

## Peer Review File

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### **Reviewer A**

#### **Comment 1:**

Line 78 A silicone tracheal stent is an effective treatment method for severe airway stenosis caused by benign thyroid tumors. I suggest “may seem” instead of “is”. As the authors reported thyroidectomy is necessary for definitive treatment

#### **Reply 1:**

Thank you for your comment. In accordance with your comment, we added the improved sentence as following to the 77-78<sup>th</sup> line.

#### **Changes in the text:**

A silicone tracheal stent may seem an effective treatment method for severe airway stenosis caused by benign thyroid tumors.

#### **Comment 2:**

The authors should describe precisely preoperative course.

Did the patient undergo preoperative bronchoscopy after CT scan, before deciding for stent placement? Was the intervention programmed or was it emergency performed ?

#### **Reply 2:**

Preoperative bronchoscopy was not performed before stent placement because this resulted in airway edema and the possibility of complete airway obstruction. We carefully considered the surgical procedure for stent placement based on CT images. Although the patient's airway had narrowed, she was able to maintain her respiratory status. Therefore, stent placement was performed on a semi-emergency basis. In accordance with your comment, we added the following sentences to the 110-111<sup>th</sup> lines.

#### **Changes in the text:**

Although the trachea was narrowed, the patient could maintain her respiratory status. Therefore, stent placement was performed on a semi-emergency basis.

#### **Comment 3:**

How much long was the stenosis? The distance from vocal folds?

How long was then stent? 11 cm? It is not clear. At postoperative chest rx it don't seem so.

What type of suture was used? Absorbable or not? Tangled? or not? 0/0 or 0/1 ...? describe the technique. Did the site of the suture with skin develop some granulomas or abscess? Why the authors decided to suture the stent with skin? Suture fixation of tracheal stents are recently reported in few papers for the treatment of upper trachea stenosis. The distance for vocal cord is important to understand the reason for percutaneous suturing

**Reply 3:**

The total length of the tracheal stenosis was 1.3 cm, and the oral side of the tracheal stenosis site was 5.5 cm from the vocal cords. The Dumon tube® with an outer diameter of 15 mm and a length of 11 cm was cut to a length of 4 cm and placed under fluoroscopy avoiding the vocal cords. In accordance with your comment, the following modified sentences were added to the 102-104<sup>th</sup> line and the 115-118<sup>th</sup> line.

A skin incision was made on the anterior neck at the level of the sternal notch to expose the trachea. And the trachea and stent were directly sutured and fixed using 3-0 nylon suture. To prevent upper airway obstruction, the suture was placed at the level of the sternal notch, ensuring sufficient distance from the vocal cords. In accordance with your comment, we added the following modified sentence to the 120-122<sup>nd</sup> lines.

One of the causes of poor granulation formation is friction of the trachea due to movement of the stent (Reference 3, 6 and 9). Stent migration is more frequent with silicone stents (Reference 10). To prevent stents from migrating, the stent and the trachea were sutured and fixed. Suture fixation of stents was reported as an effective measure to prevent stents from migrating (Reference 11). We have already described about the effectiveness of suture fixation in the discussion section (182-186<sup>th</sup> line).

**Changes in the text:**

(the 102-104<sup>th</sup> line)

The total length of the tracheal stenosis was 1.3 cm, and the oral side of the tracheal stenosis site was 5.5 cm from the vocal cords.

(the 115-118<sup>th</sup> line)

The length of tracheal stenosis was measured using CT and transparent images, and the Dumon tube® with an outer diameter of 15 mm and a length of 11 cm was cut to a length of 4 cm and placed under fluoroscopy avoiding the vocal cords.

(the 120-122<sup>nd</sup> line)

A skin incision was made on the anterior neck at the level of the sternal notch to expose the trachea. To prevent stent migration, the trachea and the stent were directly sutured with 3-0 nylon suture.

**Comment 4:**

The goiter was so large that tracheotomy was not considered safe due to the difficult to reach the trachea. How did the authors suture the tracheal stent to the skin?

**Reply 4:**

We appreciate the Reviewer's comment on this point. There were unclear and incorrect expressions in original manuscript. In accordance with your comment, the following modified sentences were added to the 120-122<sup>nd</sup> line.

**Changes in the text:**

A skin incision was made on the anterior neck at the level of the sternal notch to expose the trachea. To prevent stent migration, the trachea and the stent were directly sutured with 3-0 nylon suture.

**Comment 5:**

Granulation tissue is one of the most frequent complication after stent positioning and it grow slowly... thus also dyspnea and stridor improve gradually. Did the patient undergo routinely postoperative bronchoscopic control?

**Reply 5:**

At the first medical examination one month after stent placement, there were no problems with the patient's breathing status. Therefore, bronchoscopy was not performed. At the second medical examination 3 months after stent placement, stridor was heard, and the patient had dyspnea. In accordance with your comment, the following sentence was added to the 125-126<sup>th</sup> line.

**Changes in the text:**

At the medical examination one month after stent placement, the patient's respiratory status was stable.

**Comment 6:**

Line 129-131 is repeated in line 131-133

**Reply 6:**

Although we checked our manuscript according to your comment, there were no repeated sentences. And the guideline for authors requires that these sentences about the Ethical statements should be described in the Case Presentation section.

**Comment 7:**

Line 117 119 s. "Immediately after tracheal stent insertion, the stent lumen was narrow" did the authors use any dilatation balloon?

Line 191 193 . Immediately after stent placement, the stent insufficiently expanded and appeared to be narrowed. However, the stent expanded sufficiently over time and the airway lumen was secured

“ However, the stent gradually expanded and a sufficient lumen was confirmed” How much time did the stent require to open? Considering the presence of the stenosis and the presence of silicone stent in the lumen of the trachea, the stent should be open in few minutes. What do the authors mean for “ the stent expanded sufficiently over the time”?

**Reply 7:**

Thank you for your comment. The stent was sufficiently expanded within a few minutes without any procedures such as balloon dilation. We added the following improved sentence to the 119-120<sup>th</sup> line.

**Changes in the text:**

Immediately after tracheal stent insertion, the stent lumen was narrow. However, the stent gradually expanded and a sufficient lumen was confirmed within a few minutes (Figure. 2).

**Comment 8:**

Line 188 Since CT findings showed severe tracheal stenosis, tracheal intubation and the insertion of a bronchoscope were predicted to be difficult. This sentence is in contradiction with “the tracheal lumen may be able to be widen because these tumors are softer than malignant tumor”.

**Reply 8:**

Thank you for your comment. Because CT showed severe tracheal stenosis, tracheal intubation and the insertion of a bronchoscope were predicted to be hard. However, the bronchoscope smoothly passed through the airway stenosis site and was easily replaced with a rigid bronchoscope. Finally, the stent expanded sufficiently, and the airway lumen was secured. Therefore, we considered that in tracheal stenosis caused by benign thyroid tumors, the tracheal lumen may be able to be widen because these tumors are softer than malignant tumors. We have already described and discussed this process of tracheal dilation in the discussion section (192-199<sup>th</sup> line).

**Comment 9:**

Line 201 A silicone tracheal stent ..... "may be considered ".....an effective treatment method for severe tracheal stenosis caused by benign thyroid tumors.

This is a case-report paper and not a case-series or literature review, thus general conclusion can not be emphasised with any certainty

**Reply 9:**

Thank you for your comment. We added the improved sentence as following to the 208-209<sup>th</sup> line.

**Changes in the text:**

A silicone tracheal stent may seem an effective treatment method for severe tracheal stenosis caused by benign thyroid tumors.

## **Reviewer B**

### **Comment 1:**

The authors are presenting a case of benign tracheal stenosis from external compression from a massive goiter in a geriatric patient who was not a surgical candidate.

The authors conclude that airway stent placement is an effective intervention in patients with central airway obstruction secondary to goiter. While this is true, I believe not enough emphasis is given that this intervention should be done as a last resort. The ideal treatment for this condition should be surgery or radioiodine. Airway stenting should be used only as a bridge to definitive treatment or a bridge to death. While we understand that the authors do not mean to communicate that airway stenting is a treatment for this condition, more emphasis should be on its role as a bridge therapy.

### **Reply 1:**

We appreciate the Reviewer's comment on this point. In accordance with your comment, we added the following improved sentences to the 200-201<sup>st</sup> line the 202-205<sup>th</sup> line.

### **Changes in the text:**

(200-201<sup>st</sup> line)

Because the patient was extremely old, the radical treatment such as thyroidectomy or radioiodine was not performed.

(202-205<sup>th</sup> line)

A silicone tracheal stent is considered an effective treatment method for tracheal stenosis due to benign thyroid disease to secure the airway in patients unable to undergo emergency surgical thyroidectomy from the perspective of their general condition or complications.

### **Comment 2:**

I would love to hear why the authors did not consider the patient for radioiodine or radiofrequency ablation.

### **Reply 2:**

Radiation therapy is an effective treatment method for Graves' disease because it can be expected to control thyroid function and reduce goiter size. However, one of the complications is swelling of the goiter after radioiodine therapy (Eur Thyroid J. 2018 Aug;7(4):167-186.). Because this patient had severe airway stenosis and there was a possibility of complete airway obstruction due to the swelling of the goiter, radiotherapy was not performed.

**Comment 3:**

I would also prefer to hear some clarification as to why the authors decided to suture the tracheal stent with the first insertion. Tracheal stent suturing is not generally recommended unless the patient has recurrent migration events or a high risk of migration is anticipated.

**Reply 3:**

One of the causes of poor granulation formation is friction between trachea and stent due to movement of the stent (Reference 9). To prevent poor granulation formation, the stent and the trachea were sutured and fixed. And in this case, a silicone stent was placed in the upper airway. Extensive migration of stent near the vocal cord could cause immediate asphyxia (reference 10). Therefore, suture fixation of stents was considered as an effective measure to prevent stents from migrating. In accordance with your comment, we added the following improved sentence to the 183-188<sup>th</sup> line.

**Changes in the text:**

Granuloma formation is the most common complication that occurs more frequently with metal stents [6, 9], and one of the causes of granuloma formation is friction between trachea and stent due to movement of the stent [9]. Stent migration is more frequent with silicone stents, with a reported incidence of 25% [10], and extensive migration of airway stent near the vocal cord could cause immediate asphyxia [10]. Therefore, measures against migration are necessary.