

Reviewer A

Comment 1: Table 2: There are so many information included. It is busy and hard to follow the detail. The important things of this table are that 1) there are some classifications and 2) there are a little bit difference among them. Therefore, I think there is no need to show classification criteria, the authors' name and their summarized comments are just showed.

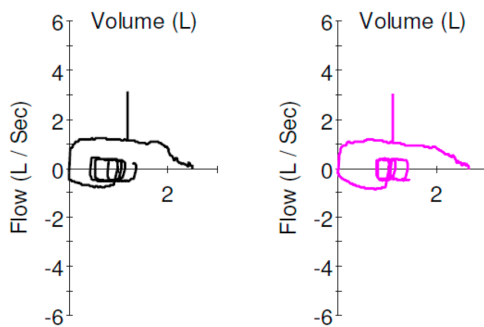
Reply 1: Thank you for the comment. Please note that this table has been reprinted from CHEST, 2016 Aug;150(2), 426-41, Murgu et al, Central Airway Obstruction: Benign Strictures, Tracheobronchomalacia, and Malignancy-related Obstruction, Copyright © 2016 (with permission from Elsevier). Indeed, this table is very comprehensive. The intent is to highlight the differences and similarities among the available classification systems described in the literature and make it a resource available for the readers who choose to use one or more of these systems.

Comment 2: Figure 1: Why did the authors represent these 3 curves? They look same.

Reply 2: Thank you for pointing this out as this issue require clarification. We wanted to show reproducibility of the flow volume loops with repeat testing. We have adjusted the picture to show two FV loops. The figure is now modified as reflected below. We also add this sentence to the Legend:

“The pattern was reproducible with repeated maneuvers.”

Changes:



Reviewer B

Comment 1:

34 Symptomatology

The science that studies the symptoms of diseases.^[1] I prefer just “Symptoms”

Reply 1: Agree. We have adjusted the text and it now reads as “Symptoms” on page 3, line 38.

Comment 2:

40 Risk Factors

High cuff pressure 50 in the ETT cuff (30 cm H₂O)

It is the main and most frequent cause. I think it should be highlighted.

Reply 2: We agree that this is one of the most common and modifiable risk factors associated with histologically benign tracheal stenosis. We have emphasized this on page 4, line 61-63 that now reads as below.

“Risk factors for post-intubation tracheal stenosis (PITS) include traumatic intubation, long duration of intubation (> 14 days), prone positioning, and high cuff pressure in the ETT cuff (> 30 cm H₂O), which is likely the main and the most frequent cause.”

Comment 3:

150 Extent and Location

we prefer the analysis by percentage

the length of stenosis divided by the length of the trachea.

Most frequent is around 20-30%

stenosis 3 cm

trachea 15 cm

3/15 - 20% - it is the tracheal percentage will be resected

Above 40% - high risk of complications

Reply 3: Thank you for bringing this up to our attention. The literature on the topic emphasizes the length reported in centimeters as a predictor of outcomes, as illustrated in one of the largest study of 589 patients by Wright and colleagues. Your perspective is very interesting, which we are addressing in the revised manuscript by rephrasing the text on page 9, lines 194-195:

“Some operators prefer to use the ratio of the stenotic segment extent to the length of the trachea as a criterion for surgical selection (i.e. stenosis involving >40% of tracheal length having high risk of complications)”

Comment 4:

233 Surgical resection of the stenotic area is the procedure of choice for most patients with benign tracheal stenosis

Not at the inflammatory fase - Surgery only after stabilized and mature stenosis without inflammation. Usually after 6 months of the initial extubation that caused the stenosis

Reply 4: Agree. We have adjusted the text to reflect this, and it now reads as below, on page 5, lines 95-97.

“Furthermore, a definitive surgical intervention is typically deferred during the acute inflammatory phase and is considered once the stenosis has matured and inflammation has subsided.”

Reviewer C

Summary:

In their article, the authors review the presentation of patients with benign tracheal stenosis and the role of bronchoscopy in the management of this disease process through the lens of corresponding currently published literature review.

General Comments:

Comment 1: This article focuses on the review on benign tracheal stenosis and this should be clarified in the title.

Reply 1: Agree. The title has been changed to “The Role of Bronchoscopy in the Multidisciplinary Approach to Benign Tracheal Stenosis” on page 1, line 2

Comment 2: The authors allude to the role of radial EBUS on several occasions, but this evaluation and why it is done should be clarified more as a bronchoscopist’s tool in evaluating tracheal stenosis. For example, clarifying why the tracheal wall diameter/hypertrophy/cartilage integrity is important in considering advanced options.

Reply 2: We have amended and added text on pages 12, lines 257-261 to further clarify the role of radial EBUS in the evaluation of tracheal stenosis. The revised text now reads as below:

“With the use of EBUS intra-operatively, a bronchoscopist can visualize hypertrophic tissue thickness and cartilage structure to determine integrity. Cartilage destruction determines the complexity of stenosis and could predict poor response to dilation alone. The location and thickness of stenotic tissues can also guide treatment strategies including choosing optimal site for laser or electrocautery radial incisions, or intralesional steroid injections.”

Comment 3: The authors discuss silicone stents as a preference in cases of tracheal

stenosis needing stents and the black box warning regarding uncovered bare metal stents; however mention should be given to potential use options of the newer generation covered SEMs as their use has increased recently.

Reply 3: Thank you for your suggestion. We agree with you while acknowledging that studies on long term safety of SEMs in benign tracheal stenosis are limited. We have added text to reflect this on pages 21, lines 468-478. It now reads as below.

“Use of Self-expanding metallic stents in Benign Tracheal stenosis

Recently, a third generation of metallic stents which are fully covered and self-expandable are being considered in patients with benign tracheal stenosis. A study of 30 patients with 40 stents showed a clinical success rate of 40% (no additional interventions after elective stent removal) but 50% of the stents had to be removed secondary to stent related complications after a median 77 days [90]. Another study of 19 patients with fully covered SEMs for benign tracheal stenosis had stents removed in all patients secondary to complications at a median of 3 months [91]. Based on the available limited studies on long term efficacy and safety, fully covered SEMs should not be considered as the first choice of stent in management of inoperable benign tracheal stenosis but are an option in scenarios where a rigid bronchoscopy cannot be performed for inserting silicone stents. These patients should be closely followed up for potential complications.”

Comment 4: Given that the article’s general focus is on the “Role of Bronchoscopy” in management, I would encourage the authors to more assertively emphasize this in the introduction of the article and throughout, both as a primary evaluation tool in addition to its use for therapeutic options. Bronchoscopy is really the gold standard for evaluation, measurement and planning regardless of the ultimate approach taken and has a primary role in the multidisciplinary management. This is stated in the conclusion, but could be overall more present throughout the article.

Reply 4: We agree with your suggestion. We have amended the introduction and added text on page 3, lines 33-34 and it now reads as below.

“Bronchoscopic evaluation of tracheal stenosis is critical to the assessment of the morphology, extent, and severity of stenosis, and is considered as the gold standard before pursuing any treatment options.”

Specific Comments:

Comment 1: On page 3, the sentence on lines 37-38 is incomplete and should be re-written for clarity.

Reply 1: Thank you for catching this typo. This has been amended and now reads as below on page 3, lines 40-43.

“Patients with CAO share symptoms with other obstructive lung diseases and typically present with dyspnea, wheezing, cough, and even cough syncope. In cases of severe tracheal stenosis, patients can have stridor, dysphagia and dysphonia, especially for lesions involving the subglottis.”

Comment 2: One page 3, under the subheading of “Risk Factors”, the first sentence should be amended to reflect the fact that this is a proposed potential mechanism of injury and stenosis, but not necessarily known true for all etiologies.

Reply 2: Agree. This has been amended and now reads as below on page 3-4, lines 45-60:

“Benign tracheal stenosis has varied etiologies including gastro-esophageal reflux disease (GERD), airway infection, radiation, inhalation or chemical injury, systemic autoimmune disorders (granulomatosis with polyangiitis, sarcoidosis, relapsing polychondritis), and iatrogenic due to trauma from airway manipulation (endotracheal intubation or tracheostomy). A potential mechanism for the development of stenosis is an altered inflammatory response to injury, ischemia of the tracheal mucosa, and excessive scar formation. Associated cartilage destruction leads to full thickness and/or concurrent tracheomalacia (Table 1) [1, 3].”

Comment 3: In the first paragraph on page 8 (lines 135-139) the authors suggest retracting an ETT, using an LMA and considering moderate sedation, all of which are appropriate in some cases for evaluation, but specific note should be made of the need for careful selection of these methods depending on the severity of the suspected tracheal stenosis. For example with a very severe tracheal stenosis a moderate sedation bronchoscopy may not be appropriate. Some of these evaluations may need to be carefully conducted by an interventional pulmonologist/advanced bronchoscopist/surgeon in the appropriate level of care with the appropriate level of back up equipment and support.

Reply 3: We agree with your comment. We have added text and it now reads as below on page 8, lines 166-169.

“However, in patients with suspected severe tracheal stenosis, the ideal choice of anesthesia for bronchoscopy (moderate anesthesia vs general anesthesia) for airway evaluation should be selected after carefully assessing symptoms and pre-bronchoscopy imaging, when available. It is also essential to consider local expertise and availability of equipment for managing potential airway emergencies.”