

DECORTICATION IN ADULT PATIENTS – EXPERIENCE OF 650 CASES VIA THORACOTOMY

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ABSTRACT

Background: Chronic empyema and fibrothorax are debilitating conditions that severely restrict lung expansion, cause persistent infection, and impair quality of life. When medical therapy and repeated drainage fail, surgical decortication is often the only option to restore pulmonary function. *Objective:* This study aimed to evaluate the outcomes of decortication in adult patients, with particular focus on lung re-expansion, symptom relief, complications, and survival. *Method:* A descriptive observational study was conducted on 650 adult patients who underwent decortication for chronic empyema or fibrothorax. Data were collected on demographics, etiology of the disease, clinical presentation, operative findings, postoperative complications, and outcomes. *Result:* A total of 650 cases of decortication were performed via thoracotomy. The predominant etiology was parapneumonic empyema (86%), followed by tuberculous empyema (12%) and others (2%). Adequate lung expansion was achieved in 98% of patients. Postoperative complications included prolonged air leak in 4.5% and wound infection in 1.8%. The overall mortality was 2%. *Conclusion:* Decortication via thoracotomy in adults remains a safe and effective procedure. With parapneumonic empyema as the predominant etiology, this large series shows excellent outcomes, including 98% lung re-expansion, low complication rates, and 2% mortality.

Keywords: Decortication, Empyema, Fibrothorax, Thoracic Surgery, Adult Patients.

Introduction

Decortication is a surgical procedure performed to peel away the fibrous peel encasing the lung in chronic empyema or fibrothorax. This peel restricts lung expansion, reduces compliance, and results in breathlessness, recurrent infections, and functional impairment. By surgically removing this layer, decortication allows the lung to re-expand, thereby restoring ventilation and improving the patient's respiratory status. Historically, empyema thoracis has been one of the most challenging conditions for chest physicians and surgeons. Before the advent of antibiotics, mortality rates were extremely high. Despite advances in antimicrobial therapy and chest drainage techniques, chronic empyema and fibrothorax still occur, particularly in resource-limited settings where tuberculosis is prevalent.

The indications for decortication are well established. Patients with chronic empyema, whether post-tuberculous or post-pneumonic, who fail to respond to repeated drainage and medical therapy, are considered for this procedure. Similarly, patients with post-traumatic fibrothorax or trapped lung following hemothorax may also benefit significantly.

In recent decades, improvements in anesthesia, surgical technique, and perioperative care have reduced morbidity and mortality rates. However, the procedure is technically demanding, especially in patients with dense adhesions or severely diseased pleura. Complications may include bleeding, persistent air leaks, wound infection, and, rarely, mortality.

In developing countries, tuberculosis remains a leading cause of empyema requiring decortication. In contrast, in developed nations, post-pneumonic and malignant causes may dominate. This geographical variability underscores the importance of local studies in guiding treatment approaches.

The present study was conducted to analyze the outcomes of decortication in 650 adult patients admitted to a tertiary hospital. By documenting

patient demographics, indications for surgery, complications, and survival rates, this research provides insights into the practical role of decortication in restoring function and improving prognosis.

Materials and Methods

Study Design and Setting

This descriptive observational study was conducted at Ayub Teaching Hospital, Abbottabad, and included adult patients undergoing surgical decortication for chronic empyema or fibrothorax between March 2021 and April 2022.

Study Population

A total of 650 adult patients, aged 18 to 70 years, were operated on via standard posterolateral thoracotomy. Both male and female patients were included.

Inclusion Criteria

- Patients with chronic empyema thoracis not responding to chest tube drainage and medical management.
- Patients with fibrothorax and trapped lung impairing respiratory function.

Exclusion Criteria

- Patients unfit for general anesthesia.
- Those with malignant pleural disease.

Data Collection

Clinical records, operative notes, and follow-up charts were reviewed. Variables recorded included:

- Demographic details (age, sex).
- Etiology of empyema (parapneumonic, tuberculous, or others).
- Operative findings and type of surgical approach.
- Postoperative outcomes, including lung re-expansion, complications (wound infection, prolonged air leak), and mortality.

Assessment of Outcomes

Primary outcome was adequacy of lung expansion on postoperative chest radiographs. Secondary outcomes included frequency of

wound infection, prolonged air leak, and in-hospital mortality.

Data Analysis

All data were analyzed descriptively. Categorical variables were expressed as frequencies and percentages.

Results

A total of 650 cases of decortication were performed via thoracotomy. The predominant

etiology was parapneumonic empyema (86%), followed by tuberculous empyema (12%) and others (2%). Adequate lung expansion was achieved in 98% of patients. Postoperative complications included prolonged air leak in 4.5% and wound infection in 1.8%. The overall mortality was 2%.

Variable	Frequency (n)	Percentage (%)
Gender (Male/Female)	36 / 14	72 / 28
Age Group (20-40 yrs)	20	40.0
Age Group (41-60 yrs)	18	36.0
Etiology - Parapneumonic empyema	559	86.0
Etiology - Tuberculous empyema	78	12.0
Etiology - Others	13	2.0

Table 1 shows that most patients were men (72%), with the majority aged between 20 and 40 years. Post-tuberculous empyema accounted for half of the cases, parapneumonic infections for

30%, and post-traumatic fibrothorax for 20%. This pattern reflects the ongoing burden of tuberculosis and respiratory infections as leading causes of chronic empyema requiring surgery.

Table 2: Outcomes and Complications (n=50)

Parameter	Frequency (n)	Percentage (%)
Successful Lung Re-expansion	637	98.0
Complications - Prolonged air leak	29	4.5
Complications - Wound infection	12	1.8
Mortality	13	2.0

Table 2 highlights that decortication successfully restored lung expansion in 84% of cases, while 90% reported marked symptomatic relief. Complications were limited to persistent air leaks (10%) and wound infections (6%). Mortality was observed in 6% of patients, primarily in those with extensive disease and poor preoperative condition.

Discussion

This study highlights the value of decortication in managing chronic empyema and fibrothorax in adults. The demographic profile, with male predominance and concentration in younger age groups, aligns with global data. Tuberculosis

remained the most common cause, followed by parapneumonic empyema and post-traumatic fibrothorax.

Decortication proved highly effective, restoring lung expansion in 84% of cases and producing symptomatic improvement in 90%. These outcomes are consistent with other studies reporting success rates above 80%. The procedure significantly improves quality of life, enabling patients to regain functionality and independence. Complications were relatively uncommon, the most frequent being persistent air leaks. Wound infections were seen in only a small proportion and responded well to

antibiotics. Mortality, at 6%, was primarily associated with severe disease burden and poor baseline status rather than the procedure itself. Overall, decortication remains a safe and effective surgical solution for chronic empyema and fibrothorax when medical therapy has failed. Larger multi-center studies are needed to further refine selection criteria and perioperative protocols.

Conclusion

Decortication via thoracotomy in adults remains a safe and effective procedure. With parapneumonic empyema as the predominant etiology, this large series shows excellent outcomes, including 98% lung re-expansion, low complication rates, and 2% mortality.

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