

Title

Esophageal Stent Migration into Trachea

Short Title

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On behalf of the authors,

We declare that the content has not been previously published and has been submitted

solely to Journal of Medical Cases. All authors have participated sufficiently in the intellectual content and the analysis of data. Each author has reviewed the final version of the manuscript and approves it for publication. We declare no conflict of interest.

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Abstract

We reported a case of esophageal cancer in which an esophageal stent was placed for treatment of a malignant stricture. A tracheoesophageal fistula and stent migration into the trachea were noted on post-procedure day 11 before the placement of a feeding gastrostomy. Because of the possibility of stent-related tracheoesophageal fistula, whether surgical feeding gastrostomy or endoscopic stent placement is of benefit for patients with malignant esophageal stenosis requires careful evaluation.

Keywords

Tracheoesophageal Fistula; Stents; Esophageal neoplasms; Esophageal stenosis;

Gastrostomy

Introduction

Tracheoesophageal fistula (TE fistula) is a known comorbidity of esophageal malignancy as the disease progresses with an incidence of 5% [1, 2]. Esophageal stenting has been used to manage TE fistula [3, 4]. However, iatrogenic TE fistula due to the stenting procedure could occur with imminent threat of life [4]. Through this case, we would like to emphasize that making the decision between alternative modalities to cope with esophageal malignancy with obstruction should involve serious consideration of possible complications.

Case Report

A 56-year-old male presented for feeding gastrostomy due to malignant stricture of the esophagus. Esophagogram revealed a 12.3 cm narrowing of the esophagus beginning at the level of the thoracic inlet. Endoscopic stenting was arranged 6 months after diagnosis due to progressive dysphagia not responding to concurrent chemoradiotherapy. During the procedure, stenosis was encountered at 17 cm from the incisor; the endoscope (GIF Q240, Olympus, Tokyo, Japan) with an outer diameter of 10.2 mm could not be passed. Using a wire-guided catheter technique and concurrent endoscopic and fluoroscopic monitoring [2], a 12 cm long, 28/23 mm wide self-expandable metal stent (Ultraflex, Boston Scientific, Natick, MA, USA) was

implanted. Post-procedure day 7, due to postprandial cough after liquid intake, feeding gastrostomy was arranged on post-procedure day 11.

The patient presented to the operating room with inspiratory stridor and supraclavicular retraction. Bronchoscope-guided nasal intubation was planned. The patient was pre-oxygenated with an O₂ mask and was premedicated with intravenous midazolam 2 mg. However, as the patient became sedated, intermittent assisted mask ventilation was needed during bronchoscopy to prevent desaturation. Bronchoscopy revealed the stent to be exposed through a tracheoesophageal fistula (Fig. 1). The patient was intubated under bronchoscopy guidance and transferred to the intensive care unit (ICU). Computed tomography confirmed esophageal stent migration into the trachea via a 4 cm diameter fistula (Fig. 2). Post-procedure day 15, the family refused further treatment and the patient was discharged.

Discussion

Patients with inoperable esophageal malignancy who receive palliative stents for esophageal obstruction have a reported 120-day survival of 40% [1]. Mean time to death following stent placement ranges from 77 to 318 days [5, 6].

Once the TE fistula had developed, the feeding gastrostomy under general anesthesia became difficult because airway management was challenging due to the

fistula. Positive pressure ventilation was another problem encountered due to the fistula. Complications occur in 26.8% of patients who undergo self-expanding metal stents placement for esophageal malignancies [7]. Procedure-related mortality is reported to be 4.8% [7], and mortality related to the complications of stent placement is approximately 15% [7, 8]. The Ultraflex stent has a lower overall complication rate as compared to the Gianturco stent or Wallstent [8].

Wang et al. [8] reported a higher incidence for life-threatening complication in patients with stent placement in the proximal third of the esophagus, while Sarper et al. [7] reported a higher complication rate for stent placement in the distal third. The incidence of post-stenting TE fistula has not been shown to differ between types of stents [2]. In patients in whom TE fistula occurs, survival from the diagnosis of TE fistula rarely exceed 30 days [2]. Taking the risk of stent-related complications into consideration, further investigation is needed to identify the risk factors for stent-related TE fistula to properly select candidates of esophageal stenting for malignant stenosis.

Malignant stenosis is a complication of esophageal cancer as the disease progresses. TE fistula may also occur in advanced cases. Endoscopic stenting is used for both malignant stenosis and TE fistula. However, it may lead to iatrogenic TE fistula formation with stent migration, a fatal complication. Although an endoscopic

procedure is a less invasive palliative procedure, the risk-benefit should be weighted carefully against surgical feeding gastrostomy.

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Figure Legends

Figure 1. Bronchoscopy findings.

(A) The bifurcation of tracheal lumen (1) and the TE fistula (2) mimicking the carina.

(B) Close-up view of the tracheal lumen (1) showed the stent exposed through the TE fistula (2).

(C) Advancing along the stenotic trachea lumen revealed the tracheal mucosal defect with stent exposure.

(D) The tracheal mucosal defect with stent exposure (3) and the true carina (4).

Figure 2. Computed tomography and fluoroscopy images.

Solid arrows show the esophageal stent. Dotted double arrows indicate the airway, including the trachea and main bronchus.