

Erosion of esophageal stent into left main bronchus causing airway compromise

S Aneeshkumar, L Sundararajan, Rajan Santosham¹, Rajkumar Palaniappan², Ubal Dhus³

Departments of Respiratory Medicine, ¹Thoracic Surgery, ²Bariatrics and Gastrosurgery, ³Medical Gastroenterology, Apollo Hospitals, Chennai, Tamil Nadu, India

ABSTRACT

Covered or uncovered self-expanding metal stents are currently used for the palliative treatment of neoplastic esophageal strictures or compressions and esophageal leaks or fistulas due to malignancies. Erosion of esophageal stents into the respiratory tract is a rare complication and that too has been reported mostly as an early complication within few days or weeks. Here, we present the case of a 31-year-old female, who presented with a late complication of an esophageal stent eroding into the left main bronchus causing respiratory distress. She was stented for a benign corrosive esophageal stricture following caustic soda ingestion 3 years ago. She underwent a thoracotomy and closure of esophagobronchial fistula along with laparoscopic esophagectomy and gastric pull through. Postoperatively, patient developed an anastomotic leak which was corrected by placing a temporary stent.

KEY WORDS: Breathlessness, erosion of esophageal stent into the left main bronchus, esophagobronchial fistula, laparoscopic esophagectomy and gastric pull through, temporary stent

Address for correspondence: Dr. L Sundararajan, Department of Respiratory Medicine, Apollo Hospitals, 21, Grems Lane, Off Grems Road, Chennai - 600 006, Tamil Nadu, India. E-mail: sundar1967@gmail.com

INTRODUCTION

Since the insertion of the first primitive esophageal stent in 1885, indications for the use of covered or uncovered self-expanding metal stents (SEMS) have gradually expanded to include a variety of tumorous esophageal obstructions or compressions, malignant esophageal perforations, and tracheoesophageal fistulas (TOF).^[1] The success rate of fluoroscopically or endoscopically inserted esophageal stent is around 100% and periprocedural complications such as hemorrhage, perforation, and infections are extremely rare.^[1] Acquired TOF is rare, and its primary causes are either iatrogenic usually following intubation injury, or malignant in the case of extensive neoplastic disease invading both the esophageal and tracheal walls.^[2] Acquired nonmalignant TOF are even rare, the causes being complications of mechanical

ventilation^[3] or indwelling tracheal or esophageal stents^[4] complications from prior tracheal or esophageal surgery,^[5,6] granulomatous mediastinal infections^[7] trauma, iatrogenic injuries,^[3] and caustic ingestion.

CASE REPORT

A 31-year-old female presented with c/o progressive breathlessness since 6 months and recurrent episodes of cough with streaky hemoptysis since 2 months. She was initially evaluated elsewhere. Fiberoptic bronchoscopy (FOB) showed a tumor mass obstructing the left main bronchus (LMB). A biopsy was inconclusive, and, hence she was referred to our institute for further management. She has had an esophageal stent inserted for corrosive stricture of esophagus 3 years ago.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Aneeshkumar S, Sundararajan L, Santosham R, Palaniappan R, Dhus U. Erosion of esophageal stent into left main bronchus causing airway compromise. Lung India 2017;34:76-8.

Access this article online	
Quick Response Code: 	Website: www.lungindia.com
	DOI: 10.4103/0970-2113.197114

Chest examination revealed few crepitations in the left base. Complete blood count and liver and renal function were within normal limits. Pulmonary function test showed a restrictive pattern. A computed tomography (CT) scan of the thorax was done, which showed the esophageal stent eroding into the LMB [Figure 1]. There was no evidence of any major thoracic vessel invasion in the contrast CT scan. FOB was performed which showed the stent almost completely obstructing the LMB and mimicking a tumor mass [Figure 2]. Upper gastrointestinal endoscopy was performed in which only the upper part of the stent was visible, and the rest of the stent was embedded into the esophagus and covered with granulation tissue [Figure 3]. Since the stent could not be removed endoscopically, the decision for surgical removal was made after discussion with the thoracic and gastro intestinal surgeons.

The patient underwent thoracotomy with closure of the esophagobronchial fistula along with laparoscopic esophagectomy and gastric pull through. The

esophagogastric anastomosis was done in the chest. Postoperative period was uneventful. Repeat bronchoscopy showed a patent LMB. Patient's symptoms improved, and she did not have any hemoptysis after the surgery. She was started on liquid diet 5 days after the surgery, following a gastrografin study which showed no leak.

On the 4th day after starting a liquid diet (postoperative day 9), she developed high grade fever along with cough and breathlessness. Repeat CT scan with oral contrast revealed a microleak at the anastomotic site with minimal mediastinal collection [Figure 4]. She was started on appropriate antibiotics based on the culture reports. The mediastinal collection drained through the thoracotomy incision. A temporary esophageal stent (covered megastent from NITI) was inserted. She improved with the above measures, and a repeat CT with contrast showed no leak. She was gradually started on a normal diet and was discharged with advice to review after 2 months for removal of the temporary stent.

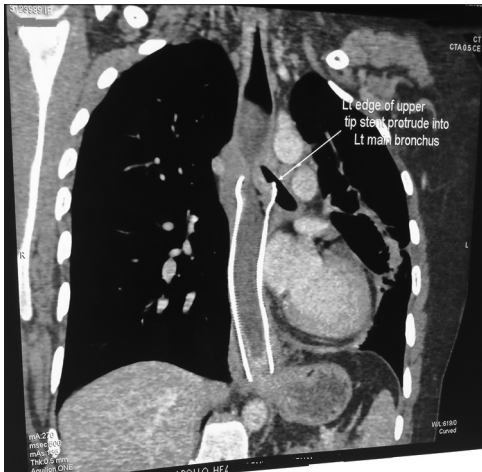


Figure 1: Computed tomography scan showing esophageal stent eroding into left main bronchus



Figure 2: Fiberoptic bronchoscopy showing the stent almost completely obstructing the left main bronchus mimicking a tumor mass



Figure 3: Endoscopic image showing only a part of the stent, remaining part of the stent is completely embedded in the esophageal mucosa

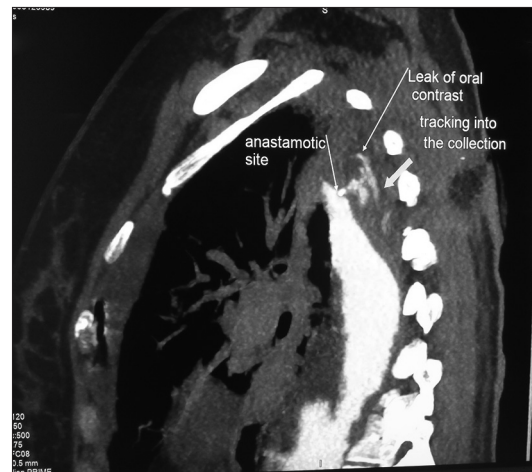


Figure 4: Computed tomography scan with oral contrast showing a microleak at the anastomotic site with minimal mediastinal collection

DISCUSSION

Used first in the biliary tree, SEMs are now placed to palliate malignant esophageal strictures to occlude esophago-respiratory fistulas, and to close esophageal perforations associated with laser therapy.^[8] Airway and/or esophageal stent insertion improves the quality of life in patients with malignant TOF. The main principle of management in malignant TOF is to stabilize the airway and to seal off the tracheoesophageal communication. Stents can be placed simultaneously via bronchoscope in the airways and with endoscope in the esophagus to seal the defect and restore the patency of passages with resumption of oral feeds.^[9] Bronchoscopic approach to the placement of covered tracheal/bronchial SEMs placement may include either rigid or flexible bronchoscopy; however, rigid bronchoscopy is the preferred modality in situations with significant airway compromise.^[10-12]

SEMs are contraindicated in benign tracheal and esophageal strictures because of the problems of erosion, migration, recurrent infections, and granulation tissue formation. In patients with benign esophageal strictures, surgery is the last resort as it is technically difficult and may lead to serious morbidity and mortality. Surgery usually requires opening the thorax and possibly the abdomen, depending upon the location of the stricture. Generally, patients with refractory strictures located in the more distal esophagus are technically easier to operate and resect, and there is more esophagus available proximal to the stricture. In a case study by Yararbai *et al.*, thirty-three patients underwent 34 esophagocoloplasties for benign strictures of the esophagus over a 17-year period. Three patients died in the first postoperative month, and there was an overall mortality rate of 9%.^[13]

The occurrence of esophago-respiratory fistula as a result of esophageal stent is very rare. If at all it occurs, it is usually an early complication immediately after the procedure or within few weeks.^[14,15] Although late complications after 8 months have been mentioned in literatures, in our case the complication has occurred 3 years after insertion of the stent.^[11] To the best of our knowledge, such a delayed complication has not yet been reported in the literature. Moreover, TOF is common to occur, whereas esophagobronchial fistulas are very rare as in our case. In our case, the two issues to be addressed were the embedded esophageal stent itself and the bronchoesophageal fistula. Since the stent could not be removed endoscopically, she needed an esophagectomy along with gastric pull through. The esophagobronchial fistula was repaired by suturing the defect.

CONCLUSION

Erosion and prolapse of the self-expanding metal esophageal stent into the tracheo-bronchial tree is a rare but life threatening and morbid complication. Late presentation after few years of stent placement can also occur as in our case and has to be borne in mind while dealing with such patients. The management of this complication can often be challenging and requires a dedicated multidisciplinary approach.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Sabharwal T, Morales JP, Irani FG, Adam A; CIRSE: Cardiovascular and Interventional Radiological Society of Europe. Quality improvement guidelines for placement of esophageal stents. *Cardiovasc Intervent Radiol* 2005;28:284-8.
- Reed MF, Mathisen DJ. Tracheoesophageal fistula. *Chest Surg Clin North Am* 2003;13:271-89.
- Hameed AA, Mohamed H, Al-Mansoori M. Acquired tracheoesophageal fistula due to high intracuff pressure. *Ann Thorac Med* 2008;3:23-5.
- Schowengerdt CG. Tracheoesophageal fistula caused by a self-expanding esophageal stent. *Ann Thorac Surg* 1999;67:830-1.
- Bartels HE, Stein HJ, Siewert JR. Tracheobronchial lesions following oesophagectomy: Prevalence, predisposing factors and outcome. *Br J Surg* 1998;85:403-6.
- Mangi AA, Gaisert HA, Wright CD, Allan JS, Wain JC, Grillo HC, *et al.* Benign broncho-esophageal fistula in the adult. *Ann Thorac Surg* 2002;73:911-5.
- Macchiarini P, Delamare N, Beuzeboc P, Labussière AS, Cerrina J, Dulmet E, *et al.* Tracheoesophageal fistula caused by mycobacterial tuberculosis adenopathy. *Ann Thorac Surg* 1993;55:1561-3.
- Weigert N, Neuhaus H, Rösch T, Hoffmann W, Dittler HJ, Classen M. Treatment of esophagorespiratory fistulas with silicone-coated self-expanding metal stents. *Gastrointest Endosc* 1995;41:490-6.
- Herth F, Becker HD, LoCicero J 3rd, Thurer R, Ernst A. Successful bronchoscopic placement of tracheobronchial stents without fluoroscopy. *Chest* 2001;119:1910-2.
- Madan K, Venuthurimilli A, Ahuja V, Hadda V, Mohan A, Guleria R. Tracheal penetration and tracheoesophageal fistula caused by an esophageal self-expanding metallic stent. *Case Rep Pulmonol* 2014;2014:567582.
- Madan K, Venuthurimilli A, Mohan A, Guleria R. Oesophageal stent-associated esophagorespiratory fistula. *BMJ Case Rep* 2015;2015. pii: bcr2015211880.
- Madan K, Agarwal R, Aggarwal AN, Gupta D. Therapeutic rigid bronchoscopy at a tertiary care center in North India: Initial experience and systematic review of Indian literature. *Lung India* 2014;31:9-15.
- Yararbai O, Osmanodlu H, Kaplan H, Tokat Y, Coker A, Korkut M, *et al.* Esophagocoloplasty in the management of postcorrosive strictures of the esophagus. *Hepatogastroenterology* 1998;45:59-64.
- Katsanos K, Sabharwal T, Koletsis E, Fotiadis N, Roy-Choudhury S, Dougenis D, *et al.* Direct erosion and prolapse of esophageal stents into the tracheobronchial tree leading to life-threatening airway compromise. *J Vasc Interv Radiol* 2009;20:1491-5.
- Hendra KP, Saukkonen JJ. Erosion of the right mainstem bronchus by an esophageal stent. *Chest* 1996;110:857-8.