;12:305-10.
3. Arlyan S, Cuono B. Use of pectoralis major myocutaneous flap for reconstruction of large

- cervical, facial or cranial defects. *Am J Surg*. 1980;140:503-6.
4. Matthew M. Hanasono, "Reconstructive Surgery for Head and Neck Cancer Patients", *Advances in Medicine*. 2014; 1-28.
 5. Tripathi M, Parshad S, Karwasra RK, Singh V. Pectoralis major myocutaneous flap in head and neck reconstruction: An experience in 100 consecutive cases. *Natl J Maxillofac Surg*. 2015;6(1):37-41.
 6. Xu Y, Hai H, Liang Z, Feng S, Wang C. Pedicled fasciocutaneous flap of multi-island design for large sacral defects. *Clin Orthop Relat Res*. 2009;467(8):2135-2141.
 7. Mayank T, Sanjeev P, Rajender K, Virender S. Pectoralis major myocutaneous flap in head and neck reconstruction: An experience in 100 consecutive cases. *Natl J Maxillofac Surg*. 2015;6(1):37-41.
 8. Bhanja A, D'Souza DS, Roy C, Poddar RN. Reliability of the pectoralis major myocutaneous flap in reconstructive oral cancer surgery in developing countries: Our experience. *Med J Armed Forces India*. 2016;72(Suppl 1):S1-S7.
 9. Bussu F, Gallus R, Navach V, et al. Contemporary role of pectoralis major regional flaps in head and neck surgery. *Acta Otorhinolaryngol Ital*. 2014;34(5):327-341.
 10. Pinto R. Pectoralis major myocutaneous flaps for head and neck reconstruction. Factors influencing occurrences of complications and final outcomes. *Sao Paulo Med J*. 2010;128:336-41