

Peer Review File

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Reviewer A

The paper describes a typical case of tracheal stenosis after tracheotomy with secondary stenosis and a typical complication due to infection.

Postoperative surgical infection leading to tissue necrosis and dehiscence is the worst case of tracheal surgery, since the result of the procedure is identical to situation that should be resolved.

Comment 1: Patients after long standing intensive care treatment and tracheotomy are likely to be colonized by typical pathologic bacteria which may be multi-resistant to conventional antibiotics ([Influence of nosocomial infections on resection of tracheal stenosis after tracheotomy]. Wolter A, Ludwig C, Beckers F, Stoelben E. *Pneumologie*. 2012 Jan;66(1):7-11, Benign stenosis of the trachea.

Stoelben E, Koryllos A, Beckers F, Ludwig C. *Thorac Surg Clin*. 2014). Therefore, preoperative smear for culture is recommended for perioperative antibiotic treatment to avoid infection with his fatal outcomes. This crucial point of trachea surgery post intensive care patients is not touched.

Reply 1: Thank you for your suggestion. We did not mention it in the text due to length reason. Patient underwent bronchoscopy before surgical intervention and a bronchial washing was performed, finding no pathogens but normal flora. The tracheotomy appeared clean, a smear was made before surgery and it was negative. We'll add it in the text (line 136-140)

Comment 2: The endoscopic stenting may control the acute situation of relapsing stenosis but is not able to replace successful surgery with nearly complete cure.

The conclusion ends with "offering good palliative and definitive results without tracheostomy."

A patient with a stent in place cannot be defined as a good or definitive result. Chronic colonization and granulation tissue at the end of the stents require continuing treatment and interventions. Final result of your treatment would be visible after removal of the stent.

Reply 2: Thank you for your comment. We agree with you about the conclusion end "good result". Certainly, we'll change the text because we didn't reach our aim. However, in our experience, stent positioning is not associated with a high complication rate, as reported also by Galluccio et al (Interventional endoscopy in the management of benign tracheal stenosis: definitive treatment at long-term follow-up. *European Journal of Cardio-thoracic Surgery* 35 (2009) 429—434). He described stent positioning also in a restenosis after end-to-end anastomosis, with few cases of stent dislocation. In this sense, it is essential to choose the right diameter of the stent, because the stenosis itself keeps the stent in place. The stability reduces the probability of granulation tissue at the extremities of the stent.

Additionally, the patient must be informed about the necessity to perform nebulizer everyday, in order to maintain bronchial tree humidified and keep the stent clean. Thus, the patients can be followed-up with routine bronchoscopy after 1, 3 and then every six months. At the end of the 2-year follow-up, Galluccio et al. found a left stent in place in 31% of complex stenosis.

At the time of the article's writing the stent was still in place, with the aim to remove it 10-12 months later (as suggested in the literature)

(Line 60-64 and 358-362)

Reviewer B

In this study, the authors reported a case underwent multidisciplinary treatment for benign tracheal stenosis. For such a case, it is often hard to cure by just surgical intervention. In this case, addition endoscopic approach was also needed. I would like to congratulate the authors could finally archive a good result without re-tracheostomy. I have some comments listed below.

Comment 1. Overall, I felt all sections were too long. Especially, I think it is better to represent the minimum required information in case description and conclusion sections. Please make shorten and reconstruct.

Reply 1: Thank you for your suggestions. We'll try to reduce all sections, trying to maintain essential information, as suggested also in the Editorial Comment, in order to make them well understandable for the readers.

Comment 2. Line 31, 64, 73-73, 78, 82, 85, 92, 124 and 132; Personal information might be identified because age and date were clearly described. Should be changed.

Replay 2: Thank you. We changed the text.

Comment 3. Figures; There are so many represented. I recommend that Figure 1 and 2, 3 and 4, 5 and 6 should be combined each other. In Figure 2, vertical and horizontal lines should be deleted because it is hard to see. The stenosis site should be indicated with an arrow.

Reply 3: Thank you for your suggestions. We combined figure 1 and 2, figure 5 and 6. However we can not delete vertical and horizontal lines in figure 2 because they are laid out from the digital program.

Reviewer C

I congratulate the authors on an interesting and challenging case.

Regarding the manuscript, it is clear and well-written. Figures and videos are also of good quality.

Regarding the case itself, I have some remarks. And this maybe could be added to the discussion.

Comment 1: Firstly, was the patient on steroids? if so, what dosage? I ask this because of the myasthenia gravis.

Reply 1: Thank you for your comment. The patient was on steroid therapy at the moment of surgery. We discussed the eventual interruption of steroid therapy, but, after careful neurological evaluation, this hypothesis was rejected. We Added the relative information with precise dosage in section CASE DESCRIPTION, paragraph 5, lines 119.

Comment 2: This patient, in my institution, would not have been operated on. She had several prognostic factors for anastomosis dehiscence.

- Diabetes
- Long-segment stenosis (4cm)
- Corticoid use ? (not sure...)

It is important to remember that those prognostic factors are well-validated, and the risk of dehiscence increases greatly with such complications. Furthermore, more serious events such as trachea-innominate fistula and mediastinitis could occur. So, the discussion of operations x endoscopic treatment (stent, T-Tube) is valid.

Reply 2: We are fully aware of these negative prognostic factors. We discuss with the patient and his family about all possible therapies (surgical intervention, T-stent and tracheotomy maintenance), also specifying all possible adverse events of surgical treatment, including infection and re-tracheotomy). However, the patient rejected exclusive endoscopic treatment and was really motivated, choosing surgical intervention.

We'll add this information in section CASE DESCRIPTION, lines 120-123 and in section DISCUSSION line 274-277

Comment 3: A second point that I would like to comment. When the patient had the first restenosis, I believe that dilation and stenting would have been the better option, instead of just dilation. In post-op cases, the sooner you restore the patency of the airway, the better. The idea is that the operated area will heal over the stent, and hopefully remain patent.

Reply 3: Thank you for your comment. We agree with you about the sooner restoring of tracheal patency. We tried firstly with balloon dilatation, as reported also by D'Andrilli et al, in order to avoid tracheal laceration, as reported by Kim et al. . However, few days elapsed between the first attempt with rigid bronchoscope and stent positioning.

We add this in the DISCUSSION.

Overall, an interesting case.

Editorial Comments

This study reported a case of a tracheotomy and a subglottic stenosis, related with a previous recovery in an intensive care unit for a myasthenic crisis. The complex tracheal stenosis was treated with surgical intervention (resection/anastomosis). The endoscopic treatments were also required to treat the complication- a progressive restenosis. The process of therapeutic interventions and the corresponding prognosis were logical and clearly reported, which is useful in clinical practice. Below please see some suggestions.

1. Abstract

(1) In the “Abstract-Background”, please highlight the unique point of this manuscript. For the authors’ kind reference, consider specify the used multidisciplinary approach for the complex tracheal stenosis and the used endoscopic treatments for the complication- a progressive restenosis. Or, is this the first case regarding the use of multidisciplinary approach and endoscopic treatments for the complex tracheal stenosis patient?

Reply. Thank you for your comment. In our hospital, there is a close collaboration between thoracic surgeon and endoscopist, that originated from a communal background and it has been developing during several years. Tracheal stenosis are usually discussed in a multidisciplinary setting. So, the multidisciplinary approach doesn’t represent the unique point in this manuscript, however it could be seen as key for challenging cases. I suppose that the complexity of the case (the presence of miastenia gravis, the steroid therapy, the presence of tracheostomy and the length of resection) could be a distinctive requisite. We’ll try to emphasize this concept.

(2) In the “Abstract-Case description”, please provide a brief statement about the results and the follow-up information after receiving the endoscopic treatments.

Reply: Added in ABSTRACT-CASE DESCRIPTION lines 54 55

2. Introduction

In the introduction, also highlight the unique point of this manuscript based on comparison with existing evidence/similar cases.

Replay: We add it in the text line 88-95

3. Case presentation

Lines 112 and116: We suggest the authors provide the detailed information about the “daily medications” and “antibiotic therapy with Piperacillin/Tazobactam and Vancomycin”. Detailed information includes formulation, dosage, duration and so on.

Reply: Thank you for this suggestion. We added this information in section CASE DESCRIPTION, lines 159 230.

Line 144: What’s the meaning of the “both situations”? Please provide the detailed statement about it.

Reply 3: We provided details (lines 270-272