

Pectoralis Major Myocutaneous Flap for Reconstruction of Major Neck Defects

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ABSTRACT

- Objective** To analyze results of pectoralis major myocutaneous flap used for reconstruction in massive neck trauma patients.
- Study design** Descriptive case series study..
- Place & Duration of study** Plastic and Reconstructive Surgery Department Bahawal Victoria Hospital Bahawalpur, from April 2010 -April 2014.
- Methodology** Patients who were brought with major tissue defects in neck either due to trauma or surgeries done due to malignant lesions were enrolled. Patients with diabetes mellitus, renal or hepatic dysfunction were excluded. Those with active infection were also not subjected to this surgical procedure. Pectoralis major flap was taken based on longitudinal artery for reconstruction of neck. In those cases where history of extensive trauma or neck dissection was present, flap was based on thoracoacromial vessel. Complications during hospital stay and at follow up were recorded. Aesthetic and functional assessments of the patients were done at each follow up.
- Results** Twelve patients were selected for the procedure. The age ranged from 15 year to 55 year. In six cases the soft tissue loss was due to electric burns while three were victims of road traffic accidents. Three (25%) patients developed complications including flap necrosis and hematoma of donor site in one case each. Three patients were able to speak normally and four had no problem with swallowing. Three patients attained good color match while two patients attained good neck contour.
- Conclusion** Pectoralis major myocutaneous flap is simple, easy, variable and a life saving flap for coverage of major head and neck defects with minimal complications.
- Key words** Pectoralis major myocutaneous flap, Aesthetic surgery, Reconstruction. Neck defect, Trauma-neck.

INTRODUCTION:

Deformities in the neck region, whether congenital, traumatic or neoplastic, need reconstructive surgery.¹ Reconstruction in the neck region has improved with the better knowledge and techniques.² It is a surgical challenge to perform reconstruction in the neck region as both structure and function have to be restored.³ There are different ways of reconstruction in the neck region. Flaps from different donor sites are used

including free anterolateral thigh flaps in patients with defects after cancer ablation.⁴ Expanding prostheses are also used to augment local tissue in the neck reconstruction with excellent results.⁵ Similarly flap based on supraclavicular artery is a new alternative for neck defects.⁶

The pectoralis major myocutaneous flap is one of the most commonly used flaps for reconstruction in the neck region.⁷ This flap was first used in 1968 and later popularized by Ariyan in 1979 for head and neck reconstruction.⁸ Pectoralis major flap easily accepts the challenges of reconstruction in extensive intra and extra high volume defects in neck region either post-traumatic or post-infective as well as after cancer

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ablation and therefore declared as “workhorse” for maxillofacial and neck reconstruction.³ It can be used for intraoral and pharyngeal lining as well as reconstruction of the esophagus.⁹ It is based on longitudinal artery and is very versatile. It does not involve any complicated surgical procedure like vascular anastomosis.¹⁰ Pectoralis major myocutaneous flap can also be used in extensive reconstruction in neck after extensive neck dissection based upon thoracoacromial artery.¹⁰

In this study we report results of pectoralis major myocutaneous flaps in the patients after massive neck trauma either due to burn, firearm, road traffic accident or cancer ablation.

METHODOLOGY:

This was a descriptive case series carried out from April 2010 to April 2014 in the Department of Plastic and Reconstructive Surgery at Bahawal Victoria Hospital, Bahawalpur. Patients aged 15 year to 55 year with no metabolic derangement like diabetes mellitus, renal or hepatic dysfunction were included. Patients with active infection were excluded.

History was taken and complete physical examination done. Hematological investigations were carried out. Informed consent was taken. Pectoralis major flap was taken based on longitudinal artery for reconstruction of neck. In those cases where history of extensive trauma or neck dissection was present flap was based on thoracoacromial vessel. After reconstruction patient was kept in ward for three weeks and monitored for complications. Weekly follow up was continued for two months. Functional outcome was noted with regards to adequate speech and ability to tolerate food. Aesthetic component was observed in relation to color and contour as good, acceptable or a failure.

RESULTS:

A total of twelve patients underwent the pectoralis major myocutaneous flap surgery for neck reconstruction. Out of these seven were males and five females. Mean age of the patients was 40 year. Table I shows different causes that resulted in the defect for which reconstruction was needed. Three

(25%) patients had complications during hospital stay of three weeks. No major complication like total flap necrosis was observed. Table II shows different complications. The functional outcome on the basis of speech and food tolerance is given in table III. Figure I shows the aesthetic assessment of the patients on the basis of color and contour. Figure II, III and IV shows the pectoralis major flaps done in cases of electric burn and laryngeal cancer patients.

Table I: Different Causes With Which Patients Presented For Neck Reconstruction

Cause	No of Cases	Percentage
Electric burn	6	50%
Road traffic accident	3	25%
Firearm injury	1	8.3%
Pharyngeal fistula (post laryngectomy)	2	16.6%

Table II: Complications During Hospital Stay

Complications	No. of cases	Percentage
Hematoma at donor site	1	8.3%
Partial flap necrosis	1	8.3%
Wound dehiscence at donor site	1	8.3%
Total	3	25%

DISCUSSION:

Reconstruction of a complex defect in the region of neck is very challenging for a plastic surgeon. Pectoralis major myocutaneous flap is a reliable flap for reconstruction in neck due to its simplicity and versatility.¹¹ A study conducted by Oluwatosin OM et al concluded that pectoralis major flap has a wide variety of indications for use and has minimal complications.¹² Another study conducted by Kurse et al recommended that pectoralis major flap is an appropriate flap for huge defects in head and neck reconstruction particularly when a large bulky flap is needed to cover carotid artery.⁷ In literature

Table III: Functional Assessment

Speech			Food tolerance		
Character	No. of cases	Percentage	Character	No. of cases	Percentage
Normal	3	25	Full normal diet	4	33
Understandable	7	58.3	Liquid and soft diet	6	50
Not understandable	2	16.67	Dependency on tube	2	16.67

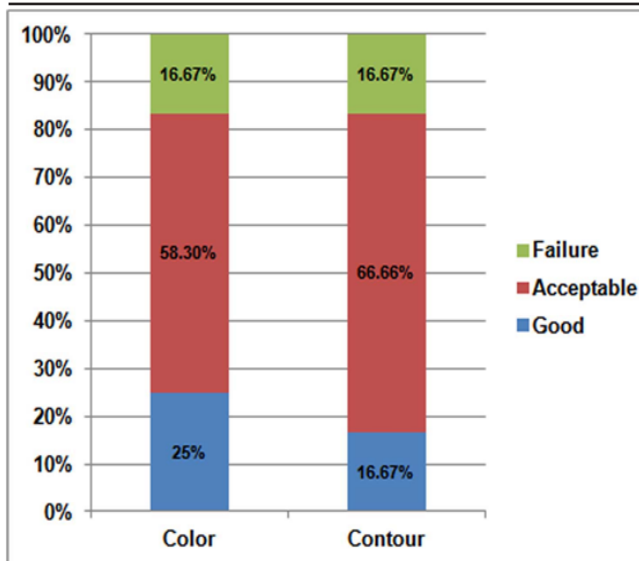


Figure I: Aesthetic assessment of the flap



Figure III a: Patient with post laryngectomy pharyngeal fistula. (Pre-operative defect).



Fig-II a: Pectoralis major flap in patient with electric burn injury (open laryngeal defect at neck) (Pre-operative defect)



Fig III b: Soft tissue coverage by Deltopectoral myocutaneous flap. (pedicle divided later on). Color and contour was good and functional outcome was acceptable.



Fig-II b: Postoperative results with good color and contour. Repair of larynx was done with primary closure.



Fig III c: Postop barium swallow showing no leakage.



Figure IV a: Patient having massive neck injury after high voltage electric burn (tracheal segment was missing) Preoperative condition of patient.



IV b: Postoperative condition with good coverage of neck. Patient is having permanent tracheostomy

46-50% complication rate is reported.⁹ Most commonly reported complications are wound dehiscence, infection, hematoma, flap failure and fistula formation.⁹ In our study similar complications were noted. Complications in present study occurred in 25% patients which is comparable to one reported by Ethier et al (44.4%).¹³ No total flap failure was observed in this study which is similar to the study of Abid et al.³

The functional outcome was assessed by speech and ability to tolerate food. 58.3% of patients have understandable speech and 50% of patients were able to tolerate regular liquid and soft diet. These results are comparable to the study conducted by Tahir et al.⁹ The aesthetic assessment was done on the basis of color and contour of flap. These results are also comparable with other reported series.

CONCLUSIONS:

Pectoralis major myocutaneous flap was found to be a versatile flap for reconstruction of large defects in neck region. The complication rate in this study was minimal.

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