

Regional Pedicled Flaps in Head and Neck Oncoreconstruction in Current Era – Single Centre Experience Of 20 Cases

Shyam Gupta¹, Akhil Kumar Chouhan², Rajesh Prajapati³, Achal Gupta⁴,

¹Senior Resident Gr Medical College, Gwalior

²Senior Resident Pgimer Ram Manohar Lohia Hospital, Delhi

³Associate Professor Gr Medical College, Gwalior

⁴Professor And Head Gr Medical College, Gwalior

Corresponding Author: Dr Shyam Gupta

Abstract: Head and neck malignancy are among one of the leading cause of mortality and morbidity and increasing day by day and. We did a retrospective observational study to identify the demography, modes of reconstruction in department of general surgery, GRMC, Gwalior during the period of six months from September 2017 to march 2018 Results: Out of 20 cases operated during this period, all were males (100%). Most common decade of presentation was 40-60 years of age. The commonest site of cancer was buccal mucosa. Mode of reconstruction used was regional pedicled flaps including Deltopectoral cutaneous flap , Pectoralis Major Myocutaneous flap, Forehead flap by a single surgeon. 20 Delto pectoral flap (DP), 20 PMMC flaps, 2 forehead flap were performed. Functional and aesthetic outcome was good and all patients were satisfied with the results. 2 PMMC flap failed and was debrided . One DP showed distal necrosis that was managed conservatively. To conclude DP & PMMC are a major workhorse flaps for reconstruction with good acceptance among patients. Both the flaps are easy and rapid in elevation with a short learning curve with no special training required. We recommend these reconstruction methods for all centres which are not equipped with microsurgical skills and intensive post operative trained care.

Keywords: Oral Malignancy, Deltopectoral Flap (DP), Pectoralis Major Myocutaneous Flap (PMMC), Forehead flap, Microvascular Anastomosis

Date of Submission: 30-12-2018

Date of acceptance: 15-01-2019

I. Introduction

Head and neck malignancy shares a large percentage of overall cancers in the world. They account for 23–25% of all cancers occurring in different sites, out of which oral cancer takes 50 % share or 12.5% of the whole body. Various sites in oral cavity are lower lip 0.32, upper lip 0.01, anterior tongue 2.81, lower alveolus 1.84, upper alveolus 0.25, floor of mouth 0.44, buccal mucosa 4.82, hard palate 0.32, retromolar space 0.51, and base tongue 1.36.[1] (deonting percentage of whole body). It stands 8th globally and incidence is 3.00.000 per year. [2]. The age/standardized incidence rate for oral cancer in SE Asia is as high as 25/100,000 per annum. Oral cancer is more prevalent in males and presentation is usually in 5th – 6th decade. [3,4] Various risk factors are smoking, spices, alcohol, tobacco consumption, betel nut [5].

Limiting factor in oncological safe resection is the resulting defect to be covered i.e. is the lack of a suitable flap. With the development of better insight into vascular zones and angiosome concept by Manchoy and Taylor, various regional flaps made available for reconstruction opening a new horizon for the oncosurgeons. Functions of oral cavity include speech, articulation, swallowing, patent airway and aesthetic contour of the face. Various options for soft or hard tissue reconstruction available are local flaps such as nasolabial flaps, forehead flap, submandibular flap, regional flaps like Deltopectoral cutaneous flap, pectoralis major myocutaneous flap, cervicohumeral flap [6], and micro vascular free flaps. All the flaps have it merits and demerits along with it. An ideal reconstruction method should be easy, quick, should not produce any donor site deformity, should not delay the following chemo/radio or planned treatment, should be aesthetically and functionally sound.

II. Materials And Methods

The present study comprises of cases of oral malignancies underwent reconstruction in Department of Surgery GRMC, Gwalior. A pretested proforma was used to collect the relevant information by interviewing, clinical examination of patients, and noting relevant investigations required for treatment and reconstructive planning done. Postoperatively patients were evaluated clinically on a monthly basis. Additional investigations were ordered as deemed necessary only after clinical examination.

Inclusion criteria - In the study, all the cases diagnosed with oral malignancy and subjected to relevant investigations and underwent surgery were included.

Exclusion criteria - Cases which had extensive nature of the disease and was inoperable and managed by palliative therapy.

Procedure [figure 1]

The vascular pedicle was marked by drawing an imaginary line from the ipsilateral acromion to the xiphisternum and another line perpendicular from the clavicle midpoint to intersect the first line. Skin paddle of the flap was positioned over the pectoralis muscle along the course of the pectoral branch of the thoracoacromial artery. During flap elevation, try to accommodate as much perforators as possible by beveling the incision outside to include extra fascia. The skin paddle was sutured to the underlying pectoralis muscle to avoid shearing injury. Dissection started along lateral border of pectoralis major muscle identifying the pectoralis minor and major plane. Once in the plane, pedicle can be easily seen. The pectoralis major muscle was divided lateral to the pedicle while keeping the pedicle in view, thereby freeing it from the humerus. A portion of the clavicular fibers of the muscle was divided to accommodate only the neurovascular pedicle and its adventitia, eliminating the supraclavicular hump. The flap was now passed into the neck through a subcutaneous tunnel created superficial to the clavicle of adequate size.

III. Results

Distribution of primary site of tumor is as follows

PRIMARY SITE	NUMBER OF CASES
BUCCAL MUCOSA	10 (50%)
LOWER ALVEOLUS	4 (20%)
UPPER LIP	3 (15%)
FLOOR OF MOUTH	1 (5%)
LOWER LIP	2 (10%)

Out of 20 cases, all were the males. Age group was 40-65 years,

Most common site of presentation was buccal mucosa.

Total 20 PMMC flap were used for lining and 20 DP flaps for cover.

2 forehead flaps for lining in cases of PMMC died

Out of 20 PMMC, 2 flaps had total flap necrosis which was debrided and forehead flaps done.

Out of 20 DP flap, one was necrosed distally which was managed by conservative debridement and dressing.

2 patients got microstomia which was secondarily released by z plasty.

Graft take was 90-95% in all the cases with minor patchy loss was there. Grafted site was left open after 15 days.

1 Patient developed mild axillary contracture which was managed by massage and physiotherapy

Flap related complications are-

Complications	DP	PMMC
Total flap necrosis	0	2
Major partial flap necrosis	0	0
Distal tip necrosis	1	0
Fistula	1	
Wound dehiscence	1	2
Hematoma	0	0
Infection	3	0
Skin graft take at flap donor site	GOOD	GOOD

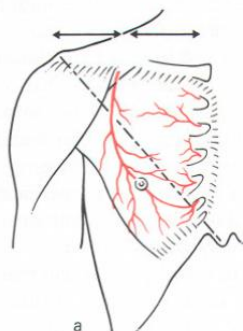


Figure 1- Marking of PMMC flap

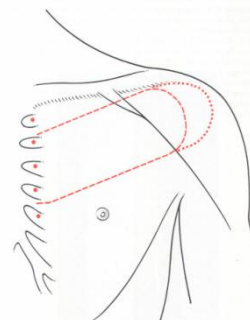


Figure 2- Marking Of DP Flap

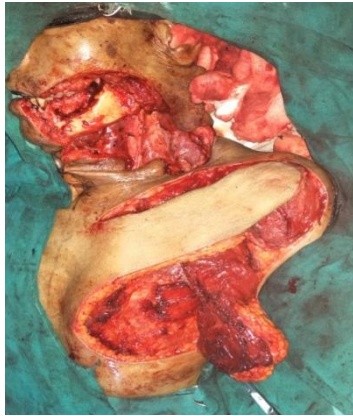


Fig 3 – DP and PMMC intraoperative view



Fig 4– Forehead flap intraoperative view



Fig-5- Two Month Follow Up Healed Flap And Graft



Fig 6- Two Month Follow Up Healed Flap And Graft



Fig 7- Mild contracture of shoulder



Fig 8 - Healed donor site of thigh

IV. Discussion

Currently free flap reconstruction is undoubtedly the first choice for head and neck reconstruction, providing one stage restoration with less morbidity and better cosmetic and functional results [7]. However, DP & PMMC flap are still the workhorse flaps as a backup in equipped centres and as the primary flaps where microsurgical skills and equipment facility are not available. Merits of DP and PMMC flaps over free flap is their small learning curve, rapid elevation, no microanastomosis involved, pliability of tissue, texture, color & bulk for the neck in cases of RND performed.

Demerits of regional flap is donor site chest deformity and ugly looking grafting site, two stage procedure, awkward positioning, continuous soakage, difficult mouth cleaning, prolonged duration between resection and follow up chemo/radio therapy, good amount of patient cooperation required. Learning curve for the procedure is shorter and younger surgeons pick up the procedure very fast.

DP flap is used to provide skin cover for the coverage of defect as color, texture, thickness, is akin to what is required in face. It is easy to raise as described by bakamjian. An additional length can be taken by incorporating the skin of proximal arm if required by doing a surgical delay procedure 2 days prior to surgery under local anesthesia.

In addition, a single team could continue with the surgery thus avoiding the problem of logistics of getting two teams work together always [8]

PMMC flap reconstruction has varied complications as denoted in literature from varies from 17% to 63%. [5, 6] we had 2 PMMC (10%) complete loss in our series, we observed a complication rate of 40% with 16% occurrence of flap necrosis. Our results are comparable to those in the literature.[4,6,9,10] In our series 4 (40%) of total partial flap, necrosis occurred in patients in whom skin paddle was extended beyond the 7th rib. Rikimaru *et al.*, pointed out that positioning the skin island just medially to the nipple, over the fourth, fifth and sixth intercostal spaces, is essential for encompassing the skin perforator vessels that arise from the intercostal branches of the internal thoracic artery. These cutaneous vessels are supplied by the pectoralis branch of the thoracoacromial artery, through open choke vessels, when the main blood flow through the internal thoracic artery is interrupted during PMMC elevation [11] According to our study, with overall complication rate of 40%, which is comparable to the available literature,[3,9,11] PMMC flap is an excellent choice in limited resources.

V. Conclusion

DP & PMMC flap are still one of the most favored approaches for the head and neck reconstruction with acceptable cosmetic and functional outcomes owing to its versatility, color match, short learning curve, a constant vascular pedicle, minimum training requirement and no large setup . Our experience in 20 cases has shown a good healing rate with early recovery and low complication rate. So we recommend these as baseline flaps in developing world where the quest is getting healthcare for all rather than getting best for few.

References

- [1]. Blackwell KE, Buchbinder D, Biller HF, Urken ML. Reconstruction of massive defects in the head and neck: The role of simultaneous distant and regional flaps. *Head Neck*. 1997;19:620–8. [PubMed]
- [2]. McCrory AL, Magnuson JS. Free tissue transfer versus pedicled flap in head and neck reconstruction. *Laryngoscope*. 2002;112:2161–5. [PubMed]
- [3]. Ariyan S. The pectoralis major myocutaneous flap. A versatile flap for reconstruction in the head and neck. *Plast Reconstr Surg*. 1979;63:73–81. [PubMed]
- [4]. Milenovic A, Virag M, Uglesic V, Aljinovic-Ratkovic N. The pectoralis major flap in head and neck reconstruction: First 500 patients. *J Craniomaxillofac Surg*. 2006;34:340–3. [PubMed]
- [5]. Croce A, Moretti A, D’Agostino L, Neri G. Continuing validity of pectoralis major muscle flap 25 years after its first application. *Acta Otorhinolaryngol Ital*. 2003;23:297–304. [PubMed]
- [6]. Liu R, Gullane P, Brown D, Irish J. Pectoralis major myocutaneous pedicled flap in head and neck reconstruction: Retrospective review of indications and results in 244 consecutive cases at the Toronto General Hospital. *J Otolaryngol*. 2001;30:34–40. [PubMed]
- [7]. Vartanian JG, Carvalho AL, Carvalho SM, Mizobe L, Magrin J, Kowalski LP. Pectoralis major and other myofascial/myocutaneous flaps in head and neck cancer reconstruction: Experience with 437 cases at a single institution. *Head Neck*. 2004;26:1018–23. [PubMed]
- [8]. Talesnik A, Markowitz B, Calcaterra T, Ahn C, Shaw W. Cost and outcome of osteocutaneous free-tissue transfer versus pedicled soft-tissue reconstruction for composite mandibular defects. *Plast Reconstr Surg*. 1996;97:1167–78. [PubMed]
- [9]. Freeman JL, Walker EP, Wilson JS, Shaw HJ. The vascular anatomy of the pectoralis major myocutaneous flap. *Br J Plast Surg*. 1981;34:3–10. [PubMed]
- [10]. Shah JP, Haribhakti V, Loree TR, Sutaria P. Complications of the pectoralis major myocutaneous flap in head and neck reconstruction. *Am J Surg*. 1990;160:352–5. [PubMed]
- [11]. El-Marakby HH. The reliability of pectoralis major myocutaneous flap in head and neck reconstruction. *J Egypt Natl Canc Inst*. 2006;18:41–50. [PubMed]
- [12]. H, Kiyokawa K, Inoue Y, Tai Y. Three-dimensional anatomical vascular distribution in the pectoralis major myocutaneous flap. *Plast Reconstr Surg*. 2005;115:1342–52. [PubMed]

Dr Shyam Gupta. “Regional Pedicled Flaps in Head and Neck Oncoreconstruction in Current Era – Single Centre Experience Of 20 Cases.” *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 1, 2019, pp 27-30.