Esophageal Stent for Malignant Dysphagia: a case report

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We report the case of a 50-year-old man with esophageal cancer complicated by esophageal stenosis and a bronchoesophageal fistula. In recent months, he had suffered from easy choking. We successfully sealed the fistula using a covered esophageal Wallstent under fluoroscopic guidance. His easy choking was relieved and his dysphagia score improved from grade 3 to grade 1. The covered esophageal stent was patent after 3 months, and the patient remained free of dysphagia or choking.

Most malignant dysphagia results from resectable esophageal carcinomas [1, 2]. Surgery is usually unacceptable because the mean survival time is only approximately 6 months and, consequently, palliation will be the main focus of treatment [1-3]. First used by Symonds in 1887, esophageal prostheses have been developed over the past century and become increasingly used to palliate malignant dysphagia and to seal off bronchoesophageal fistulas [1, 3, 4]. Dysphagia is relieved in approximately 90% of patients who undergo esophageal stent placement, and successful closure of tracheo- or bronchoesophageal fistulas can be achieved in 70%–100% of patients [2]. We report a case in which an esophageal stent was used successfully to treat malignant dysphagia complicated by a fistula.

CASE REPORT

A 50-year-old man had complained of progressive dysphagia and easy choking over the previous 6 months. In our clinic, he was unable to swallow semisolids and his physical examinations were otherwise normal. The results of blood analyses were unremarkable, except for mild anemia (Hb=11.2). He was a manual worker in the local train station, where he had been in employment for more than 20 years. He smoked 1 pack of cigarettes and drank 3 bottles of alcohol per day. He had no systemic disease and the family history was unremarkable.

Esophageal endoscopy was performed and a stenotic lesion was noted 25 cm below the mouth. The endoscope was unable to pass the stenotic site and the biopsy revealed squamous cell carcinoma. His following esophagogram revealed an irregular 6.5-cm stenotic lesion at the level of the T5–T7 vertebrae complicated by proximal dilatation of the esophagus and contrast extravasation into the left bronchial tree (Fig. 1).

Palliative esophageal stent expansion was performed for esophageal carcinoma complicated by
esophageal stent for malignant dysphagia

The patient was placed in the left lateral position on a fluoroscopy table and his pharynx was anesthetized with xylocaine spray. A 5-Fr Headhunter catheter and a soft-tip Bentzon guide wire were then advanced via the mouth into the esophagus at the level of the T5–T7 vertebrae in accordance with the findings of the previous esophagogram. Under fluoroscopic control, the location of the stricture was confirmed by repeated injection of water-soluble contrast medium. The delivery system was then advanced into the esophagus over the guide wire and a 15-cm covered Wallstent (Fig. 2; Boston Scientific, Natick, Mass. Wallstent II) was positioned with the ends above and below the stricture. The sheath covering the stent was removed and the stent expanded fully within 3 minutes.

The post-procedure esophagogram revealed patency and correct positioning of the stent without extravasation (Fig. 3). At the 3-month clinical follow-up, the patient’s dysphagia improved from grade 3 to 1 and his esophagogram revealed patency and correct positioning of the esophageal stent without extravasation (Fig. 4).

DISCUSSION

Malignant dysphagia may result from primary esophageal or metastatic malignancy and is currently difficult to treat [3, 5]. Although many benign strictures can be treated with balloon dilation, esophageal stent placement will be the main palliative option in malignant dysphagia [6]. In malignant lesions, dilation is sometimes performed prior to stent insertion; however, it is generally ineffective if used alone [2]. Covered metallic stent placement is now the primary treatment for malignant dysphagia and associated bronchoesophageal fistulas in patients with poor functional status or previous therapy failure [2, 5, 7]. These stents have recently been used to treat irradiation-related strictures, iatrogenic or spontaneous esophageal perforations, and postoperative stenoses [3, 8].

General indications for esophageal stent include the following: (a) contraindications to surgery or irradiation; (b) dysphagia from recurrent stenoses after initial treatment; (c) circumferential strictures or malignant strictures longer than 6 cm; (d) rapidly growing masses; (e) extraluminal masses compressing the esophagus; (f) bronchoesophageal fistulas; and (g) unresectable lesions [2, 4].

Commercially available, FDA-approved covered esophageal stents include Ultraflex, Wallstent II, and Z-stent. The Ultraflex stent has a lower radial force and greater flexibility causing less post-deployment chest pain and better patient tolerance; however, this type of stent also requires more time to fully expand in comparison with the other stents. The Wallstent has the highest radial force and is more appropriate for extrinsic compression, although it is more likely to produce post-deployment chest pain. The Z-stent has an antireflux valve allowing patients to belch or vomit; however, it has minimal flexibility making it less appropriate for tortuous anatomic structures.

We performed the procedure with a 15-cm covered Wallstent (Boston Scientific, Natick, Mass.
esophageal stent for malignant dysphagia

A Wallstent II) that is knitted from 0.15-inch nitinol wire and is flexible about its long axis. The fully expanded stent measures 18 mm in diameter, and the proximal end of the stent is amplified into a 5-mm-long collar with a diameter of 20 mm. The delivery system includes a 95-cm-long (2 mm outer diameter [OD]) Teflon catheter with a distal half olive-shaped tip, and a 60-cm-long (8-mm-OD) covering Teflon sheath is introduced over a 0.038-inch guide wire.

Since the endoscope cannot pass the stenotic lesion in our case, a Wallstent is well-opacified under fluoroscopy; further more, the stent needs no predilation and can be loaded in a relative small sheath (18F). Stents typically shorten by approximately 30%; therefore, a safe margin of approximately 2 cm at both ends should be considered when using a Wallstent. Consequently, a 15-cm stent instead of a 10-cm stent was considered to be more appropriate for the 6.5 cm lesion revealed in the esophagogram. The strong radial force of the Wallstent may reduce migration in a case with fistula.

Metallic stent placement is performed under fluoroscopic guidance over a stiff 260-cm guide-wire. Fluoroscopy allows better monitoring of stent deployment, whereas endoscopy often cannot be performed distal to tight strictures, although it may provide better delimitation of tumor extension [2]. Routine predilation of the lesion is not required but will facilitate stent expansion. The level of pain experienced by the patient should also be monitored, and dilation to a greater diameter should not be attempted if the patient complains of moderate to severe pain. [2]. Esophageal stents may shorten either during or after deployment, which is a factor that should be considered when deciding on the stent length. Stents should never be placed across the superior esophageal sphincter (C5-C6 level) and crossing the gastroesophageal junction should, if possible, be avoided. The delivery system should be carefully retrieved to prevent its tip from catching on the stent.

A successful outcome of treatment using esophageal stents is indicated by improvement of the dysphagia score modified by Mellow and Pinkas; these scores are classified as follows: 0 = ability to consume a normal diet, 1 = ability to eat some solid food, 2 = ability to eat semisolid food only, 3 = ability to swallow liquids only, and 4 = complete dysphagia [3, 4, 8, 9]. In reported series, the technical success rates have been as high as 96%–100%, usually with an improvement of the dysphagia score from 2–3 to 0–1 [3, 8, 9]. Dysphagia can be relieved in approximately 90% of patients treated with an esophageal stent, and this outcome is superior to that achieved with either radiation therapy or chemotherapy. Successful closure of bronchoesophageal fistulas can be achieved in 70%–100% of patients [2, 6, 10].

Follow-up esophagograms are performed in...
order to confirm adequate stent positioning, patency of the esophageal lumen, and sealing of esophageal leakage. All patients should be examined with a barium study within 24 hours and with a second fluoroscopic checkup after 3 months [3-5]. Patients who have previously undergone radiation therapy or chemotherapy have a higher mobility and mortality rate, and approximately 0.5%-2% of patients die as a direct result of esophageal stent placement [2, 3]. The overall reintervention rate after esophageal stent placement is approximately 25% [2, 7, 9]. Complications, which occur in up to 65% of patients, include chest pain, esophagitis, aspiration, food impaction, tumor ingrowth, overgrowth of mucosal hyperplasia, and migration [2, 6].

All currently FDA-approved stents are covered in order to prevent tumor ingrowth and allow for treatment of fistulas [2]. Covered stents have a larger diameter (usually 20 mm) and are stiffer than uncovered stents (16-18 mm). Chest discomfort occurs in 5%-9% patients treated covered stents. Esophagitis and aspiration may also occur during the positioning of the stent across the esophageal sphincters. Stent obstruction with recurrent dysphagia may be due to tumor progression, reactive hyperplasia, or food impaction. Tumor ingrowth occurs in 4%-18% of patients and migration occurs in 0%-35% [2, 4, 7, 10]. It is believed that covered stents are associated with a lower recurrence of dysphagia (4%-10% vs. 5%-15%, covered vs. uncovered) but with a higher migration rate than occurs with uncovered stents (6%-25% vs. 0%-5%) [1]. Esophageal perforation occurs following stent insertion in 0%-8% of patients and diagnosis of esophageal perforation during the intervention should be identified immediately [2, 4, 7, 9, 10].

In conclusion, esophageal stent placement is a safe, minimally invasive, effective treatment for esophageal strictures and associated bronchoesophageal fistulas.

**REFERENCE**

惡性吞嚥困難使用食道支架：病例報告

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慈濟佛教花蓮綜合醫院 影像醫學部 2

本院報告一位患有惡性吞嚥困難併發食道氣管間瘻管的 50 歲男性病人，置放食道支架是此一臨床狀況的主要治療選擇。個案在使用 Wallstent 成功治療後其吞嚥困難級數由第三級降至第一級，並於三個月追蹤時呈現食道暢通無瘻管發現。