

Use of Modified Eloesser Flap in the Management of Complicated Empyema Thoracis - Study of 150 Cases in Our Institute Grant Medical College, Mumbai

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Abstract

Introduction: Empyema is the collection of pus within the pleural cavity. Complicated effusions or empyema which do not respond to medical management or intercostal drainage, require surgical intervention. Decortication, Eloesser flap procedure and thoracoplasty are the commonly employed surgical techniques. When the underlying lungs are too diseased to be satisfactorily decorticated and when the patient is very sick, toxic or has other major co morbid conditions, the Eloesser flap is an invaluable option in the management. This technique was first described by Leo Eloesser in the year 1935 for tuberculous empyema in the pre-antibiotic era [1]. Various modification of this technique, also called the window procedure is employed now a days when indicated. We endeavored to study the use of this technique in the management of complicated empyema in a tertiary care centre.

Methodology: From the database, the details of all the patients who underwent surgery for treatment of empyema were retrieved and studied retrospectively.

Results: Two hundred and fifty two cases of empyema required surgery over the last 8 years. Of these, 150 patients were subjected to a window procedure. Most patients were referred after due medical management by the pulmonologists and twenty patients presented as complications of previous surgeries. 31 patients were smokers and 19 were diabetic. 9 had bronchopleural fistula. 6 of the cultures and 20 of the biopsies were confirmatory of tuberculosis. The mean hospital stay postoperatively was 6.4 days and the average follow up was for 11 months. Most windows healed by 6 months. Diabetes, debility, malnutrition, drug resistant tuberculosis, immunosuppression and the presence of bronchopleural fistulae delayed the healing of the window. Four patients required their window to be refashioned in the process of healing and two patients opted to have elective window closure.

Conclusion: The modified window procedure is an invaluable option in the management of empyema thoracis when indicated. Patient compliance is good and the recovery time acceptable.

Keywords: Empyema; Decortication; Lung Infection; Pleural Space

Introduction

Empyema (from Greek meaning "abscess") is the collection of pus within pleural cavity. The management of empyema involves adequate drainage of the pus and obliteration of the pleural space. Management options for complicated empyema include intercostal tube drainage, decortication, thoracoplasty or modified Eloesser flap. Modified Eloesser flap, more commonly known as the Window

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procedure is reserved for patients in who the underlying lung beneath the empyema is too diseased to be decorticated effecting adequate expansion. This is also useful in sick and toxic patients to relieve them of the sepsis immediately. We endeavored to study the incidence and effectiveness of this procedure in the treatment of complicated empyema thoracis in a tertiary care centre.

Aim

To study and project the effectiveness of modified Eloesser flap procedure as a valuable treatment option in management of complicated empyema thoracis when indicated.

Methodology

A database of all the patients who undergo surgical treatment for empyema thoracis is maintained in the institution. From this live database, the details of all patients who underwent the window procedure over the last 8 years were retrieved and studied. The mode of presentation, symptomatology, indications for surgery, co morbid conditions, microbiological cultures, duration of hospital stay and follow up details were analyzed.

Results

Empyema requiring surgical management formed about 17% of all the general thoracic surgical admissions. Of this 51% were considered unfit for a decortication and were subjected to a window procedure This is 8.5% of all thoracic surgical admissions. The total number of patients was 150. Most patients were referred to us from the pulmonary medicine department after a failed medical management. All had a complete work up which included routine hematological and biochemical tests, pre-operative cultures, chest x-ray, computerized tomogram of the chest, pus cultures, bronchoscopy and a pulmonary function test. Twenty patients had a window procedure done to manage the complications of a previous surgery like a pulmonary resection or decortication. The average age was 39.2 years. The male: female ratio was 4.5:1. The right: left ratio was 60:40. Twenty patients were already on anti-tuberculous treatment at the time of surgery. 17 patients had an indwelling intercostal drainage tube. 31 patients were smokers and 19 were diabetic. 9% of the patients had bronchopleural fistulae. Four patients required their window to be refashioned and two patients opted to have elective window closure. Up to 45% of the preoperative cultures and 37% of the post-operative cultures did not grow any organism. Post operatively, gram negative organisms especially pseudomonas were the most common pyogenic organism. 20 % of the biopsies were confirmatory for tuberculosis, but only 6% of the mycobacterial cultures were positive. The mean hospital stay postoperatively was 6.4 days and the average follow up was for 11 months. Most windows healed by 6 months. Diabetes, debility, malnutrition, drug resistant tuberculosis, immunosuppression and the presence of bronchopleural fistulae delayed the closure of the window.

Discussion

Leo Eloesser in 1935 described the Eloesser flap operation for tuberculous empyema and drainage of the infected pleural space [1]. In 1971, Panagiotis Symbas from Emory University, reported a modification of this method in the treatment of nontuberculous pleural empyema [2]. The operative steps comprises of locating the empyema cavity with the aid of a recent CT and needle aspiration before making a thoracotomy incision directly over the cavity [3]. Once the empyema cavity is entered, pus taken for culture studies and is evacuated [4]. An inverted U shaped flap of skin and subcutaneous tissue is made over this cavity [5]. The base is over the most dependent and anterolateral portion of this cavity. It is necessary to resect part of 3 to 4 overlying ribs to make an adequate sized opening [6]. The edges of the flap are tucked in into the mouth of the window (Figure 1). The cavity is packed with roller gauze. Multiple daily dressings would be done for a few days till the amount of discharge reduce [7]. The patient is taught how to do dressings themselves for a few days. Patients were discharged with daily outpatient dressings for a few days. The patients are routinely followed up in the outpatient department.

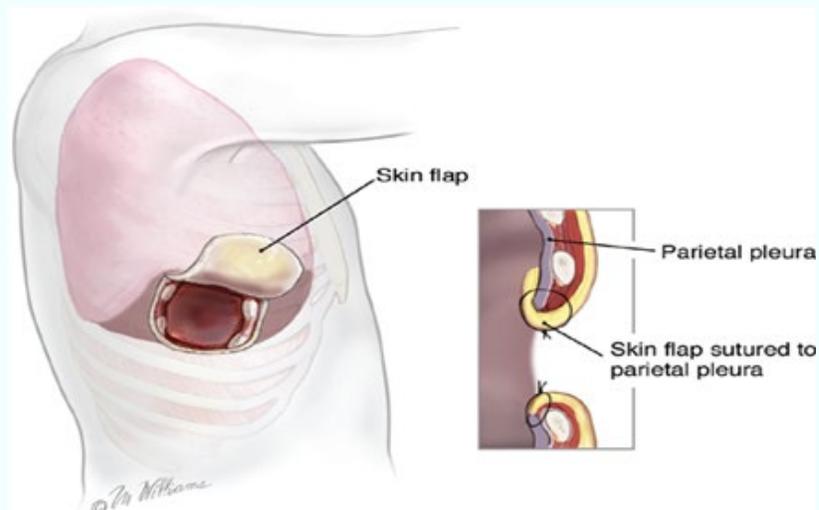


Figure 1: Eloesser Flap technique.

Conclusions

Eloesser procedure is invaluable the armamentarium in treating patients with empyema who are very sick, septic and moribund, especially where the underlying lung is too diseased for decortication. These sick patients may not tolerate major procedure like a decortication or thoracoplasty. This short procedure would decompress the empyema cavity, reduce toxicity and sepsis and make the patient better symptomatically very fast. Eloesser flap is also the choice of procedure in patients with bronchopleural fistula. When pleural empyema complicates lung resection surgeries, modified Eloesser flap provides the final definitive modality of management. We assert that, when indicated, window procedure continues to be an easy and definitive surgical option in the management of complicated empyema thoracis. It gives immediate relief of symptoms of empyema and avoids the complications of prolonged tube drainage. Patient compliance is good. The residual scar is tolerable and the patient can opt for scar revision or early plastic surgical closure of the window if necessary.

Consent

Informed consent has been obtained.

Funding

No funding was required for this study.

Conflict of Interest

No potential conflict of interest exist.

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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