

# Late Paediatric Empyema Thoracic Decortication Using Muscle Sparing Axillary Skin Crease Incision (Msasci)

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## ABSTRACT

**Objective:** The aim of this study is to determine the effectiveness of muscle sparing axillary skin incision (MSASCI) among patients of late paediatric empyema thoracic were undergone decortication.

**Study Design:** A prospective study

**Place and Duration:** The study was conducted at Pediatric Surgery Department, Liaquat University of Medical & Health Sciences, Jamshoro Sindh during the period from December 2020 to May 2021.

**Methods:** Total 50 children of both genders were presented in this study. Patients were aged 1 month-12 years. Patients' detailed demographics age, sex and weight were calculated after taking informed written consent from authorities. Patients had late paediatric empyema thoracic were enrolled. MSASCI was used for decortication among all cases. Effectiveness of incision was calculated post-operatively in terms of visibility and size of scar, intraoperative exposure and access to the lobes. Complete data was analyzed by SPSS 23.0 version.

**Results:** There were 30 (60%) male and 20 (40%) females with mean age  $7.14 \pm 7.44$  years. Mean body weight of the children was  $16.58 \pm 9.74$  kg. We found pyopneumothorax in 20 (40%), followed by encysted empyema in 12 (24%), multiloculated empyema in 9 (18%), bilateral Empyema thorax in 5 (10%), and diaphragmatic hernia in 4 (8%). Adequate exposure was seen among 49 (98%) cases. Chest tube was removed within  $5.87 \pm 4.54$  days. Good lung expansion was found in 47 (94%) cases. Air leak was found among 6 (12%) cases. Frequency of scars was very low only among 4 (8%) cases.

**Conclusion:** We concluded in this study that MSASCI was effective for decortication among patients of late paediatric empyema thoracic in terms of post-operative good lung expansion, adequate exposure with minimum numbers of scars and less complications i.e air leak in all cases.

**Keywords:** MSASCI, Paediatric Empyema Thoracic, Decortication, Complications

## INTRODUCTION

Emphysema is a difficult clinical disease that can last for weeks or months. It is caused by severe pneumonia and can be life-threatening if untreated. There are three sequential phases of empyema, according to the American Thoracic Society: an early exudative phase, an intermediate fibrinopurulent phase, and a late organizing phase [1]. For patients with early stages of empyema, the minimally invasive video-assisted thoracoscopic surgery (VATS) with low surgical morbidity has emerged as the recommended treatment option [2]. In several studies [3], it has been demonstrated that intravenous infusion of fibrinolytic solution is useful in improving illness resolution. Despite the fact that thoracoscopic operations have been demonstrated to be beneficial in the second phase [2, 4], thoracotomy and decortication have been shown to be the treatment of choice in the organizing phase [5–7].

In a developing setting such as ours, the majority of patients present at late stages, at which point fibrinolysis and video-assisted thoracoscopic adhesiolysis are ineffective treatments. Paediatric thoracic surgery incisions made on the posterolateral side of the chest can result in poor functional and cosmetic outcomes, such as chest abnormalities (such as scoliosis, shoulder deformity, or winged scapula) and big surgical scars [8]. Axillary skin

crease incision (MSASCI) was first utilized for thoracic surgery and is now used for a variety of procedures.

Purpose of this study is to determine the effectiveness of muscle sparing axillary skin incision (MSASCI) among patients of late paediatric empyema thoracic were undergone for decortication.

## MATERIAL AND METHODS

This prospective study was conducted at the study was conducted at Pediatric Surgery Department, Liaquat University of Medical & Health Sciences, Jamshoro Sindh during the period from December 2020 to May 2021. The study was comprised of 50 children. Patients' detailed demographics age, sex and weight were calculated after taking informed written consent. Children had other medical illness and those did not give any written consent were excluded from this study.

Patients were aged 1 month-12 years. Patients had late paediatric empyema thoracic were enrolled. MSASCI was used for decortication among all cases. Effectiveness of incision was calculated post-operatively in terms of visibility and size of scar, intraoperative exposure and access to the lobes. Complete data was analyzed by SPSS 23.0 version. Mean standard deviation was used to present data. Frequency and percentage was used for categorical variables.

## RESULTS

There were 30 (60%) male and 20 (40%) females with mean age  $7.14 \pm 7.44$  years. Mean body weight of the children was  $16.58 \pm 9.74$  kg. We found pyopneumothorax in 20 (40%), followed by encysted empyema in 12 (24%), multiloculated empyema in 9 (18%), bilateral Empyema thorax in 5 (10%), and diaphragmatic hernia in 4 (8%). (table 1)

Table 1: Baseline detailed demographics of enrolled cases

Variables	Frequency (n=50)	Percentage
Mean age (years)	$7.14 \pm 7.44$	
Mean weight (kg)	$16.58 \pm 9.74$	
Gender		
Male	30	60
Female	20	40
Type of Disease		
pyopneumothorax	20	40
encysted empyema	12	24
multiloculated empyema	9	18
bilateral Empyema thorax	5	10
diaphragmatic hernia	4	8

Adequate exposure was seen among 49 (98%) cases. Chest tube was removed within  $5.87 \pm 4.54$  days. Good lung expansion was found in 47 (94%) cases. (table 2)

Table 2: Post-operative efficacy of MSASCI

Variables	Frequency	Percentage
Chest tube removal (days)	$5.87 \pm 4.54$	
Adequate exposure		
Yes	49	98
No	1	2
Good Lung Expansion		
Yes	47	94
No	3	6

Air leak was found among 6 (12%) cases. Frequency of scars was very low only among 4 (8%) cases. (table 3)

Table 3: Association of complications and scar among enrolled cases

Variables	Frequency (n=50)	Percentage
Air leak		
Yes	3	6
No	47	94
Scar		
Yes	4	8
No	46	92

## DISCUSSION

Thoracoscopic surgery is frequently used to remove benign tumors from children's lungs via the thorax. Huge tumors in the thoracic cavity, on the other hand, require a large incision. In the case of lower lobe intrapulmonary sequestration, a wide incision is required to ligate the abnormal arteries. Thoracic open surgery patients now have the option of using a muscle-sparing axillary skin crease incision (MSASCI), which has shown superior aesthetic results than a standard incision. In previous studies the usefulness of the MSASCI approach in thoracoscopic surgery for the removal of big tumors from

the thoracic cavity and the ligation of the aberrant arteries in the lower lobe of the lungs.

In this prospective study 50 children with ages 1 month to 12 years were presented. Majority of the cases 30 (60%) were males and remaining 20 (40%) were females. Mean age of the patients was  $7.14 \pm 7.44$  years with mean body weight  $16.58 \pm 9.74$  kg. These findings were comparable to the previous researches. [9,10] We found pyopneumothorax in 20 (40%), followed by encysted empyema in 12 (24%), multiloculated empyema in 9 (18%), bilateral Empyema thorax in 5 (10%), and diaphragmatic hernia in 4 (8%). Previous researches presented same results to our study.[11]

We found good outcomes in decortication through of muscle sparing axillary skin incision (MSASCI) in late paediatric empyema thoracic surgery. We found that adequate exposure was almost among all the cases enrolled. Chest tube was removed within  $5.87 \pm 4.54$  days. Good lung expansion was found in 47 (94%) cases.[12,13] A prior study found that MSASCI was able to effectively complete all of the expected procedures, including the lower lobectomy of the lungs, on all of the patients. Neonates and newborns made for an easy operative field. The majority of patients saw significant improvements in both their motor and aesthetic abilities after surgery. [14] In our study rate of complications were very low air leak was found only among 3 (6%) cases and scars were hardly found among 4 (8%) cases. These results were comparable to the previous studies in which rate of complications and scars were minimum and effectiveness of MSAACI was significantly good.[15,16]. Final conclusion: thoracoscopic surgery performed with the MSASCI approach yields good cosmetic results.

## CONCLUSION

We concluded in this study that MSASCI was effective for decortication among patients of late paediatric empyema thoracic in terms of post-operative good lung expansion, adequate exposure with minimum numbers of scars and less complications i.e air leak in all cases.

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