



**ORIGINAL RESEARCH PAPER**

**Surgery**

**RETROSPECTIVE STUDY OF THORACOTOMY IN PULMONARY TUBERCULOSIS PATIENTS IN TERTIARY HEALTHCARE CENTRE OF SOUTH GUJARAT.**

**KEY WORDS:** Tuberculosis, VATS, Open thoracotomy, Multi drug resistant TB.

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**ABSTRACT**

**Background:** Pulmonary Tuberculosis is one of the most prevalent infections in India and contributes significantly to morbidity and mortality. While most patients with TB can be successfully treated with anti-tuberculosis chemotherapy, Thoracic surgery is an important adjuvant strategy for these patients especially the one with MDR/XDR. **Aim:** To compare VATS and conventional open thoracotomy with decortication in pulmonary TB patient's requiring surgery. **Methodology:** A Retrospective study was conducted on a sample size of 10 patients who presented with features of pulmonary TB, mainly referred from TB OPD with chest X-ray/ HRCT thorax findings. **Results:** There was significant association was found among Both methods and various variables like Duration of hospital stay, back to routine work after surgical procedure and VAS score for pain assessment. **Conclusion:** This study suggests that VATS, a minimally invasive procedure with its implied decreased perioperative morbidity and better functional outcome, should be preferred over the traditional OT procedure whenever feasible to do so.

**INTRODUCTION:**

Pulmonary Tuberculosis is one of the most prevalent infections in India and contributes significantly to morbidity and mortality. Tuberculosis (TB) exhibiting as drug-resistant mycobacteria tuberculosis (MTB) has become a major Public health problem in India. [1] In India, newly diagnosed TB patients are very often recognised with extensively drug-resistant (XDR) or multidrug-resistant (MDR) TB, both of which indicate adverse chemotherapy outcomes. [2]

While most patients with TB can be successfully treated with anti-tuberculosis chemotherapy, Thoracic surgery is an imperative adjuvant approach for these patients especially the one with MDR/XDR. Radical surgery cannot be obtainable for every patient with useless chemotherapy course, but in many patients with poor prognosis and the impossibility of surgical resection, the situation can be corrected with collapse surgery techniques. [3,4]

In the last part of the 20th century, curative extrapleural thoracoplasty vanished from the thoracic surgery resource in the majority of countries, though it has been episodically applied in some countries with a high TB incidence. Important reasons for discontinuing thoracoplasty comprise its high grade of indiscreetness, articulated pain effect, cosmetic and functional defects, as well as subsequent disability. [5,6,7]

Approximately 2% of all pulmonary TB patients require surgical treatment. Surgical techniques discussed here are open thoracotomy with decortication and Video Assisted Thoracoscopic surgery (VATS).

**Aims & Objectives:**

To compare VATS and conventional open thoracotomy with decortication in pulmonary TB patient's requiring surgery.

**Methodology:**

A Retrospective observational study was a conducted among 10 patients who presented with features of pulmonary TB, mainly referred from TB OPD with chest X-ray/ HRCT thorax findings at Department of General Surgery, New Civil Hospital Surat, in duration between July to September 2021.

Institutional Ethical Committee Permission was taken before the initiation of the study. The written Informed consent was taken prior to the study.

**Procedure of Open Thoracotomy:**

Double lumen ET tube used and proper Position of the patient was done. Incision - 1-2cm or 2 finger breadths below tip of scapula posteriorly. Incision deepened through SC tissue , Latissimus Doris muscle , Serratus anterior , intercostal muscles and ribs, pleura exposed Ribs spreader used to create space and prevent ribs fracture, Periosteum elevator, rib hook, cutter used...and pleura entered along the upper border of the rib. Anaesthetic- allows lung to collapse to prevent injury and Stripping from back to front 1 or 2 ICD Tube placed anterior to mid axillary line for drainage. Thoracotomy closed using 4 pericostal sutures and Post-op Analgesics, Epidural catheter, Rib block was done.

**Procedure for VATS:**

Double lumen Endotracheal tube inserted and Position of the patient was given. The number of ports and position of ports depend on the type and complexity of the surgery. VATS Debridement - Fluid and debris are vigorously debrided, freeing the lung and allowing for re-expansion. VATS Decortication - If lung still fails to re-expand , more radical approach is required..the fibrous cortex or peel from the underlying entrapped lung is removed so that the lung can expand to obliterate the pleural space. At the end of OT , ICD tube/s is/are placed carefully for drainage. Post op analgesia , rib block , CPT , Neb , spirometer was done.

**Data Collection & Analysis:**

Data were collected in Semi structured questionnaire. It includes Socio-demographic details, Case History in brief as well as various Investigation parameters like, Radiological Investigation, Laboratory & Microbiological investigation, Histopathological examination, Liquid culture and CBNAAT of resected specimen.

Statistical analysis was performed by Students 'T' test and Chi-square tests. Results are presented as the mean and SD. A P value of <0.05 was considered statistically significant.

**RESULTS:**

Total 10 patients who were suffered from Multidrug resistance tuberculosis included in this study. All of the participants were from 31-50 years of age group. Total 8 and 2 were males & Females, respectively. All of the participants were residing in the urban slum area and belonging to lower Socioeconomic class.

Mean age of Study participants was 42.3 years in Open thoracotomy group and 48.2 in VATS method group. The mean duration of surgery was more in Open thoracotomy in compare to VATS method. Also Intraoperative blood loss is more in open Thoracotomy. Mean Chest tube drainage duration in open thoracotomy was 11 days while in VATS method was 6 days. [Table 1]

Among the study participants mean time of hospital stay was 13.5 and 7.42 days , respectively in Open thoracotomy & VATS Method. Mean time duration in days to rejoin their work was 30 days in open thoracotomy and 13 days in VATS method. On observing, VAS Pain Score , which is less in VATS method in compared to Open thoracotomy. There was statistically significant difference found between Duration of surgery, Intraoperative blood loss, Chest tube drainage, Hospital Stay, Time to Rejoin Work, VAS pain score at day 0,3,7 and type of surgical procedure done. [Table 1]

**Table 1 - : Comparison Between Video-assisted Thoracoscopic Surgery And Open Thoracotomy Groups. (n=10)**

Clinical Parameters	Open thoracotomy (n=5)	VATS (n=5)	T-test	P Value
Age (years)	42.30±12.26	48.21±10.96	-1.806	0.077
Duration of Surgery(mins)	268.15±48.86	178.33± 9.63	5.909	0.000
Intraoperative blood loss (ml)	407.41±243.26	195.83±182.92	3.475	0.001
Chest tube drainage duration (days)	11.70±3.71	6.13±2.21	6.419	0.000
Duration of post-operative hospital stay (days)	13.56±4.29	7.42±3.24	5.707	0.000
Time to return to work (days)	26.96±5.65	12.57±3.85	10.170	0.000
Pain by VAS	7.67±0.48	5.21±1.14	10.229	0.000
0 POD	3.81±1	0.83±0.87	11.291	0.000
7 POD	1.13±0.80	0±0	6.912	0.000
3 month POD				

**TABLE 2- Distribution of patients according to the post-operative complications**

Post-Operative Complications	Open thoracotomy(n=5)	VATS (n=5)	Chi Square Test	P Value
Post op wound infection	1	0	7.081	0.718
Elective intubation	5	1		
Need for blood transfusion	3	1		

Out of total, only 1 patient had suffered from Postoperative wound infection, 5 patients had elective intubation and 3 needed blood transfusion in Open thoracotomy method. While in VATS method no one suffered from Post operative wound infection and only 1 case had elective Intubation and 1 case needed blood transfusion. There was statistically association found between Post operative wound infection, Elective intubation, need for blood transfusion and methods of surgical procedure. [Table 2]

**DISCUSSION:**

In past 10 years, less amount of research dedicated to extrapleural therapeutic thoracoplasty. After the introduction of VATS method, patients have given precedence to minimally invasive techniques.

The results of this study indicates a less intraoperative complications with VATS , which is explained by the good visualization of tissues using the Video thoracoscopy. The reduction in the rate of postoperative wound complications. Also lesser time duration was taken for VATS procedure in compare to Open thoracotomy.

The VATS technique is much less traumatic than standard Open thoracotomy [13,14] due to the minimal sectioning of the dorsal muscles, vessels, and nervous branches, and it further enables a significant reduction of hemithorax volume without chest wall and shoulder girdle muscle atrophy. Patients' pain syndrome manifestation is less severe, their functional rehabilitation is full and early, chest deformation is absent, and shoulder girdle function is completely saved. Comparing the results of this technique in the cohort of MDR TB patients with the outcomes of MDR TB treatment worldwide (77% vs. 55%, respectively) [15], we regard this technique as efficacious and recommend it for use. However, it is worth noting that this technique should not be the method of choice in cases where resection is possible.

**CONCLUSION:**

Thoracotomy is a safe and effective approach for the treatment of tuberculosis or its complications. Patients undergoing decortication by VATS show less postoperative complications. This study suggests that VATS, a minimally invasive procedure with its implied decreased perioperative morbidity and better functional outcome, should be preferred over the traditional OT procedure whenever feasible to do so.

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