

Herniation of Tracheal Posterior Wall into Silicone Tracheal Tube Hole as a Granulation Tissue or Mass (Rare Complication of Silicone Tracheostomy Tube)

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ABSTRACT

Granulation tissue is a known complication of tracheostomy. Herniation of the tracheal posterior wall from the hole of silicone tube can mimic mass or granulation tissue. We report the successful management of a patient with a large mass like tissue in the posterior wall of the trachea with bronchoscopy. In the second look the mass like tissue was disappeared.

Keywords: Granulation, Herniation, Tissue Silicone tracheostomy tube, Tracheal wall

INTRODUCTION

Long-term tracheostomy has many complications such as hemorrhage, infections, tube obstruction and even rarely can result in Carotid-Tracheal Fistula. Granulation tissue formation is a rare complication that causes tracheal stenosis and obstruction and it mostly develops in the edge region of the stent which is difficult to manage. Late complications can occur in up to 65% of cases (Epstein, 2005, Hu et al., 2011 and Shylendran et al., 2016). In another study, a long-term use of tracheostomy was reported to result in about 67% of obstructive airway lesions and also caused 14% of tracheostenosis (Law et al., 1993). In a study by Eom et al., it has been claimed that the tracheal wall thickness defined on Computed Tomography (CT) scan may be associated with granulation tissue formation after silicone stenting (Eom et al., 2013). Other origins for this circumstance (Tracheostomy tube Obstruction) are thick secretions, blood clots, passage of the tube into a paratracheal soft-tissue plane or by the positioning of the orifice of the tube against the tracheal

wall. Also partial occlusion due to the posterior membranous portion of the trachea and the lateral tracheal wall protrusion in the distal lumen of the stent is more seen in obese patients (Feller-Kopman, 2003). There are few data about the time of routine tracheostomy tube change. The first tracheostomy tube substitution should be performed 1-2 weeks after the tracheostomy and is usually dependent on the tracheo-cutaneous tract maturation. A malpositioned tube can be a source of patient distress and ventilator asynchrony. Airway endoscopy can help ensure the optimal positioning of a replacement tracheostomy tube (White et al., 2010).

CASE PRESENTATION

The patient was a 41-year old female admitted for arterio-venous malformation surgery. She had been in the intensive-care unit for two months and had a tracheostomy under the mechanical ventilator. She was discharged with silicone tracheostomy tube. Her mental status was normal, and she did not have any mental problem in the last year.

ORIGINAL ARTICLE
PII: S2322-47891800001-8
Received 10 Jan. 2018
Accepted 30 Feb. 2018

She had not removed the inner cannula for a long period, and she referred to the pulmonary clinic of Imam Reza Hospital, Tabriz, Iran, for decannulation. Fiberoptic bronchoscopy was done; there was a large bluish incarcerated mass-like tissue in the posterior wall of the trachea, bulged from the posterior hole of the tube that fixed silicone tube to the tracheal wall (Figure 1). With the bronchoscopic guide, we pushed the mass backward to the hole of the silicone tube and removed it (Figure 2) so the mass was disappeared (Figure 3) and the posterior wall showed ischemic appearance because of incarceration in tube hole of silicone tube (Figure 4). This condition can increase the risk of laceration and spontaneous perforation.



Figure 3. After pushing the mass like tissue by bronchoscope, the mass was disappeared



Figure 1. Bronchoscopic view of the lesion. The small arrow shows large bluish incarcerated mass like tissue in the posterior wall of the trachea. The large arrow shows the inner hole of silicone tracheal tube.



Figure 4. The arrow shows the ischemic tissue of the posterior wall of trachea while new tracheostomy is inserted.



Figure 2. The small arrow shows the mass pushed forward. The large arrow shows the hole of inner of silicone tracheal tube.

DISCUSSION

Granulation tissue is the late complication of tracheostomy so the time of removing tracheostomy tube is important. It has been shown that changing tracheostomy every 2 weeks, would reduce the number of patients required for surgical intervention due to granulation tissue formation (Yaremchuk, 2003).

Tracheal wall herniation into the silicone tube hole appears as the similar granulation tissue so it's important not to mistaken the granulation tissue or mass because the approach of diagnosis and doing any procedure such as biopsy and laser therapy will have harmful complication

such as bleeding, perforation, mediastinitis and etc. Matsuoka et.al has recently reported a case of tracheal restenosis after tracheal intubation, had undergone tracheal resection and placement of a Self-Expandable Metal Stent (SEMS). This case was treated by tracheotomy and insertion of a silicone T-tube. In this study it has been declared that considering the possibility of restenosis following placement of a SEMS, using a silicone stent is preferred (Matsuoka et al., 2012). In a study done by Gaissert et al. (2003) 15 patients with benign airway obstruction secondary to a metal airway stents insertion were assessed and treated by bronchial resection with closure of an esophageal fistula (1 patient), tracheostomy tube in unresectable lesions of 3 patients and resection in 10 patients with resectable lesions. However, it has been claimed that curative tracheal resection is technically difficult in these stent-induced injuries (Gaissert et al., 2003). In a case reported by Singhal et al. complete closure of tracheotomy tube as a result of posterior tracheal wall protrusion into the tracheotomy tube in each inspiration was seen. In that case, the patient suddenly developed respiratory distress and tachycardia. The condition was confirmed by fiber optic bronchoscopy and the treatment done by removing the tracheotomy tube over a bougie and replacing with a smaller tracheotomy tube (Singhal et al., 2013). In this case, we reported a 41-year-old female with a long-term use of silicone tracheostomy tube that resulted in formation of a large bluish incarcerated mass like tissue in the posterior wall of the trachea, protruding into the posterior hole of the tube. We managed this condition by pushing the mass into the hole of the silicone tube and removing. To the best of our knowledge, there is no any other similar complication in the literature that has been managed by bronchoscopy, so we can name it as rare complication of silicone tube insertion, especially in a long period without adequate caring. We recommend the use of grid in the structure of tracheotomy tube to avoid such mass formation and the following complications.

CONCLUSION

Tracheostomy is a lifesaving procedure. However, there are some preventable complications that can be prevented by educating the patient in the right way, so it's important to educate the patient and care takers about caring of the tracheal tube and the adequate time of removing it. Finally, we managed this case without any remarkable complications and bronchoscopic removal of this rare type of lesions can be considered.

DECLARATION

Acknowledgements

We would like to thank Dr. Fatemeh Seifar for her help and support for manuscript preparation.

Competing interest

The authors declare that there is no competing interests.

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