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LETTER TO THE EDITOR

Esophageal Stricture Due to a Self-Expandable Metal Stent (SEMS) Placement for Post Sleeve Gastrectomy Leak: a Case Report

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Introduction

Obesity is a major health concern worldwide [1]. Surgery is still the most efficient and sustainable treatment for patients with morbid obesity [2, 3]. Due to its reputed simplicity and low morbidity rate [3, 4], sleeve gastrectomy (SG) has become the most commonly performed bariatric procedure, both in France and worldwide [3]. However, staple-line leak at the gastroesophageal junction is still the most dreaded complication of SG, occurring in up to 3% of patients [5, 6]. The challenging management of post SG leaks (SGL) is initially based on interventional endoscopy. Even if outdated by endo-luminal pigtail (PTD) and naso-cavitary drains, esophageal self-expandable metal stents (SEMS) are still considered a valuable non-operative treatment option in patients with SGL [7]. Reported complications of SEMS include migration [6], bleeding, ingrowth obstruction, stripping, and perforation [8–11].

We hereby present the case of a patient with SGL who had a severe esophageal stricture induced by a SEMS. To the best of our knowledge, this is the first reported case of such a complication in this setting.

Case Report

A 33-year-old female patient with a body mass index (BMI) of 46.88 kg/m^2, with an unremarkable past medical history, underwent laparoscopic SG. On postoperative day (POD) 2, she was transferred to our department with epigastric pain and septic shock. Initially, she had hypotension (80/40 mmHg), tachycardia (170 beats per minute), tachypnea (27 breaths per minute), and diffuse abdominal tenderness. Laboratory tests revealed a white blood count (WBC) of 5700 × 109/L (N: 4.00–11.0 × 109/L) and a C-reactive protein level of 800 mg/l (N, < 5 mg/l).

Computerized tomography (CT) scan of the abdomen and pelvis confirmed the presence of gastroesophageal junction leak with extravasation of orally administered contrast, a peri-splenic, 10-cm diameter, air-fluid collection, left pleural effusion, and a right segmental pulmonary embolism. After admission to the intensive care unit (ICU), explorative laparoscopy showed generalized peritonitis and a 2-cm defect located at the angle of His. Peritoneal lavage and closed-suction, trans-cutaneous drainage were performed. Next day, 2 PTDs (7 French/6 cm) were positioned in the gastroesophageal junction defect. Shock was rapidly controlled, WBC dropping to 15,800 × 109/L (N: 4.00–11.0 × 109/L) and C-reactive protein to 300 mg/l (N, < 5 mg/l).

On POD 16, control CT scan showed the persistence of a gastroesophageal junction leak with high output extravasation of the orally administered contrast and a 7-cm diameter, left sub-diaphragmatic collection. On POD 20, endoscopy revealed a persistent 2-cm defect, 40 cm from the dental arch. The PTDs were removed and a SEMS Niti-STM Megastent (*Megastent, Taewoong Medical Industries, Kangseo-Gu Songjung-Dong, South Korea*) was inserted that allowed insertion of the proximal end into the distal esophagus at 35 cm from the incisors, with the distal end placed into the duodenal bulb. The trans-abdominal drain, positioned during the initial

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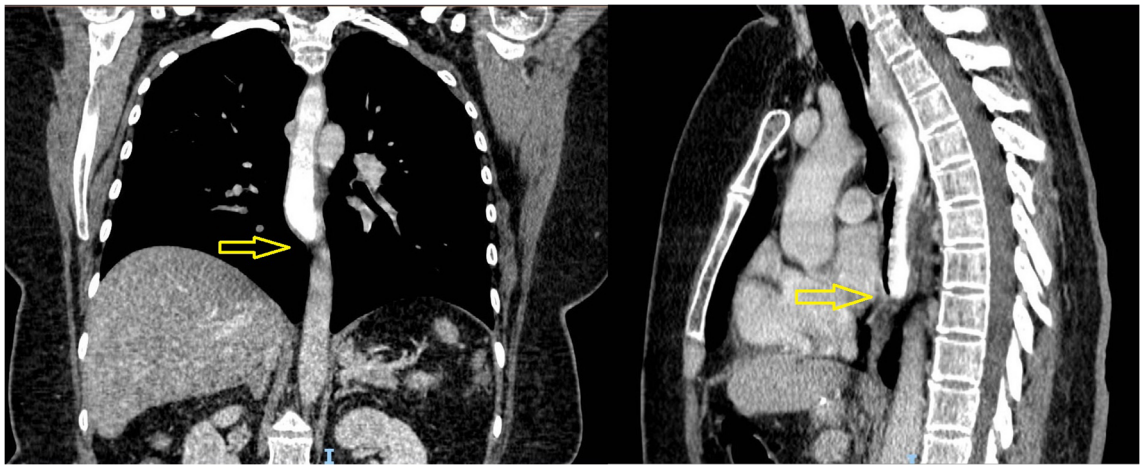

Fig. 1 Thoracic CT scan with oral contrast in a patient with severe dysphagia after SEMS esophagogastric stenting for post SG leak. The arrow shows the interruption of the oral contrast progression in the lower esophagus (bird's beak sign)

explorative laparoscopy, was removed. The patient resumed a soft oral diet.

On POD 70 (i.e., 7 weeks after insertion of the SEMS), the stent was removed endoscopically, revealing an esophageal ulceration at the cephalic insertion point. A PTD was placed in the remaining fistula (0.7 cm × 0.5 cm). Medical treatment included double-dose esomeprazole and domperidone.

On POD 90, the patient had laparoscopic Roux-en-Y fistulo-jejunostomy (RYFJ). She was then discharged 1 week later. The patient was readmitted to our department on POD 122 for a rapidly evolving dysphagia to both solids and liquids. Physical exam was unremarkable. Her laboratory results were within normal limits.

Thoraco-abdominal CT scan showed an abrupt stenosis of the distal esophagus with complete obstruction of the oral contrast (Fig. 1). Esophagoscopy showed a punctiform, esophageal stricture, 33 cm from the dental arch (Fig. 2). Endoscopic balloon dilation was performed, gradually starting from 6 mm and reaching 8 mm. The same procedure was repeated 2 weeks later, gradually from 8 to 10 mm (Fig. 3). Eventually, clinical and radiologic examinations were satisfactory.

Discussion

To the best of our knowledge, this is the first report of an esophageal stenosis secondary to the use of SEMS for SGL. Over the past 5 years, endoscopic management of fistulas complicating bariatric surgery evolved dramatically towards the use of internal endoscopic drainage replacing the use of SEMS. Our approach to SGL is based on initial non-operative management unless the septic condition of the patient

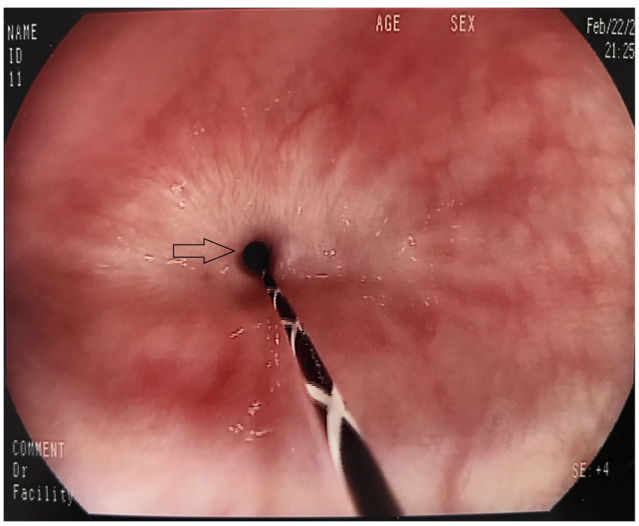

Fig. 2 Flexible esophagoscopy in a patient with severe dysphagia after SEMS esophagogastric stenting for post SG leak. The arrow shows severe stenosis

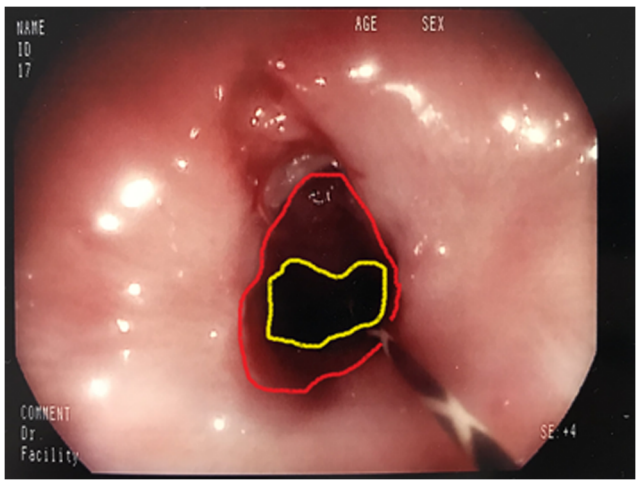

Fig. 3 Endoscopic dilatation in a patient with severe dysphagia after SEMS esophagogastric stenting for post SG leak. The dilatation was stepwise, to 6 mm (yellow) and then 10 mm (red)

mandates explorative surgery. Aside from antibiotics and supplemental nutrition, enteral or parenteral, our preferred approach is the use of one or more PTDs or SEMS if the fistula is more than 1 cm in diameter.

SEMS, as an exclusion device, bypasses the leak and enables rapid restoration of oral intake [12]. SEMS also reduces the gastric pressure in cases of associated gastric stricture, theoretically facilitating healing of the leak [12]. The reported leak closure rate with SEMS is nearly 70% [12, 13]. Reported SEMS-related complications include bleeding, migration, ingrowth, and perforation [6, 8–11], stent migration being by far the most common [6].

No standardization of the duration of SEMS placement could be found. However, 6 to 8 weeks may be the best time for removal, earlier removal risking incomplete leak control with some authors advocating for 3 to 4 weeks in small leaks [13] because delayed removal may increase complications [12]. Longer duration of placement favors mucosal hypertrophy, which can lead to difficult and hazardous stent extraction [12].

Among SEMS, our preference goes to the Niti-STM Megastent (*Megastent, Taewoong Medical Industries, Kangseo-Gu Songjung-Dong, South Korea*) due to its proven efficacy and safety [14]. This is a covered metallic stent with an anti-migratory feature, enabling the insertion of its proximal end into the distal esophagus. The stent bypasses the entire sleeved stomach with its distal end opening into the duodenal bulb.

In our case, the stent had been fixated at 35 cm from the dental arch, exactly where the stricture ultimately developed. We believe that the insertion site led to scarring with inflammation constricting the lumen. In addition as described above, mucosal hypertrophy with longer duration of placement (i.e., 50 days in our case) may have promoted stricture formation at the previous site of insertion.

We believe that early and large SGL, where endoscopic procedures usually fail, should be treated surgically as soon as possible, especially if initial laparoscopy and external drainage was already performed. The RYFJ remains the ultimate curative procedure for SGL while endoscopic treatment only provides a period of remission that may last briefly or may extend over several months or years [15]. Moreover, external drainage may promote continued fistulization, hindering its chances of closure [16].

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval For this type of study, formal consent is not required.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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