

Peer Review File

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Reviewer A

Interesting paper reporting a retrospective study of patients treated by surgical reconstruction for post-tuberculosis tracheobronchial stenosis, which is a quite rare condition. Indications, preoperative assessment and surgical technique are well described as are the postoperative complications and outcome.

Some points could be clarified:

Comment 1: In many countries, interventional bronchoscopy (balloon dilatation, laser resection, stent placement) has largely replaced surgical resection or surgical bronchoplasty. Authors specified that the large proportion of fibrotic lesions in their study did not allow endobronchial treatment. Could the authors clarify this point?

Reply 1: *Thank you for your comment. We acknowledge that endobronchial interventions have become a common alternative to surgical procedures. In our study, however, the high prevalence of chronic fibrotic lesions with severely narrowed lumen diameters rendered these interventions unsuitable. It is important to clarify that all patients underwent bronchoscopy by interventionists, but these attempts were ultimately unsuccessful due to the severe nature of the lesions.*

Changes in the text: *To address this point, we have revised the sentence in the Discussion section to: “A unique characteristic of our study population was the predominance of airway chronic fibrotic lesions with very narrow lumen diameter” (See revised Discussion section). We have also added a sentence to clarify the indication of surgery in the Results section of the revised manuscript: “Surgery was indicated for these patients because endotracheal interventions were failed (2 patients) or lesions were deemed too complex for interventional bronchoscopy (46 patients).”*

Comment 2: Were bacteriological examination and culture carried out on the surgical samples? The persistence of endobronchial tuberculosis proven by microbiological tests is recognized as a factor favoring the development of stenosis.

Reply 2: *Thank you for raising this important point. Unfortunately, we did not perform bacteriological examination and culture on the surgical specimens in our study. However, we did conduct a pathological examination and observed several features suggestive of tuberculosis, including Langhans giant cells (22 cases, 45.8%) and caseous necrosis (7 cases, 14.6%). We also identified other findings like granulomatous inflammation tissue (33 cases, 68.8%), other necrosis (25 cases, 52.1%), calcification (25 cases, 52.1%), and fibrous tissue (16 cases, 33.3%).*

Changes in the text: *We have included information about the performed pathological examinations and observed features in the revised Table 3 and the corresponding Results section.*

Comment 3: English could be improved in some sentences.

Line 148, “atelectasis in but 34 cases”. The meaning of “in but” is not clear to me.

Line 149, “ cases (27.1%) with, and linear fibrosis”. The meaning of “with” is not clear to me.

Line 173-174, “and there were no patients of severe obstructive lung disease after surgery”. “with” would be preferable to “of”.

Reply: Thank you for your attentive review and for identifying these grammatical errors. You are absolutely correct. These were indeed typos, and we have made the following corrections to improve clarity:

Line 148: Changed “atelectasis in but” to “but atelectasis in” for clarity.

Line 149: Removed unnecessary “with” before “linear fibrosis.”

Line 173-174: Changed “of” to “with” for a more natural phrasing.

Changes in the text:

Line 148: “but atelectasis in 34 cases”.

Line 149: “pulmonary consolidation in 13 cases (27.1%), and linear fibrosis in 7 cases (14.6%)” (removed “with”).

Line 173-174: “and there were no patients with severe obstructive lung disease after surgery”.

Reviewer B

The paper is very interesting since it gathers a very broad casuistic on a topic not very frequently analyzed at present. Most similar works refer only to the presentation of a clinical case. Methodologically, the inclusion and exclusion criteria are clearly defined with a very detailed explanation of patient management. Patients have been subjected sufficient ethical considerations to be able to carry out the study.

Comment 1: The images presented are very descriptive of the nature of the work.

Reply 1: Thank you for your appreciation.

Comment 2: In the presentation of the results are described first where the data are found (table number) and then a summary of the data presented in the table, perhaps the order would be better the other way around, specifying the most interesting data of each aspect described in the table and then the rest of the data can be consulted in more detail.

Reply: We appreciate your suggestion and have modified the text as revised.

Changes in the text:

Lines 139-146: removed “Table 1 shows the baseline characteristics of patients before surgery” and added “All baseline characteristics of patients before surgery are shown in Table 1” at the end of the paragraph.

Lines 147-158: removed “Table 2 shows the characteristics of the lesions on the imaging” and added “Full detailed characteristics of the lesions are shown in Table 2” at the end of the paragraph.

Lines 159-169: removed “Table 3 shows the surgical techniques and complications” and added “Details of surgical techniques and complications are in Table 3” at the end of the paragraph.

Comment 3: There are several aspects that could improve the paper

- Were endoscopic techniques used prior to surgical treatment or surgical treatment was decided directly?

Reply: Thank you for your inquiry. While all patients underwent a pre-surgical evaluation by

interventionists, the characteristics of the lesions in this study (e.g., severe stenosis, chronic fibrosis) were not amenable to treatment with endoscopic techniques. Therefore, surgical intervention was determined to be the most suitable approach.

Changes in the text: We have included this information in the Methods - Preoperative and postoperative management section of the revised manuscript: "All patients underwent a pre-surgical evaluation by interventionists, but the lesions were not amenable to treatment with endoscopic techniques". We have also added a sentence to clarify the indication of surgery in the Results section of the revised manuscript: "Surgery was indicated for these patients because endotracheal interventions were failed (2 patients) or lesions were deemed too complex for interventional bronchoscopy (46 patients)."

Comment 4: Although the main diagnosis of these lesions is made by flexible bronchoscopy due to the lack of sensitivity of spirometry and imaging tests, is there any value in the use of spirometric flow-volume curves?

Reply: We appreciate your comment. While flow-volume curves have shown some promise in differentiating unilateral main bronchus obstruction from chronic obstructive pulmonary disease (Sun W et al. 2021), their sensitivity can be limited and the finding needs to be validated. In our practice, spirometry is not the primary diagnostic tool for bronchial stenosis. However, it can be valuable for monitoring lung function improvement after surgery.

Changes in the text: We have included this information in the Methods - Preoperative and postoperative management section of the revised manuscript: "A chest CT scan with 3D reconstruction of the tracheobronchial tree and spirometry were performed 1 year after surgery for monitoring lung function improvement."

Reference:

Sun W, Wang GF, Zhang W, Zhang H, Liu Y, Que CL. Characteristics of unilateral main bronchus obstruction and differentiation from chronic obstructive pulmonary disease by spirometry. *J Thorac Dis* 2021;13(4):2264-2275. doi: 10.21037/jtd-20-2649

Reviewer C

This is the review of the manuscript entitled "Long-Term Outcomes of Surgical Reconstruction for Post-Tuberculosis Tracheobronchial Stenosis: 6 A 7-Year Follow-Up in a Tuberculosis-Endemic Region".

This review is meant to be constructive and respectful of the authors' work. I appreciate the manuscript, and I have some issues that need revising.

The topic is certainly of interest, since there is little information regarding airway resection after tuberculosis infection.

The abstract is well written and adequately describes the study.

Introduction: Concise and directs the reader to the literature gap.

Methods:

Comment 1: There is not much information on how you indicate surgery for those patients. If a patient has a stenosis >50% and symptoms, the indication is clear. But for instance, how do you manage patients with severe stenosis that aren't symptomatic? Or that have a mild dyspnea on exertion, with no atelectasis or pneumonia?

We see a lot of patients like this. Do you dilate them? Observation only?

What is the rationale for surgery indication?

Reply: *Thank you for your question regarding the rationale for surgical intervention. In our center, patients with a bronchial stenosis of >50% without symptoms or having only mild dyspnea on exertion, and with no evidence of atelectasis or pneumonia on imaging, are closely observed only. This is because our patient population is not routinely screened for post-TB tracheobronchial stenosis, so most cases are diagnosed when symptoms or complications are already present.*

For patients with stenosis >50% and post-stenotic complications like pneumonia, consolidation, or atelectasis, interventional treatment is considered. All patients undergo bronchoscopy to evaluate the lesions and assess the feasibility of endobronchial interventions. Surgery is then indicated when these interventions are not feasible or have failed. We have clarified this information in the revised manuscript's Results section.

Changes in the text: *We have included this information in the Results section of the revised manuscript: "Surgery was indicated for these patients because endotracheal interventions were failed (2 patients) or lesions were deemed too complex for interventional bronchoscopy (46 patients)."*

Comment 2: Surgical technique should be one of the most important parts of the manuscript, but the description of the bronchial anastomosis is too concise. I believe a figure indicating the types of anastomosis performed would be good. Or good photos...

Reply: *We appreciate your suggestion regarding a more detailed description of the bronchial anastomosis technique. To address this, we have included a new figure (Figure 2) in the revised manuscript that illustrates the different types of anastomosis performed during the surgeries.*

Changes in the text: *We have added Figure 2 to present the types of anastomosis.*

Comment 3: The text is also a little bit confusing because you start the description with cervical disease (quite rare...) and move to intrathoracic... Maybe you should focus more on the intrathoracic description... Just an idea...

Reply: *Thank you for your suggestion. We agree that the original order of descriptions might have caused confusion. To improve clarity, we have reorganized the text accordingly.*

Changes in the text: *We have moved the paragraph describing tracheal stenosis (previously lines 72-77) to follow the section on bronchial stenosis (previously lines 78-82).*

Comment 4: Myer-Cotton classification refers to subglottic stenosis. I understand the concept used, but the classification should not be used for bronchial disease.

Reply: *We have acknowledged that the Myer-Cotton classification is used for subglottic stenosis. While the Freitag et al. classification exists, its complexity makes it less practical for our study. We therefore apply the Myer-Cotton classification to our data.*

Changes in the text: *We have revised the text to remove all the statements of Myer-Cotton in the Outcomes (line 121), Results (line 157), Table 2, and Table 6 (which has been moved to the Supplementary file). We only keep a statement that "Tracheobronchial stenosis was classified*

into four grades, which is in line with the Myer-Cotton grading system used for subglottic stenosis: mild (stenosis 0-50%), moderate (stenosis 51-70%), severe (stenosis 71-99%), and occlusion (stenosis 100%)” (lines 98-99 of the old manuscript).

Comment 5: Do you buttress the anastomosis with any tissue?

Reply: Thank you for your inquiry about the use of buttressing material for the anastomosis. In our study, we did not employ any tissue buttressing. This decision was based on the fact that all patients had received anti-TB therapy for at least three months and exhibited no signs of active infection. We are pleased to report that this approach yielded positive results, with no anastomotic leak or dehiscence observed in any patients.

Changes in the text: We have added this information in the Surgical technique section (“We did not use any tissue to buttress the anastomosis due to no signs of active infection.”) and Results section (“No anastomotic leak or dehiscence was observed.”).

Comment 6: In the cases that you performed hyoid bone release (I’m assuming that they are bronchial stenosis...)... Do you start with cervicotomy and then proceed with the thoracotomy, correct? So, the decision was made prior to the operation and based on the extent of the stenosis?

Reply: Thank you for your comment. In our study, hyoid bone release was only performed in one patient with **tracheal stenosis** due to the extensive resection length (>4.5 cm). All patients with bronchial stenosis did not require hyoid bone release, and the choice of surgical approach (cervicotomy for tracheal stenosis, thoracotomy for bronchial stenosis) depended on the location of the stenosis. We did not have any cases requiring both procedures simultaneously.

In our clinical practice, hyoid bone release is performed in cases with bronchial stenosis only when they have simultaneous long lesions in the trachea that require a long resection of the trachea. In such cases, we perform two separated operations, in which the tracheal resection was performed before the bronchial resection.

Changes in the text: We have clarified this information in the Surgical technique section in the revised manuscript by adding “tracheal” in the sentence “For tracheal resections greater than 4.5 cm, hyoid bone release was added”.

Comment 7: Did you have any anastomosis dehiscence?

Reply: As mentioned in our response to your Comment #5, we are pleased to report that no anastomotic dehiscence was observed in any patients. We have added this information to the Results section for clarity.

Changes in the text: We have added this information to the Results section.

Comment 8: When the entire bronchus is involved, what do you do? Did you perform in any patient a slide bronchoplasty?

Reply: Thank you for your question regarding the management of full bronchial involvement. In these cases, we thoroughly evaluate the patient pre-operatively using chest CT scans to assess lung completeness, lesion location, and length. This assessment is further complemented by intraoperative evaluation to determine the most suitable surgical approach.

Due to the prevalence of fibrotic lesions (94% our study population) and severe stenosis or occlusion, slide bronchoplasty was not a feasible option in our study. In our practice, we more commonly perform sleeve tracheal or bronchial resections for these cases. We have clarified this information and the rationale behind our approach in the revised manuscript’s Methods –

Surgical technique section.

Changes in the text: *We have added this information to the Methods – Surgical technique section: “Slide tracheoplasty or bronchoplasty was not performed in any patient due to the fibrotic lesions.”*

Comment 9: Do you do schedule bronchoscopy exams in the postoperative period?

Reply: *Thank you for your inquiry. We performed bronchoscopies at scheduled intervals (1 day, 1 month, and 1 year after surgery) to monitor patients’ recovery. Additionally, bronchoscopy was performed more frequently if any abnormalities, such as anastomotic stenosis or dehiscence, were identified during previous examinations.*

Changes in the text: *We have added this information to the Methods - Preoperative and postoperative management section: “We performed bronchoscopies at scheduled intervals (1 day, 1 month, and 1 year after surgery) to monitor patients’ recovery. Additionally, bronchoscopy was performed more frequently if any abnormalities, such as anastomotic stenosis or dehiscence, were identified during previous examinations.”*

Results:

Comment 10: The division of the paragraph according to the tables is odd. I would cite the tables along the text.

Reply: *Thank you for the comment. We have moved the citations of the tables to the end or middle of the paragraphs.*

Changes in the text:

Lines 139-146: removed “Table 1 shows the baseline characteristics of patients before surgery” and added “All baseline characteristics of patients before surgery are shown in Table 1” at the end of the paragraph.

Lines 147-158: removed “Table 2 shows the characteristics of the lesions on the imaging” and added “Full detailed characteristics of the lesions are shown in Table 2” at the end of the paragraph.

Lines 159-169: removed “Table 3 shows the surgical techniques and complications” and added “Details of surgical techniques and complications are in Table 3” at the end of the paragraph.

Comment 11: The text is good, and the results well described.

Reply: *We appreciate your comment.*

Comment 12: I don’t see the point of Figure 2. It adds little to the manuscript. It could be described in the text.

Reply: *We agree with your comment.*

Changes in the text: *We have removed Figure 2 and kept only the description in the text.*

Comment 13: I would exclude table 6. It is not the objective of the study and it is purely exploratory.

The discussion is concise and well-written and the references are adequate.

Reply: *Thank you for your comment regarding Table 6. We acknowledge that the information presented in this table is more exploratory in nature. To maintain focus on the core findings of the study, we have moved Table 6 to the Supplementary file. However, the data remains*

available for readers interested in further details.

Changes in the text: *We have moved Table 6 to the Supplementary file.*