Massive gastric distension following tracheobronchial Y-shaped self-expanding metallic stent placement for large tracheoesophageal fistula

Sir,

Tracheoesophageal fistula (TEF) is a commonly encountered complication in patients with malignancy. Treatment of TEF includes palliation in the form of placement of airway stent and performance of gastrostomy or jejunostomy for feeding. We recently encountered an uncommon complication following the placement of a tracheobronchial Y-shaped self-expanding metallic stent (Y-SEMS).

A 16-year-old female was referred to pulmonary medicine services due to persistent cough following eating. She was diagnosed as a case of Hodgkin's lymphoma on mediastinal mass biopsy and had received eight cycles of chemotherapy. She had progressive disease and was planned for salvage chemotherapy. Flexible bronchoscopic examination revealed a large TEF near carina extending into the right main bronchus [Figure 1a]. Given the progressive nature of primary illness and the large size of fistula, we planned to place a covered Y-SEMS (rather than a silicon stent). She underwent a covered Y-SEMS (Ottomed Y stent; Mitra and Co., New Delhi, India) placement under general anesthesia. Postprocedure bronchoscopy revealed a complete covering of tracheoesophageal fistula (TEF), and the patient was extubated. On the next day, the patient had marked cough and shortness of breath. She was diaphoretic and had the use of accessory muscles of respiration. The room air oxygen saturation dropped to 80%, and she had an impending respiratory arrest. Immediate endotracheal intubation was done, and positive-pressure ventilation was initiated. Because of the emergent nature of intubation, it was not done under bronchoscopy guidance. Stent occlusion due to mucous plug or stent displacement was thought to be the possibilities. A check flexible bronchoscopy performed ten minutes later demonstrated self-expanding metallic stent (SEMS) in situ without any displacement, mucous plug, or airway fistula. The endotracheal tube was also seen within the metallic stent. One hour following initiation of mechanical ventilation, abdominal distension was noted, and abdominal examination demonstrated tympanic note on percussion. At that time, ventilator graphics demonstrated a significant leak from the circuit. A bedside chest and abdominal radiograph was performed, which demonstrated a large radiolucent abnormality suggestive of massive gastric distension [Figure 1b]. An urgent esophagoscopy was performed with demonstrated a fistulous communication between the esophagus and right main bronchus. The insertion of a nasogastric tube led to the rapid relief of abdominal distension. After the esophagoscopy demonstrated the fistula and gastric distention was relieved, we performed repeat bronchoscopy. With careful examination, it was seen that the medial wall of the right limb of SEMS was not in complete contact with the bronchial wall, and that was the probable site of air leak into the esophagus. The patient, later on, succumbed to refractory septic shock due to aspiration pneumonia.

Airway fistulas due to lymphoma are uncommon. It usually occurs in advanced stages with active lymphoma at the fistula site. Fistula can also occur at the initial presentation, following treatment, or at the time of recurrent disease. The treatment for the same varies depending on primary disease status and usually includes airway/esophageal stenting or surgical closure in case disease is in remission. Airway stents are not a permanent solution to the problem of fistula. It helps in maintaining airway patency and preventing aspiration until the time a definite management plan is in place. For benign fistula such as due to tuberculosis, stents work as bridge therapy till medical therapy takes care of the disease, as many of these may require surgical repair eventually. For malignant fistulas, airway stenting is a palliative procedure rather than a definite treatment option. The complications due to stent placement may vary from stent misplacement, stent blockade, stent fracture, and restenosis to stent migration and expulsion. Massive gastric distension not been described as a complication following Y-SEMS placement for TEF, and



Figure 1: (a) Flexible bronchoscopic view of the tracheoesophageal fistula at carina. (b) Chest and abdomen radiograph showing Y-shaped self-expanding metallic stent with the endotracheal tube in place (yellow arrow) and massive gastric distention (white arrowheads)

it has been described in patients with anorexia nervosa, bulimia, nutritional deficiencies, diabetes, and trauma.^[1] This condition usually presents as an acute abdomen and may require surgical management.^[2] In our patient, this likely occurred due to fistulous communication despite stent placement, which was confirmed on esophagoscopy subsequently. Radial expansion force of SEMS could have led to an increase in the diameter of the right main bronchus, causing an increase in the fistula. The initiation of positive-pressure ventilation led to the rapid flow of air into the esophagus-stomach. Considerable leakage from the airway to the esophagus can be suspected from ventilator graphics as it will show a significant leak in the volume-time scalar on ventilator screen. This stent was standard sized, though a customized stent placement can avoid such a complication. Appropriate sizing of the stent is of paramount importance to ensure closure of the fistula. A Gastrografin study may also help in identifying any leaks to prevent subsequent aspiration. Timely identification of massive gastric distention is essential as it may lead to gastric wall necrosis, causing perforation and need for surgical treatment.^[3]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/ her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship Nil.

Conflicts of interest

There are no conflicts of interest.

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Submitted: 19-Jan-2020	Revised: 05-May-2020
Accepted: 06-May-2020	Published: 31-Dec-2020

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Access this article online	
Quick Response Code:	Website: www.lungindia.com
	DOI: 10.4103/lungindia.lungindia_36_20

How to cite this article: Mittal S, Madan K, Mohan A, Tiwari P. Massive gastric distension following tracheobronchial Y-shaped self-expanding metallic stent placement for large tracheoesophageal fistula. Lung India 2021;38:92-3.

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