CASE REPORT

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Treatment of Malignant Esophageal Fistulas: Fluoroscopic Placement of Esophageal SEMS, Endoscopically-assisted through Surgical Gastrostomy. A Case Report

Gabriel Constantinescu[1], Vasile Şandru[1], Mădălina Ilie[1], Cristian Nedelcu[1], Radu Tincu[2], Bogdan Popa[3]

1) Gastroenterology Department,
2) Intensive Care Unit,
3) Radiology Department,
Clinical Emergency Hospital Bucharest, Romania

Address for correspondence:
Madalina Ilie
Spitalul Clinic de Urgenta
Calea Floreasca nr 8, sector 1,
Bucharest, Romania.
drmadalina@gmail.com

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ABSTRACT

Progressive esophageal carcinoma can infiltrate the surrounding tissues with subsequent development of a fistula, most commonly between the esophagus and the respiratory tract. The endoscopic placement of covered self-expanding metallic stents (SEMS) is the treatment of choice for malignant esophageal fistulas and should be performed immediately, as a fistula formation represents a potential life-threatening complication. We report the case of a 64-year-old male diagnosed with esophageal carcinoma, who had a 20Fr surgical gastrostomy tube inserted before chemo- and radiotherapy and was referred to our department for complete dysphagia, cough after swallowing and fever. The attempt to insert a SEMS using the classic endoscopic procedure failed. Then, a fully covered stent was inserted, as the 0.035" guide wire was passed through stenosis retrogradely by using an Olympus Exera II GIF-N180 (4.9 mm in diameter endoscope) via surgical gastrostomy, with a good outcome for the patient. The retrograde approach via gastrostomy under endoscopic/fluoroscopic guidance with the placement of a fully covered SEMS proved to be the technique of choice, in a patient with malignant esophageal fistula in whom other methods of treatment were not feasible.

Key words: esophageal carcinoma – fistula – gastrostomy – SEMS.

Abbreviations: ERCP: endoscopic retrograde cholangio-pancreatography; GI: gastrointestinal; SEMS: self-expandable metallic stents.

INTRODUCTION

Patients with esophageal cancer may develop fistulas as the tumor invades the surrounding tissue. These appear most commonly between the esophagus and the respiratory tract [1, 2]. Esophageal fistulas may also develop in primary lung cancer and other mediastinal malignancies, as a result of radiotherapy or due to the necrosis induced by the pressure of a previously placed metal stent [1-3] .

The endoscopic placement of covered self-expandable metallic stents (SEMS) is the treatment of choice for malignant esophageal fistulas, and should be performed as soon as possible [2], because fistula formation represents a potential life-threatening complication; the strength of the recommendation is impotant if we consider the paucity of alternatives [2, 3] and the fact that palliative surgery is associated with a high mortality rate of up to 50% [4]. SEMS improve the quality of life of these patients, allowing better nutrition intake which prevents dehydration and aspiration [5, 6].

Techniques such as a retrograde approach via gastrostomy under endoscopic guidance [7-9] or fluoroscopic guidance [10], using recanalization devices or combined endoscopic anterograde and retrograde dilation [8, 9, 11] after passing a guide wire through a complete esophageal obstruction have been reported as successful.

In our case, the transgastric approach was the most appropriate choice as the anterograde way to insert a SEMS had failed, and the patient already had had a surgical gastrostomy which was performed prior to the development of the fistula.

CASE REPORT

We present the case of a 64-year-old heavy smoker male patient, with a pathological history of chronic pancreatitis, hypertension and aneurysm of the thoracic aorta; he had been

diagnosed with esophageal cancer after he developed dysphagia for solids. After histopathology and computer tomography examinations it was concluded that the tumor was a locally advanced adenocarcinoma (T3N2M0), and it was decided, in another hospital, to have a surgical gastrostomy for protection, placed before chemo-radio therapy.

The patient was able to ingest liquid food for a while before he developed complete dysphagia, cough after swallowing and low fever during chemo-radiotherapy, and was admitted to our hospital in order to evaluate the opportunity of endoscopic tumor stenting.

We attempted to insert a SEMS using the classic approach; several attempts were made to pass a guide wire over the stenosis and fistula, using a usual endoscope and the ultrathin endoscope, without any success of finding the esophageal lumen. Due to safety reasons the attempts were stopped.

After the initial attempt of anterograde stenting failed, the ultrathin endoscope - 4.9 mm diameter - was directed under fluoroscopy by transgastric retrograde technique into the distal esophagus and then upwards into the malignant stenosis, obtaining this way a successful rendez-vous with a simultaneously placed proximal endoscope; a guide wire (0.035") was advanced through the ultrathin scope and then pulled through the mouth using biopsy forceps (Figs. 1, 2).

The guide wire was then used for anterograde SEMS placement under fluoroscopy, after the cranial end of the fistula was marked by injecting a contrast agent in the submucosa layer. Meanwhile, the ultrathin endoscope observed the distal end deployment of a 12 cm long Niti-S covered esophageal stent with a body diameter of 20 mm. In the end the ultrathin endoscope was passed through the SEMS into the stomach having a direct view of the gastrostomy tube (Fig. 3). In its final fluoroscopic position, the stent was placed ~3cm above the cranial end of the fistula so that the contrast agent in the submucosa could be noticed (Fig. 4).

Immediately after the procedure, the patient had moderate pain in the chest, but was able to intake liquid food two hours after that, without coughing after swallowing or dyspnea. With the pain progressively decreasing after symptomatic treatment, he was discharged two days later without dysphagia or fever and in good condition. The patient survived another 46 weeks and died from a massive upper GI bleeding in an Oncology department.

DISCUSSION

The placement of esophageal stents for fistulas is recommended because they provide durable and immediate relief [12]. Although the SEMS is the treatment of choice for malignant esophageal fistula with a success rate of over 90% of the cases [2, 3], the occlusion rates of the fistula vary between 70-100% [2, 13]. The technical success rates can be improved up to 100% in the presence of a gastrostomy.

The concept of an esophageal stent placement using the combined antegrade–retrograde rendez-vous technique using the gastrostomy route, was described by Van Twisk et. al. in 1998. Since then, it has been used with success in the reconstruction of complete esophageal disruptions post-chemo-radiotherapy for neck carcinoma, post caustic ingestion strictures, esophageal stripping during stent removal, postoperative strictures [14] and even for iatrogenic esophageal perforation resulting from incorrect stent insertion [15].

Even if the superiority of percutaneously placed gastrostomies compared to former surgical gastrostomy procedures (Witzel, Stamm, Janeway technique) has been shown clearly in many clinical studies [16], the surgical

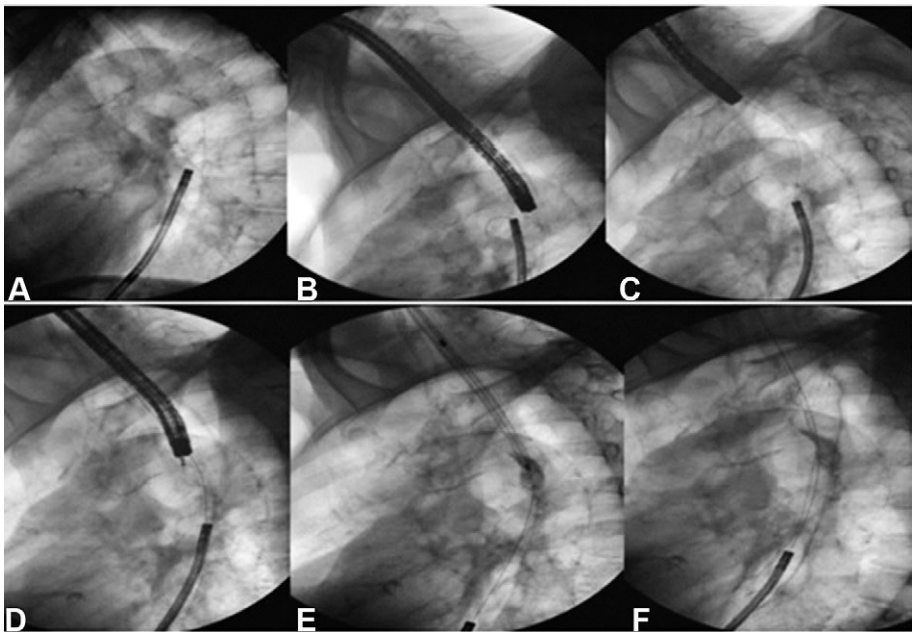

Fig. 1. Steps taken for fluoroscopic placement of a SEMS assisted through a gastrostomy: A) the ultrathin endoscope is directed into the distal esophagus; B, C) rendez-vous with a proximal endoscope; the guide wire is advanced, then pulled up with a biopsy forceps; D) the cranial end of the fistula is marked with contrast agent in submucosa; E, F) insertion of the SEMS using the 0.035" guide wire; the stent in the final position is inspected with the ultrathin endoscope.

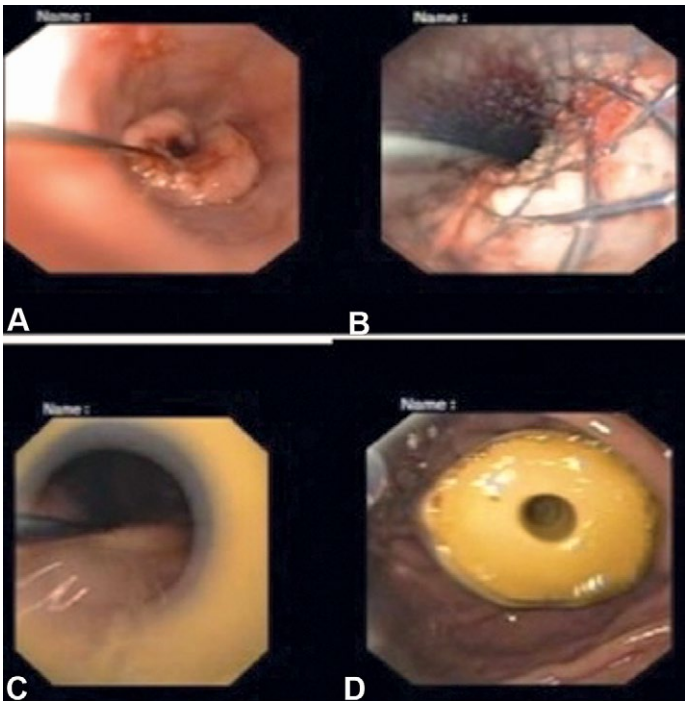

Fig. 2. A) the cranial end of the malignant stenosis and fistula; B) rendez-vous as the ultrathin endoscope passes the stenosis anterogradely; C) and D) guide wire being pulled up with a biopsy forceps.

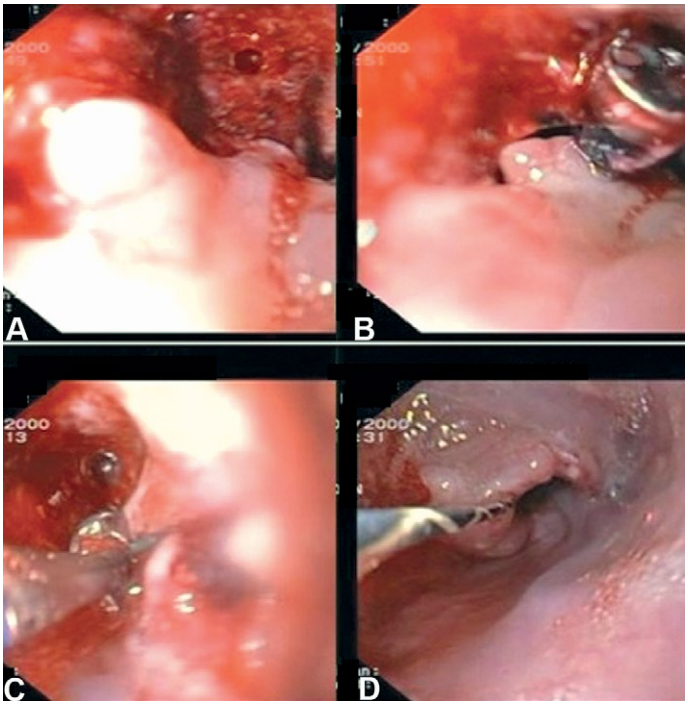

Fig. 3. A) The distal end of the malignant stenosis and the guide wire as seen by the ultrathin endoscope; B) distal end of the deployed SEMS; C) and D) the gastrostomy tube seen through and from above after the placement of the stent, with the ultrathin endoscope.

procedures are still frequently used; the placement of a gastrostomy seems to be justified in these special cases of complete esophageal obstructions due to malignancy, in order to provide easy access to the distal esophagus.

The classic technique for endoscopic placement of esophageal stents includes upper endoscopy in order to define the proximal and distal margins of stent placement. In these cases where the upper endoscope cannot be advanced beyond the tumor, esophageal dilation can be considered before stent placement, but with a higher risk of complications. The use of fluoroscopy should be strongly considered when dilating malignant esophageal strictures. After the marking of the area to be stented, for fluoroscopic visualization, either using external radiopaque markers, endoscopic clips or by injecting contrast into the submucosa the stent is advanced over the wire guide [9].

An alternative approach is to use an ultraslim pediatric upper endoscope (≤ 5.4 mm diameter) to pass beyond the tumor. In some cases, the retrograde passage of a small caliber endoscope through a gastrostomy tract and the use of ERCP accessories may be required to go through impassable strictures [9, 11].

The experience gathered worldwide over the last decade in the exploration of the gastrointestinal tract using ultrathin endoscopes and in the radiologic management of benign and malignant esophageal pathology after gastrostomy, makes this procedure safe and therefore very feasible in designated situations.

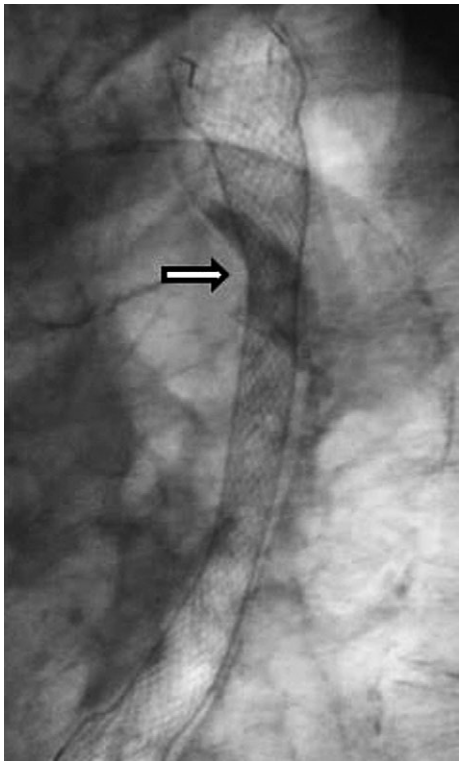

Fig. 4. SEMS in its final position (arrow indicates the cranial end of the fistula marked with contrast agent in submucosa).

CONCLUSIONS

From our experience regarding esophageal stenting we conclude that SEMS are highly efficient to palliate dysphagia and close malignant fistulae. When the attempt to insert SEMS via anterograde way fails, the best alternative remains a retrograde passage of a guide wire through stenosis using a thin endoscope via gastrostomy, followed by stent insertion.

The particularity of this case report consists of the fact that we used a less conventional method to insert a SEMS in a patient with malignant esophageal fistula. While the classic technique is widely performed, the retrograde passage via gastrostomy requires experience and represents a saving alternative with good outcome for patients in these special cases.

Conflicts of interest: no conflict to declare.

Authors' contributions: S.M. wrote the manuscript, contributed to reference selection and reviewed the specialized literature; C.G. performed the procedure and reviewed the manuscript; I.M., I.C.N., R.T. and B.P. contributed to the procedure and critically reviewed the manuscript. All authors approved the final draft submitted.

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