https://doi.org/10.29309/TPMJ/2026.33.03.10079 www.theprofesional.com

ORIGINAL ARTICLE

Medical thoracoscopy: An effective tool for diagnosis of pleural tuberculosis.

Muhammad Saqib[1], Talha Mahmud[2], Muhammad Naeem Akhtar[3], Abdul Saeed Khan[4]

ABSTRACT… Objective: To assess the diagnostic yield, safety, and outcomes of medical thoracoscopy in patients with suspected pleural tuberculosis. **Study Design:** Cross sectional study. **Setting:** Department of Pulmonology, Shaikh Zayed FPGMI, Lahore. **Period:** January 2015 and December 2024. **Methods:** This is a retrospective study. A total of 119 patients who underwent medical thoracoscopy for suspected pleural tuberculosis between January 2015 and December 2024 were included. Data were analyzed using descriptive statistics. **Results:** Tuberculosis was confirmed in the majority of cases, demonstrating a high diagnostic yield. Pleural adhesions were seen in over half of the patients; most were managed successfully during thoracoscopy, while a few required additional interventions. No major complications occurred. Minor events included post-procedural pain (35.3%), surgical emphysema (4.2%), air leak (4.2%), and wound site infection (0.8%). Three patients required surgical referral. **Conclusion:** Medical thoracoscopy is a safe, reliable, and effective procedure for diagnosing pleural tuberculosis, with minimal complications and added therapeutic benefit in managing pleural adhesions.

Key words: Medical Thoracoscopy, Pleural Tuberculosis.

Article Citation: Saqib M, Mahmud T, Akhtar MN, Khan AS. Medical thoracoscopy: An effective tool for diagnosis of pleural tuberculosis. Professional Med J 2026; 33(03):457-460. https://doi.org/10.29309/TPMJ/2026.33.03.10079

INTRODUCTION

Tuberculosis (TB) remains a serious worldwide health issue, and pleural TB is among the most common extrapulmonary manifestations. Its diagnosis is frequently difficult due to nonspecific presenting features and the paucibacillary nature of the pleural fluid.[1,2] Traditional techniques such as pleural fluid examination, cytology, and closed pleural biopsy have inconstant yields. Closed pleural biopsy can make a diagnosis in 60–80% of diagnoses, but it is operator- and sampling-dependent in accuracy.[3]

Medical thoracoscopy, or pleuroscopy, is a minimally invasive technique which facilitates direct visualization of the pleural space and biopsies of specific areas. It has been found to have a substantial increase in diagnostic yield, with yields greater than 90% in pleural TB.[4,5] It compares favorably to blind pleural biopsy, as it provides larger and more representative tissue samples and offers a safer profile.[6]

Apart from its diagnostic application, thoracoscopy also facilitates therapeutic procedures like adhesiolysis and pleurodesis, specifically beneficial in complicated pleural effusions.[7] Due to its superior diagnostic yield, safety, and therapeutic value, medical thoracoscopy has become widely accepted as a useful instrument in the diagnosis and treatment of pleural tuberculosis, particularly in resource-limited countries with high burden.[1,6]

In spite of its established benefits, medical thoracoscopy is currently underutilized in most resource-constrained high TB burden nations. Local clinical practice assessment of its efficacy can inform on its contribution to early and accurate pleural TB diagnosis.

METHODS

This cross-sectional study was conducted in the Department of Pulmonology, Shaikh Zayed Hospital, FPGMI, Lahore. Retrospective data from 119 patients who underwent medical thoracoscopy for suspected pleural tuberculosis between January 2015 and December 2024 were included.

1. MBBS, DTCD, MD (Pulmonology), Assistant Professor Pulmonology, Shaikh Zayed FPGMI, Lahore.
2. MBBS, MCPS, DTCD, FCPS, MD (Pulmonology), Ph.D, Professor & HOD Pulmonology, Shaikh Zayed FPGMI, Lahore.
3. MBBS, MCPS, MD (Pulmonology), Senior Registrar Pulmonology, PGMI/AMC/LGH, Lahore.
4. MBBS, DLO, FCPS, Associate Professor ENT, Shaikh Zayed FPGMI, Lahore.

Correspondence Address:
Dr. Muhammad Saqib
Department of Pulmonology, Shaikh Zayed FPGMI, Lahore.
dr.saqib.ch@gmail.com

Article received on:
13/09/2025
Date of revision:
07/10/2025
Accepted for publication:
18/11/2025

Ethical approval was obtained from the Institutional Review and Research Advisory Board of Shaikh Zayed FPGMI, Lahore (Ref: 02-TERC/NHRC-SZH/INT-SC/868, dated: 12-09-2025). Data were entered and analyzed using SPSS version 20. Descriptive statistics, including frequencies and percentages, were applied, and the results were presented in the form of tables and pie chart.

RESULTS

During the study period, 119 patients underwent medical thoracoscopy with suspicion of pleural tuberculosis. A definitive diagnosis of pleural tuberculosis was achieved in 114 cases (95.8%), whereas 5 patients (4.2%) remained undiagnosed.

Among the study population, 81 patients (68.1%) were male and 38 (31.9%) were female, yielding a male-to-female ratio of roughly 2:1. With regard to age distribution, 31 patients (26.0%) were younger than 25 years, 31 (26.0%) were between 26–50 years, and 57 (47.9%) were older than 50 years.

The right pleural space was affected in 70 patients (58.8%), the left side in 48 patients (40.3%), while bilateral disease was seen in only 1 case (0.8%).

Chest radiographs showed varied presentations: opaque hemithorax in 11 patients (9.2%), large pleural effusion in 24 (20.2%), moderate effusion in 62 (52.1%), mild effusion in 9 (7.6%), hydropneumothorax in 8 (6.7%), and pneumothorax in 5 (4.2%) cases.

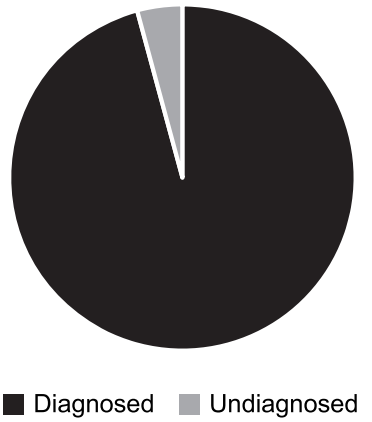
Thoracoscopic examination most frequently revealed gritty and inflamed pleura in 64 patients (53.8%). Pleural nodules were detected in 30 cases (25.2%), while a combination of nodules with inflamed pleura was observed in 25 cases (21.0%). Pleural adhesions were identified in 68 patients (57.1%).

Of the 68 patients with adhesions, 54 (79.4%) underwent successful adhesiolysis during thoracoscopy. The remaining 14 patients (20.6%) required additional interventions post-procedure, such as external suction and intrapleural streptokinase. Despite these measures, 3 patients (4.4% of those with adhesions) eventually required surgical referral.

No significant complications were encountered in the study population. The most common minor event was post-procedural pain, noted in 42 patients (35.3%). Surgical emphysema and air leak were each seen in 5 patients (4.2%), while wound site infection occurred in one patient (0.8%).

FIGURE-1

Diagnostic yield of Medical thoracoscopy



DISCUSSION

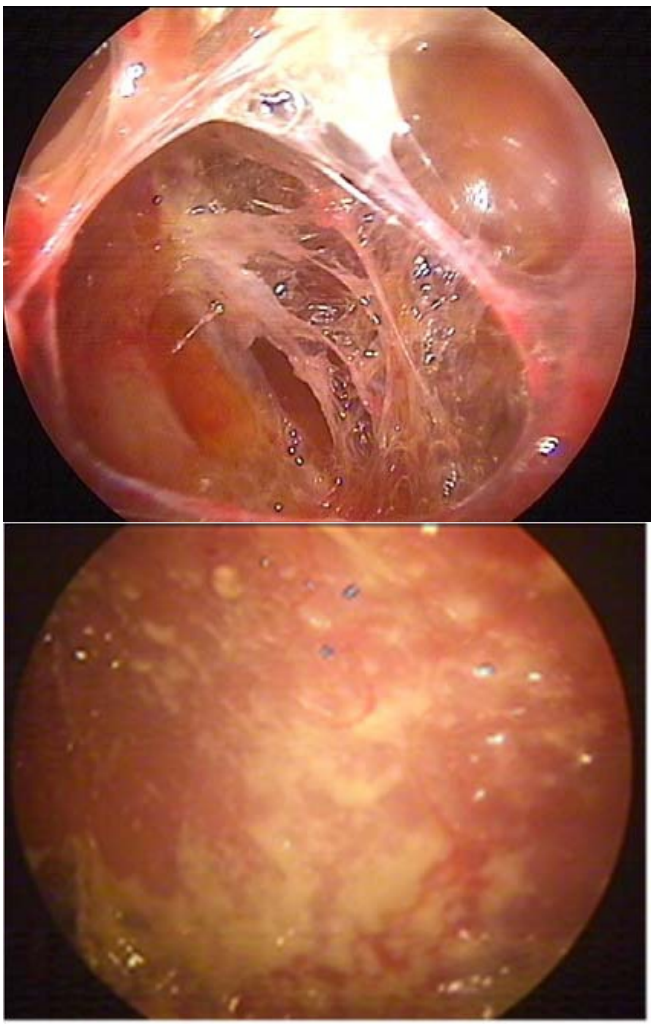
In the present study, medical thoracoscopy established a diagnosis in 114 out of 119 patients with suspected pleural tuberculosis, yielding a diagnostic accuracy of 95.8%. This success rate is comparable to earlier reports, where diagnostic yields ranged from 85% to 95% (1,4,8,9). Loddenkemper and colleagues emphasized that thoracoscopy remains the most sensitive minimally invasive method for evaluating pleural tuberculosis[1], and similar results have been documented in studies from India, China, and the Middle East.[9,10]

Most of our patients were male (68%), with a male-to-female ratio of approximately 2:1. This finding is consistent with regional data, where pleural TB is more frequently observed in men.[10,11] Nearly half of our patients were older than 50 years, which differs slightly from some series where younger adults predominate.[12] This variation may reflect differences in local epidemiology, delayed health-seeking behavior, or the presence of comorbidities in older patients. Right-sided effusion was more

common than left, a pattern also noted in other reports, though laterality is generally not considered diagnostically significant.

FIGURE-2

Thoracoscopic image, pleural adhesions Fig: 3 Thoracoscopic image, gritty pleura & parietal pleural nodules



Moderate effusion was the most frequent radiographic presentation (52.1%), followed by large effusion and opaque hemithorax. Less common findings included hydropneumothorax (6.7%) and pneumothorax (4.2%). These patterns are consistent with the study by Dixit et al., who reported that moderate to large effusions represent the majority of pleural TB cases, whereas hydropneumothorax and pneumothorax are uncommon but recognized manifestations.[13]

TABLE-I

General characteristics of study population		
Total number of cases N=119		
Gender Distribution		
Male	81	68.1%
Female	38	31.9%
Age Distribution		
Less than 25 years	31	26.0%
26 to 50 years	31	26.0%
More than 50 years	57	48.0%
Side Involved		
Right	70	58.8%
Left	48	40.3%
Both	01	0.08%
X- Ray Findings		
Opaque Hemithorax	11	9.2%
Large pleural effusion	24	20.2%
Moderate pleural effusion	62	52.1%
Mild pleural effusion	09	7.6%
Hydropneumothorax	08	6.7%
Pneumothorax	05	4.2%
Thoracoscopy Findings		
Pleural Nodules	30	53.8%
Gritty & Inflamed pleura	64	25.2%
Pleural Nodules & Gritty & Inflamed pleura	25	21.0%
Adhesions	68	57.1%

Thoracoscopic evaluation demonstrated gritty inflamed pleura in more than half of the cases, pleural nodules in one-fourth, and a combination of both in another one-fifth of patients. Pleural adhesions were observed in 68 patients (57.1%). These macroscopic features correspond with classical descriptions of tuberculous pleuritis, including diffuse inflammation, nodularity, and fibrous adhesions.[2] Such findings allow targeted biopsies from diseased areas, which explains the high diagnostic yield obtained.

A notable observation from our study was the therapeutic role of thoracoscopy. Of the 68 patients with adhesions, 54 (79.4%) underwent successful adhesiolysis during the procedure. Fourteen required additional interventions such as external suction or intrapleural streptokinase, while only three

ultimately needed surgical management. These results indicate that early thoracoscopy not only facilitates diagnosis but also prevents progression to more invasive surgery. Lee and Colt similarly reported that thoracoscopic adhesiolysis improves drainage and reduces the need for thoracotomy or decortication[7], while studies from TB-endemic regions have emphasized its cost-effectiveness as both a diagnostic and therapeutic tool.[14,15]

The strengths of this study include the relatively large number of patients and comprehensive reporting of demographic, radiological, and thoracoscopic findings. However, being a single-center study without long-term follow-up, its generalizability is limited.

CONCLUSION

Overall, our findings confirm that medical thoracoscopy is a safe, accurate, and versatile procedure in the evaluation of pleural tuberculosis. In addition to providing diagnostic clarity in the vast majority of cases, it allows effective adhesiolysis, thereby reducing the burden of surgical intervention in complicated effusions.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

SOURCE OF FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

REFERENCES

1. Loddenkemper R. **Thoracoscopy—state of the art.** Eur Respir J. 1998 Jan; 11(1):213-21.
2. Diacon AH, Van de Wal BW, Wyser C, Smedema JP, Bezuidenhout J, Bolliger CT, et al. **Diagnostic tools in tuberculous pleurisy: A direct comparative study.** Eur Respir J. 2003 Oct; 22(4):589-91.
3. Valdés L, Alvarez D, San José E, Penela P, Valle JM, García-Pazos JM, et al. **Tuberculous pleurisy: A study of 254 patients.** Arch Intern Med. 1998 Oct 12; 158(18):2017-21.
4. Metintas M, Ak G, Dundar E, Yildirim H, Ozkan R, Kurt E, et al. **Medical thoracoscopy vs CT scan-guided Abrams pleural needle biopsy for diagnosis of patients with pleural effusions: A randomized, controlled trial.** Chest. 2010; 137(6):1362-8.
5. Wang Z, Xu LL, Wu YB, Wang XJ, Yang Y, Zhang J, et al. **Diagnostic value and safety of medical thoracoscopy in tuberculous pleural effusion.** Respir Med. 2015 Sep; 109(9):1188-92.
6. Wang XJ, Yang Y, Wang Z, Xu LL, Wu YB, Zhang J, et al. **Efficacy and safety of diagnostic thoracoscopy in undiagnosed pleural effusions.** Respiration. 2015; 90(3):251-5.
7. Lee P, Colt HG. **State of the art: pleuroscopy.** J Thorac Oncol. 2007 Jul; 2(7):663-70.
8. Haridas N, K P S, T P R, P T J, Chetambath R. **Medical thoracoscopy vs closed pleural biopsy in pleural effusions: A randomized controlled study.** J Clin Diagn Res. 2014 May; 8(5):MC01-4.
9. Thomas M, Karuppiah S, Al-Sahli R, Al-Kindi H, Al-Abdulla R, Al-Maslamani M, et al. **Medical thoracoscopy for exudative pleural effusion: An eight-year analysis in Qatar.** BMC Pulm Med. 2017 Nov 22; 17(1):151.
10. Dixit R, Sharma S, Dave L, Agarwal KC, Goyal M. **Diagnostic yield and safety of semi-rigid thoracoscopy in exudative pleural effusions: A study from India.** Lung India. 2017 Mar-Apr; 34(2):160-66.
11. Zhao T, et al. **Medical thoracoscopy for diagnosis of tuberculous pleurisy: Experience from a large cohort of 575 cases.** Ann Thorac Med. 2019 Apr-Jun; 14(2):134-140.
12. Casalini AG, et al. **Pleural tuberculosis: Medical thoracoscopy greatly increases diagnostic accuracy.** ERJ Open Res. 2018 Jan 5; 4(1):00046-2017.
13. Abdelfattah RA, Hassan RN, Mohamed H, Abdelghany E. **Evaluation of pleural effusion in Minia Cardiothoracic University Hospital, Egypt: two-year study.** Minia J Med Res. 2023; 34(3):153-58.
14. Sumalani KK, Rizvi NA, Asghar A. **Role of medical Thoracoscopy in the Management of Multiloculated Empyema.** BMC Pulm Med. 2018 Nov 29; 18(1):179.
15. McDonald CM, Pierre AF, de Perrot M, Shargall Y, Gilbert S, Amjadi K. **Efficacy and cost of awake thoracoscopy and video-assisted thoracoscopic surgery in the diagnosis of pleural disease.** Ann Thorac Surg. 2018; 106(5):1539-45.

AUTHORSHIP AND CONTRIBUTION DECLARATION	
1	**Muhammad Saqib:** Data collection, Concept design.
2	**Talha Mahmud:** critical review.
3	**Muhammad Naeem Akhtar:** Statistical analysis.
4	**Abdul Saeed Khan:** Study Design.