Introduction

Chest wall reconstruction has presented a constant challenge to surgeons since Parham's first description in 1898. [1]

Defects of the chest wall occur almost always as a result of neoplasm, irradiation or infection and less frequently due to congenital anomalies. [2]

Since 1940 numerous authors have made significant contributions to reconstructions of the thorax. Muscles and musculocutaneous flaps of latissimus dorsi, pectoralis major, serratus anterior, rectus abdominis and external oblique muscles have been used most frequently[3] The clarification of functional anatomy and blood supply of these muscles has resulted in more aggressive resections in the treatment of chest wall tumors and in the surgical amelioration of the drawbacks of radiation therapy.[4]

The chest wall defects produced by resection of most neoplasms involve loss of the skeleton and frequently the overlying soft tissues as well. Infection, radiation, necrosis and trauma produce partial or full thickness defects, depending upon their severity. [5]

The ability to close large chest wall defects is the main consideration in the treatment of most chest wall lesions. The critical questions of whether or not the reconstructed thorax will support respiration and protect the underlying organs must be answered when considering both extent of resection and method of reconstruction [6]

Primary closure remains the best option available when possible if the defect is partial thickness and will accept and support a skin graft reconstruction in this manner is quite reasonable. If a partial thickness defect will not reliably accept a skin graft, a situation that frequently occurs with radiation necrosis, omental transposition with skin grafting is used. If full thickness reconstruction is required, both the structural stability of the thorax and soft tissue coverage must be considered [(7)]

The goals of reconstruction of the chest wall can be prioritized to:

-Stabilization of the skeletal structure.

- Obliteration of any underlying dead space or cavities.

- Wound closure with well vascularised soft tissue

The primary importance is the establishment of a rigid skeletal structure which allows for satisfactory mechanics of ventilation. Patients may tolerate as many as four ribs resected or even complete sternectomy depending upon their underlying pulmonary function. Skeletal stabilization can be accomplished with autogenous rib grafts or less commonly reconstruction bars. The use of synthetic material such as mesh or Gore-tex sheeting to provide for a thoracic space seal has added the benefit of providing rigidity which helps to minimize flailing of the defect [(8)]

Materials used in skeletal reconstruction are either autogenous tissues (fascia lata, ribs or bone grafts) or meshes (Prolene, PTFE or Marlex) or metals (methyl methacrylate). Soft tissue reconstruction is always by autogenous tissues; muscles (Latissimus dorsi, pectoralis major, rectus abdominis, serratus anterior, external oblique and trapezius) or omentum [(9)]