

Esophageal stent migration can lead to intestinal obstruction

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Background: Self-expanding metallic stents are the devices of choice in the treatment of malign or benign strictures of the esophagus. Stent migration is a well-known complication of this procedure. **Aims:** We report a case of intestinal obstruction caused by esophageal stent migration, in which surgical intervention was used. **Methods:** A 65-year-old woman, who had a medical history of gastric cancer operations and esophageal stent applications, was admitted to our emergency department with a 48-hour history of abdominal pain, nausea and vomiting. An emergency laparotomy was performed and the migrated stent causing intestinal obstruction was removed. **Results:** The patient recovered without incident and was discharged on postoperative day 3. **Conclusion:** This case illustrates that esophageal stent migration has to be considered as a potential life-threatening complication. (Karatepe O, Acet E, Altioik M, Battal M, Adas G, Karahan S. Esophageal stent migration can lead to intestinal obstruction. *North Am J Med Sci* 2009; 1: 63-65).

Key words: Esophageal stricture; self-expanding stent; stent complications; stent migration; intestinal obstruction.

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Introduction

Self-expanding metal stent (SEMS)-placement has been the first choice for palliative therapy of the unresectable esophageal cancer [1, 2, 3]. These stents are also highly effective for the management of benign (peptic, postsurgical, corrosive) strictures refractory to dilation, esophageal leaks, perforations and fistula [2]. In most cases, rapid relief of dysphagia and adequate oral intake of nutrients can be achieved. Although complications at the time of insertion are not uncommon, most stents can successfully be managed by experienced endoscopists and only few of them are lethal [4]. Rare reports of intestinal obstruction have been confined to the stiff plastic and stainless-steel stents. In this paper, we present a case of small bowel obstruction due to the migration of an esophageal stent.

Case Report

A 65-year-old woman underwent surgery for gastric cancer four years ago and her passage was restored with jejunal interposition. After 42 months following this surgical procedure, she complained of dysphagia. Endoscopic examination revealed a stenosis in the anastomosis, in which a recurrent cancer was assumed; and so a silicon-coated wall stent (25-mm diameter, 10-cm length) was inserted.

Four weeks after stent application, she was admitted to our emergency department with a 48-hour history of abdominal pain, nausea and vomiting. Examination of the abdomen showed marked distension with peritonitis. An irregular mass was detected in the right lower quadrant. Her body

temperature was 37.5°C. Laboratory findings showed a white blood cell count of 15600/mm³, hemoglobin 12.3 gm/dl, and a platelet count of 200.000/mm³. All other studies, including electrolytes and urinalysis were within normal limits. An abdominal plain roentgenogram showed air-fluid levels present in the small intestine. A computed tomography scan was ordered, and marked dilatation of the small intestine and the displaced stent in the right iliac fossa were observed (Fig. 1). Fluid resuscitation and gastric decompression via nasogastric tube was started immediately. After establishment of the diagnosis as mechanical bowel obstruction, the patient was taken to the operating room for emergency laparotomy.

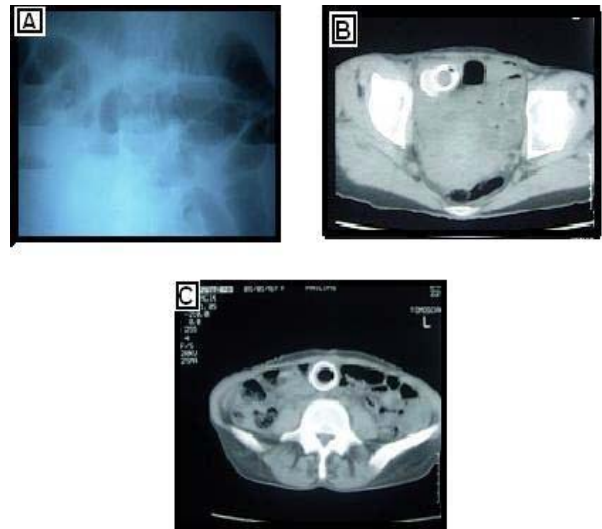


Fig. 1 A) Abdominal plain graphy shows air fluid level. B) and C) Abdominal CT-scan study. Esophageal stent is impacted into the distal segment of the small bowel. The intestine above the stent is dilated.

During laparotomy, a 40cm segment of edematous, thick-walled terminal ileum was noted. The stent could be palpated through the thickened bowel wall. The small intestine segment was incised longitudinally 2-3 cm and the migrated stent was removed (Fig. 2). The patient recovered without incident and was discharged on postoperative day 3.

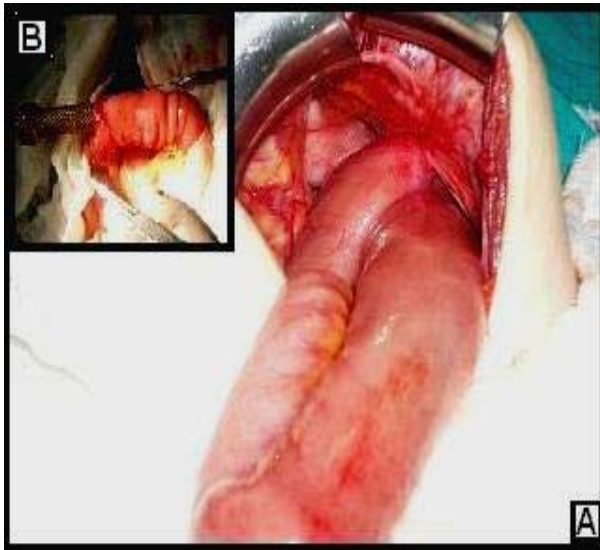


Fig. 2 A) shows one of the removed stents. B) Operative view of the small intestine.

Discussion

Today, malignant esophageal obstruction is a common pre-terminal complication of advanced gastric, pancreato-biliary and metastatic carcinoma. For these patients with limited life expectancy, a palliative treatment should relieve dysphagia and intractable hyperemesis, and maintain adequate oral nutrition [4]. In this setting, self-expanding metal stents provide a substantial progress in the management of dysphagia in patients with malignant esophageal obstructions or fistula. They can also be used in esophageal cancer patients having perforations diagnosed shortly after endoscopic dilatations [6]. Stent placement can treat the perforations, seal off fistula, palliate dysphagia, and extend the life of most patients, and should be considered as an optional treatment, particularly in patients who are poor surgical candidates [6].

The first description of the endoscopic placement of an expanding metallic spiral stent was made by Frimberger in 1983. Since then, many different types of SEMS have been used for the treatment of esophageal obstructions, e.g., covered or uncovered, with or without an anti-reflux valve to prevent gastro-esophageal reflux in patients with a malignant tumor around the gastroesophageal junction [7]. Of these stents, the ideal one should be cost-effective, technically easy to place and removable with endoscopy and/or

fluoroscopy, and designed to bear a small-caliber delivery device with minimal shortening on deployment. Furthermore, it should have low migration rate and both its insertion and removal should be associated with minimal complications.

In this sense, covered stents are most commonly used in patients with malign esophageal obstructions because the cover avoids tumor ingrowth through the stentmetal mesh [8]. However, the use of covered stents has been plagued by stent migration. With covered stents placed for tumors of the distal esophagus or gastric cardia, stent migration is more likely to occur than when stents are placed for more proximally located tumors because the distal portion of stents projects freely into the gastric fundus without fixation to the esophageal wall [9]. Therefore, stent migration has been reported to occur in up to 28% of patients treated with a covered stent [10, 11, 12].

The most important thing to be done is the removal of migrated stents, which is not successful in all cases and is sometimes even dangerous [11]. Most migrated stents are removed non-surgically, exiting the body spontaneously, or remaining in the body in an uncomplicated state. Although migrated stents generally do not block the passage as a result of their pliability, migration may infrequently lead to impaction in the distal gut. The common denominator of an impacted stent is the extrinsic fixation of the bowel wall, impeding the passage of the stent through the bowel lumen [12, 13]. Dense intra-abdominal adhesions probably contributed to the obstruction in our case. On very rare occasions, a perforation occurs without any obvious associated bowel pathology. In recent years, newly modified stents, especially used in benign conditions, are capable of being fixed with silk thread or longer devices with internal silicon sleeves which might reduce migration rate [13].

Briefly, endoscopic insertion of SEMS is a useful and powerful procedure for esophageal strictures. We agree that an esophageal stent should remain in its place until the stricture heals in benign conditions. In case of long-term therapy, stent migrations have to be considered as a potential life-threatening complication. A migrated esophageal stent, symptomatic or not, should be followed closely or removed immediately.

References

1. Knyrim K, Wagner HJ, Bethge N, Keymling M, Vakil N. A controlled trial of an expansile metal stent for palliation of esophageal obstruction due to inoperable cancer. *N Engl J Med* 1993; 329: 1302-1307.
2. Huang Q, Dai DK, Qian XJ, Zhai RY. Treatment of gastric outlet and duodenal obstructions with uncovered expandable metal stents. *World J Gastroenterol.* 2007 Oct 28; 13(40):5376-53769.
3. Conti M, Ferraro P, Martin J, Duranceau A. Esophageal stent migration into the trachea. 2007; 134(4):1084-10845.

4. Ho HS, Ong HS. A rare life-threatening complication of migrated nitinol self-expanding metallic stent (Ultraflex). *Surg Endosc*. 2004 Feb; 18(2):347.
5. May A, Gossner L, Feess G, Bauer R, Ell C. Extraction of migrated self-expanding esophageal metal stents. *Gastrointest Endosc*. 1999 Apr; 49(4 Pt 1):524-526.
6. Costamagna G, Marchese M, Iacopini F. Self-expanding stents in oesophageal cancer. *Eur J Gastroenterol Hepatol*. 2006 Nov; 18(11):1177-1180.
7. Fan Z, Dai N, Chen L. Expandable thermal-shaped memory metal esophageal stent: experiences with a new nitinol stent in 129 patients. *Gastrointest Endosc* 1997; 46: 352-357.
8. Kozarek RA. Complications and lessons learned from 10 years of expandable gastrointestinal prostheses. *Dig Dis* 1999; 17:14-22.
9. Ko HK, Song HY, Shin JH; Lee GH, Jung HY, Park SI. Fate of migrated esophageal and gastroduodenal stents: experience in 70 patients. *J Vasc Interv Radiol*. 2007 Jun; 18(6):725-732.
10. Vakil N, Morris AI, Marcon N, et al. A prospective, randomized, controlled trial of covered expandable metal stents in the palliation of malignant esophageal obstruction at the gastroesophageal junction. *Am J Gastroenterol* 2001; 96:1791-1796.
11. Christie NA, Buenaventura PO, Fernando HC, et al. Results of expandable metal stents for malignant esophageal obstruction in 100 patients: short-term and long-term follow-up. *Ann Thorac Surg* 2001; 71:1797-1801; discussion 1801-1792.
12. Homs MY, Steyerberg EW, Kuipers EJ, et al. Causes and treatment of recurrent dysphagia after self-expanding metal stent placement for palliation of esophageal carcinoma. *Endoscopy* 2004; 36:880-886.
13. Shimi SM (2000). Self-expanding metallic stents in the management of advanced esophageal cancer: a review. *Semin Laparosc Surg* 7:9-21.