Introduction :-

Chest wall reconstruction has presented a challenge to surgeons since Parham's first description of thoracic resection in 1898.

(Parham F.W. 1898)

The chest wall is composed of multiple layers based on a bony framework. The ribs and costal cartilages are hinged upon the vertebral column posteriorly and the sternum anteriorly. The clavicles and scapulae are attached to this framework via the sternoclavicular joint. The muscular layers may be divided into three layers. The innermost layer is the intercostal muscles (internal and external) and the transversus thoracis muscle. The next layer consists of the muscular attachements to the superior and the inferior apertures of the chest wall. These include the sternocleidomastoid muscle and the scalenes at the superior aperture, and the rectus abdominis muscles, the internal and external oblique muscles, and the transversus abdominis muscle at the inferior aperture. The remaining muscle groups include the pectoralis major, latissimus dorsi, trapezius, serratus anterior and the pectoralis minor.

(Seyfer A., et al., 1996)

The chest wall acts as a rigid shell for the protection of thoracic viscera. As a semi-rigid structure it allows for the elevation and depression of the ribs during respiration. The framework acts as a platform for the movement of the

shoulder and arm. Attached to this platform are the muscles that function in arm, shoulder and respiratory movements.

(Strauch B., et al., 1998)

Defects of the chest wall occur almost always as a result of neoplasm, irradiation,infection,trauma and congenital.

(Arnold, P.G., and Pairolero, P.C. 1986)

The ability to close large chest wall defects is the main consideration in the surgical treatment of the most chest wall afflictions. Excision should not be undertaken if the surgeon does not have the confidence and ability to close the defect.

(Maier, H.C. 1947)

Reconstruction of the bony thorax is controversial. Differences of opinion exist about who should be reconstructed and what type of reconstruction should be done. In general, all full-thickness skeletal defects that have the potential for paradox should be reconstructed. The decision not to reconstruct the skeleton depends on the size and location of the defect. Both muscle and omental transposition can be used to reconstruct soft tissue chest wall defects. Muscle is the tissue of choice for soft tissue coverage of full-thickness defects where skeletal reconstruction is not required. Muscle can be transposed as muscle alone or as a musculocutaneous flap. The omentum should be reserved for partial-thickness reconstruction or as a back-up procedure for muscle transposition that has failed in full-thickness defects.

(Arnold, P.G., and Pairolero, P.C. 1984)

The latissimus dorsi muscle is the largest flat muscle in the thorax. Its dominant thoracodorsal neurovascular leash has an arc rotation that allows coverage of the lateral and central back as well as the anterolateral and central front of the thorax.

(Bostwick, J., III, et al 1989)

The pectoralis major muscle is the second largest flat muscle on the chest wall and in many respects is the mirror image of the latissimus dorsi muscle.

(Arnold, P.G., and Pairolero, P.C.1984)

The serratus anterior muscle is a small flat muscle located in the mid-axillary line between the latissimus dorsi and pectoralis major muscles. This muscle can be used alone or as an adjunctive muscle with the pectoralis major or the latissimus dorsi muscles.

(Arnold, P.G., et al.,1994)

Use of the rectus abdominis muscle for chest wall reconstruction is based on the internal mammary neurovascular leash.

(McCormack, P., et al 1991)

The external oblique muscle can also be transposed as a muscle or musculocutaneous flap, and it is most useful in closing defects of the upper abdomen and lower thorax.

(Hodgkinson, D.J., and Arnold, P.G. 1996)

The trapezius muscle has been useful to close defects at the base of the neck or the thoracic outlet but is not consistently useful for other chest wall reconstructions.

(Pairolero, P.C., and Arnold, P.G. 1994)

Omental transposition has been most useful in reconstructing partial-thickness chest wall defects, particularly in radiation necrosis that does not involve tumor.

(Jurkiewicz, M.J., and Arnold, P.G. 1992)

Infected median sternotomy wounds present a special problem if left untreated, these infections can extend to aortic and cardiac suture lines, prosthetic grafts, and intracardiac prostheses. In addition, septic thrombosis may deveop in aortocoronary grafts. Early recognition of sternal wound infection is crucial for successful management. The pectoralis major muscle is ideal for closing infected sternotomy wounds.

(Pairolero, P.C., and Arnold, P.G. 1984)