

(RESEARCH ARTICLE)



Is there any role for surgery in post-tuberculosis sequelae? A retrospective institutional analysis

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Abstract

Despite the development of novel drugs to tackle MDR tuberculosis, the incidence and prevalence of PTB remains significant. While majority of the patients completed treatment, they often come back with post-TB sequelae. Surgical advancements in the form of VATS and robotic surgery, management of post-tuberculosis sequelae such as chronic empyema and abscess is simpler. However, adhesions make the surgical field very challenging due to distortion in anatomy. Hence, we present this study so that we could share our institutional knowledge regarding the outcomes of surgery performed for post-tuberculosis sequelae.

Keywords: Thoracotomy; Chronic Tubercular Empyema; Lung abscess

1. Introduction

Even with drug-susceptible strains of *Mycobacterium tuberculosis*, pulmonary and pleural tuberculosis (TB) can be severe and difficult to treat, and the disease may need a multidisciplinary approach in order to be managed effectively. In addition, drug-resistant tuberculosis (TB) and, in particular, multidrug-resistant (MDR) and extensively drug-resistant (XDR) TB, frequently arise in patients who have had prior TB episodes and have the potential to make already damaged lungs worse [1,2,3]. The management of these cases is challenging since it requires an approach from a multidisciplinary team [4,] as well as treatment that is both expensive and toxic, with treatment effectiveness still falling short of expectations [2,5].

The evolution of tuberculosis (TB) treatment is inextricably linked to the development of the thoracic surgery subspecialty as a medical specialty. A significant number of surgeons are of the opinion that the very first operation to be conducted on the chest most likely took place during the period of the Ancient Greeks.

After many years of neglect, the introduction of novel medications like bedaquiline, delamanid, and pretomanid has provided new perspectives, improved success rates, and a lower occurrence of side effects [6,7,8]. In order to preserve lung function and stop the progression of tuberculosis at an earlier stage, prompt diagnosis of the disease is essential.

With the development of more effective treatment methods, it is absolutely necessary to place a greater emphasis on preventative and educational measures, all the while working to improve nutrition. There is still a place for thoracic surgeons in the treatment of tuberculosis's aftereffects. On the other hand, there haven't been that many studies done that focus on how important the same thing is. As a result, we decided to conduct this study so that we could share our institutional knowledge regarding the outcomes of surgery performed for post-tuberculosis sequelae.

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2. Material and methods

This is a retrospective case-record-based study performed in the Department of Cardiothoracic Surgery at Kurnool Medical College, Kurnool. All the patients with pulmonary tuberculosis that have completed their treatment as per DOTS requiring surgery were included in the study.

Those study participants with miliary tuberculosis, extra-pulmonary tuberculosis, and those that are hemodynamically unstable were excluded from the study.

From the case records, demographic details, treatment and past history, history of any intervention, details of surgical intervention, and outcomes following surgery were recorded. Imaging findings, if any, were also recorded.

We had done the CBNAAT for all these cases to rule out active infection. Those were positive we referred them to Pulmonology for appropriate line of medical treatment for 4-6 weeks and then got them back to our department

A stringent institutional investigational protocol was followed for all these cases, X Ray-Chest(PA view) HRCT Chest were done to clinch the diagnosis. Major surgical profile, bedside pulmonary function tests were done, ICP and Double lumen ventilation whenever required.

Post-operative follow-up was for a minimum period of 6 months during which they were free of tuberculosis and had better quality of life.

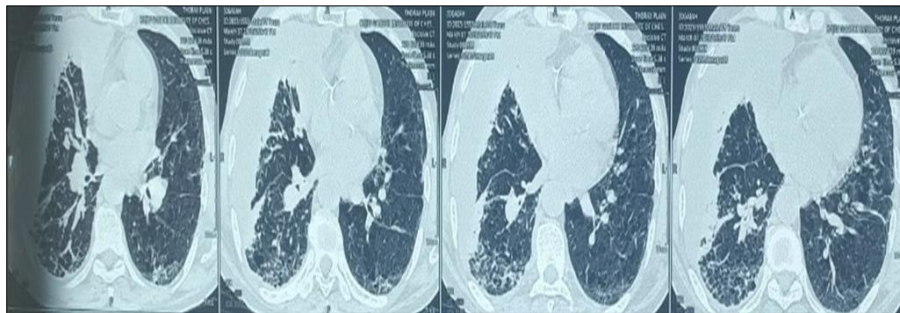


Figure 1 Computed tomography images showing chronic emphysema



Figure 2 Plain radiograph of a patient after tuberculosis treatment

The findings were then entered in an MS excel spreadsheet and analyzed using SPSS v21. Any significant correlation was considered if the p value < 0.05.

3. Results

A total of 75 patients with various sequelae of pulmonary tuberculosis were operated between January 2016 to April 2023.

The mean age of the study population was found to be 43.39 +/- 8.72 years, which was found to be higher in males than in females.

48 of the study participants were males, while the remaining were female. Of the study participants, 67.77% were smokers.

All the above-mentioned patients had received a category I regimen as per DOTS protocol. Of the 75 patients, 23 were drug defaults and 18 had a relapse of tuberculosis.

The most common complaint was cough with expectoration (83.33%), followed by chest pain (67.7%).

After evaluation, we found that the most common indication for surgery was a destroyed lung, followed by post-tubercular cavity/bullae with or without bronchiectasis and fugal ball cause haemoptysis

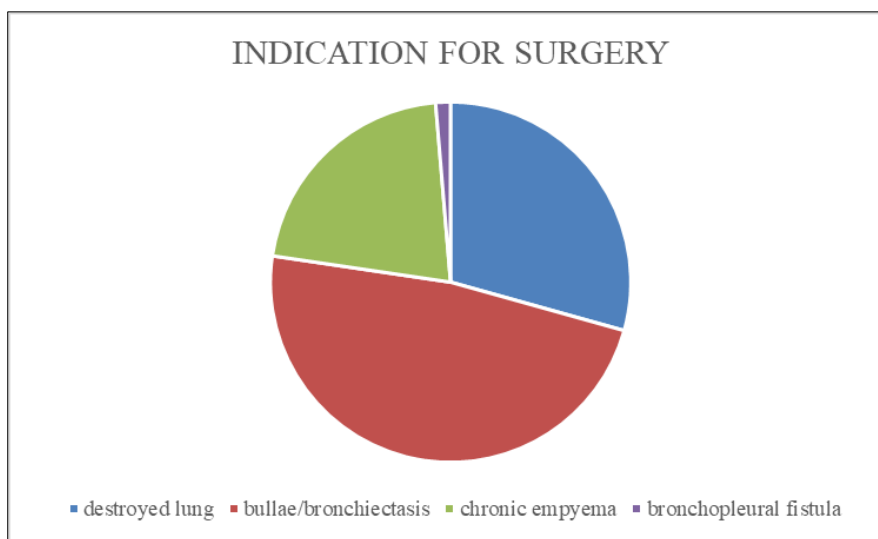


Figure 3 Indications for surgery

For the destroyed lung, patients underwent pneumonectomy. There was a slightly higher incidence of left-sided surgery than right, however, this was not statistically significant. (p-value 0.831).

Amongst the lobectomy, we observed that right-sided upper lobectomy was the most common, which is possibly due to the higher bacterial load in the upper lobes. However, there was no statistically significant difference between the two lobes.

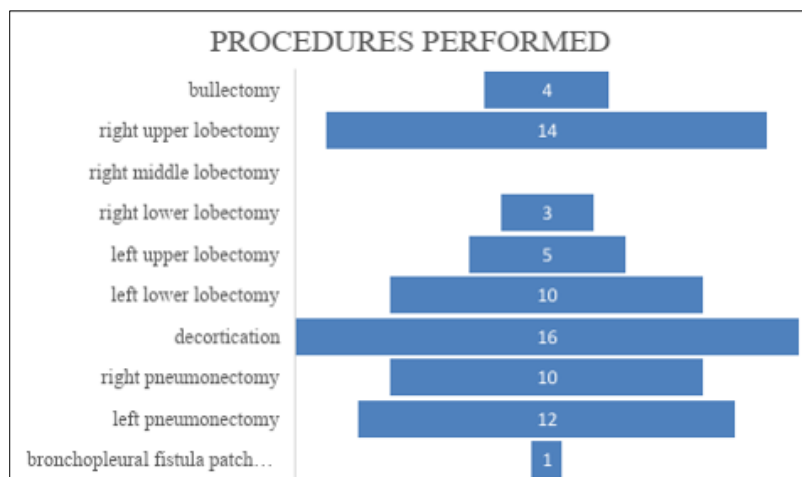


Figure 4 Procedures performed

There was only one case of bronchopleural fistula, which was closed with a pericardial patch.

Average duration of ICU stay post-surgery was 3.2 +/- 1.1 days, while average duration of ventilation was 23.66 hours.

The average duration of ICD retention post-surgery was 5.3 +/- 1.5 days. The post-operative air leak was seen in 12 patients, and the average bleeding was 210 ml on POD 1. 11 case subsided by conservatively management In 1 patient, re-intervention was required for the bleeding and air leak. The mortality rate following surgery was 5.6%, which is lower than studies performed in various centers in India.

4. Discussion

At present, thoracic surgery provides a treatment for tuberculosis and its sequelae that is highly effective while also causing significantly less trauma and fatality than in the past. The resurgence of extensive drug-resistant TB (XDR TB), or multidrug-resistant TB (MDR-TB), which is resistant to both isoniazid and rifampin as well as fluoroquinolones and at least one of the injectable anti-TB drugs (capreomycin, kanamycin, or amikacin), is one of the factors contributing to the current rise in TB incidence globally.

It is essential that these patients are free from the active disease or dissemination of the same. Preoperative assessment is vital to assess pulmonary function prior to the surgery. In some patients, the anticipated lung volume post-resection may not be sufficient for their requirements, making them poor surgical candidates.

With the advancement of VATS and robotic surgery, open approaches have taken a backseat. However, with the anticipation of adhesions and difficult dissection, making vascular structures susceptible to injury, an open approach is often considered for post-tuberculosis sequelae. In all the patients in our institute, we performed an open thoracotomy.

Adequate pre-operative planning is essential for ensuring and preserving adequate lung function. Pre-operative pulmonary function tests are routinely performed in our institution. Bronchoscopy need in haemoptysis case

At this juncture, it is very important to tackle the problem of pulmonary tuberculosis at its underlying pathological mechanism. Despite the near-perfect implementation of RNTCP and DOTS, there are several drug defaulters. Poor drug compliance due to social stigma, disabling complications and lack of awareness is responsible for the rise in MDR and XDR TB cases. Uncontrolled glycemic levels, poor nutritional status also contribute to the poor response to tuberculosis drug regimen.

Another form of post TB sequelae which was common at our institute was Fungal ball presenting with recurrent haemoptysis. These patients were referred for management of haemoptysis, correction of anaemia and parenteral antifungal treatment, following which the patients underwent surgery.

5. Conclusion

Most post-TB sequelae patients are referred for surgery from either pulmonologist or other medical specialities. The emphasis was on improving the underlying lung function without compromising the haemodynamics of the patient. The outcomes of surgery in such patients in our institute shows promise for the future. The legacy of medical fraternity is PREVENTION and hence we as Thoracic surgeons did intervene at the appropriate time among these post-Tuberculous sequelae cases needed early surgical intervention to reduce the burden of MDR and XDR strains, to prevent the spread of the diseases in community.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

Ethical committee clearance sought

Statement of informed consent

Informed consent was obtained from all individual participants included in the study

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