

Chest Wall Defects and their Reconstruction

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Background : Chest wall reconstruction remains one of the most challenging areas of Plastic and Reconstructive Surgery. The purpose of this study is to report our 4 year experience with chest wall reconstruction. **Methods:** A review of 62 patients who had chest wall reconstruction from 2001 to 2004, is included in the paper. Indications include, defects secondary to congenital deformity correction, post neoplastic reconstructions, post burn defects and sternotomy wounds. Procedures performed included direct closure after debridement, vacuum assisted closure with and without skin grafting, pectoralis major flap, rectus abdominis flap, omental flap and free flaps including latissimus dorsi flap. The average hospital stay was 13 days. The uneventful recovery was seen in 50 patients. Minor complications were seen in 12 patients whereas major complications were not seen in any patient. **Conclusion:** Chest wall reconstruction can be performed with satisfactory outcome provided that reconstruction ladder is followed.

Key words: Chest wall defects, sternal defects, chest wall reconstruction, vacuum assisted closure (VAC),

Chest wall defects pose a great challenge to every plastic surgeon. Since the first known chest wall reconstruction in 18th century improvements in surgical techniques and developments and refinements in reconstruction techniques have allowed extensive chest wall reconstructions to be performed with negligible morbidity and mortality^{1,2}. A variety of procedures including vacuum assisted closure (VAC) and flaps have been used to provide adequate wound coverage that allows quick healing, rehabilitation and cosmesis. In this study we will review our four year experience with chest wall reconstruction and conclude that careful evaluation and meticulous reconstruction can result in satisfactory outcome to these challenging injuries.

Patients and Methods

This study was carried out at the Departments of Plastic and Reconstructive Surgery, Mayo Hospital, Shaukat Khanum Hospital, Ittefaq Hospital and Surgimed Hospital, Lahore on consecutive patients from 2001 to 2004. Total number of patients were 62, out of which 45 (73%) were males and 17 (27%) were female, with age range of 1 to 68 years.

The indications for reconstruction included defects secondary to congenital deformity correction (03 patients, 5%), post neoplastic reconstructions (09 patients, 15%), post burn defects (12 patients, 19%) and sternotomy wounds (36 patients, 58%). (Table 1)

Table1. Indications for reconstruction (n=62)

	n=	%age
Defects secondary to congenital deformity correction	3	5
Post neoplastic reconstructions	9	15
Post burn defects	12	19
Sternotomy wounds	36	58
Miscellaneous	2	3

Procedures performed included, direct closure of debridement (7 patients, 11%), vacuum assisted closure (VAC), (9 patients, 14%), vacuum assisted closure with split skin grafting (12 patients, 19%), pectoralis major flap (14 patients, 23%), rectus abdominis flap (14 patients, 23%), omental flap (3 patients, 5%), transverse rectus abdominis myocutaneous flap (TRAM) (1 patient, 2%) and latissimus dorsi free flap (2 patients, 3%). (Table 2)

Table2. Procedures performed (n=62)

	n=	%age
Direct closure after debridement	7	11
VAC	9	14
VAC with graft	12	19
Local flaps:		
Pectoralis major	14	23
Regional flaps:		
Rectus abdominis	14	23
Omentum	3	5
TRAM	1	2
Free flaps:		
Latissimus dorsi	2	3

Results:

The average hospital stay was 13 days. The uneventful recovery was seen in 50 patients (81%). Minor complications (which did not prolong the hospital stay), were seen in 12 patients (19%) whereas major complications were not seen in any patient.

Discussion

With an increase in the number of coronary artery bypass grafting operations the acquired chest wall deformities need more and more reconstructions³.

With the advent of vacuum assisted closure (VAC) in the management of sternal defects, the algorithm for the management of these defects has changed⁴ (Fig. 1). Vacuum assisted closure creates a negative pressure which help in wound contraction and increase in granulation tissue⁵. Following is the algorithm used for sternal wounds management.

