

## Acute Abdomen due to Migration of Esophageal Stent

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### Abstract

Endoscopic placement of stents tends to become a routine for the treatment of various esophageal diseases, since it is a trustworthy and non-invasive technique. However there can be complications, which are divided into immediate and delayed. In this article we report a rare case of an 80-year-old man with acute abdomen, caused by obstruction of the terminal ileum due to the migration of an esophageal stent. Enterectomy was performed with end-to-end anastomosis of the small and large intestine. Postoperative period was uneventful.

**Keywords:** Acute abdomen; Ileum; Esophageal stent migration

### Introduction

Esophageal stents are used, as a daily medical routine, for the treatment of benign and malignant diseases of the esophagus. The techniques used for the placement of stents include endoscopic, fluoroscopic guidance or a combination of these two. However, several complications may occur during the performance of the above mentioned procedures. These are divided into immediate, including pain, bleeding, perforation, and delayed. The delayed ones include stent migration, tumor ingrowth and outgrowth, bleeding, as well as perforation. In particular, migration is one of the most common delayed complications [1]. The aim of this article is to report a case of intestinal obstruction due to the migration of an esophageal stent.

### Case Presentation

An 80-year-old male patient arrived at the emergency department of our surgical department with acute abdominal pain in the right iliac fossa for the last day and a lack of appetite, for approximately four days prior to admission. The patient also reported concurrent weight loss of about 4-5 kg during the last fifteen days. His previous medical history revealed a gastrectomy with Bill Roth II anastomosis in 1966 due to the presence of stomach ulcer. He also mentioned incidents of progressive dysphagia and intermittent episodes of clogged food bolus, which led the patient to a gastroenterologist, consult. More specifically, ten days prior to admission to our department he had undergone endoscopy that resulted in the removal of a clogged food bolus from the lower third of the esophagus. Consequently, an esophageal self-expandable plastic, partially covered stent was placed at that time to deal the esophageal constriction.

Clinical examination revealed acute pain located in the right iliac fossa, positive Blumberg's sign, without any muscular resistance or presence of a palpable mass. The patient's vital signs were within normal parameters. A full blood count revealed leukocytosis (12,86 K/ $\mu$ l with 84,3% neutrophils). Other parameters were within normal limits. The rest of the laboratory tests reveal blood glucose at 177mg/dl, total bilirubin was slightly elevated, 1.35 mg/dl, with direct bilirubin at 0.53. The rest of the results were normal. An abdominal x-ray was also performed and revealed three radiopaque rings at the level of the right iliac fossa (Figure 1). Following these findings, a CT scan was performed which showed an inflammatory process in the area of the ileocecal valve and foreign material, possibly endoluminal, as well as accompanying demargination of the local anatomy and increased thickness of the small bowel wall (Figure 2).

The presence of acute abdomen in addition to the findings of the previous workup resulted in an explorative laparotomy. During surgery part of the terminal ileum was found to be ischemic. There was

also a restricted rupture of the intestinal wall and contained peritonitis around the plastic stent. This stent (11.8 cm length and 1.4 cm width) was found blocking the intestinal lumen just before the ileocecal valve (Figures 3 and 4).

Right hemi colectomy was decided and performed. Right hemi colectomy includes cecum, ascending colon, upper transverse colon (13.5 cm in our case) - that incorporate right branch of middle colic artery - and terminal ileum (3.6 cm of the terminal ileum in our case). There was fibro-adipose tissue attached to the intestine wall with dimensions of 9  $\times$  5  $\times$  1 cm. From the pericolic fat 12 lymph nodes



Figure 1: Three radiopaque rings at the level of the right iliac fossa.

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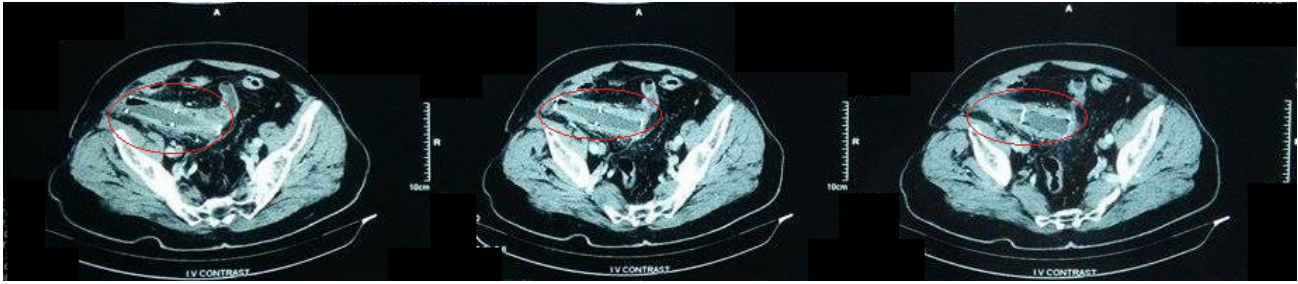


Figure 2: Abdominal CT scan.

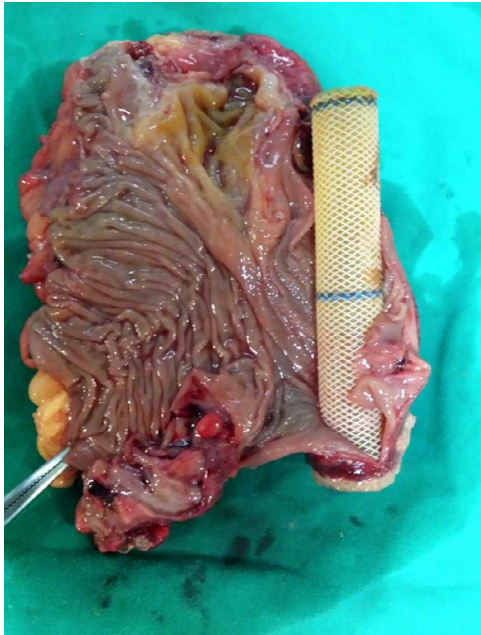


Figure 3: The extracted part of the intestine with the esophageal stent attached.

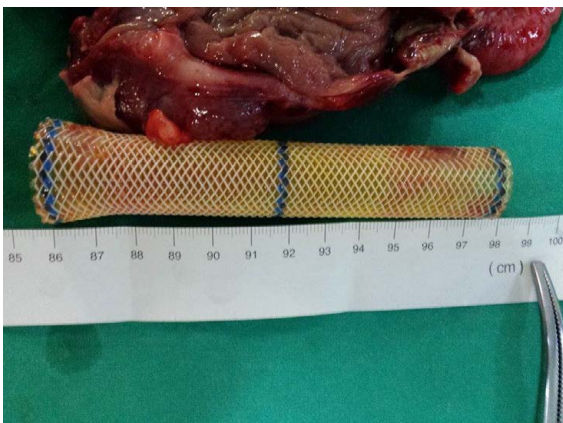


Figure 4: Self-expandable plastic stent (11.8 cm length, 1.4 cm width).

were removed with a diameter from 0.3 to 1 cm. Decongestion of the small intestine before the obstruction was performed with an end-to-end anastomosis of the remaining small and large intestine (ileo-transverse anastomosis). After surgery the patient was routinely admitted to the ICU for observation for one day. The post-operative period was uneventful.

Histological examination showed the presence of necrosis with ulceration and dense inflammatory cellular infiltrations from

neutrophils and polymorfonuclear white blood cells. The lymph nodes showed mild reactive deterioration. Thus, evidence of malignancy was not established.

## Discussion

As stated above, the use of esophageal stents can lead to various complications. Alternatives to them include nasogastric, gastrostomy and jejunostomy tubes. Total parenteral nutrition can also be used in patients who are not candidates for stent placement [1].

Migration of the stent might cause severe acute abdomen since it can obstruct the intestinal lumen. The diagnosis might be elusive, consequently a thorough medical history is crucial for the differential diagnosis along with a meticulous evaluation of the clinical, laboratory and imaging results since a radiopaque material may be detectable. In our case, the stent migrated after being placed and the patient was not aware of its placement, therefore he could not provide the appropriate information to guide us towards the right diagnosis. A thorough laboratory and screening test was necessary in order to discover the cause.

The poor endoscopic placement of the stent combined with the altered intestinal anatomy after the previously performed Bill Roth II operation (removal of the larger part of the stomach and side to side gastrojejunostomy), made it was easier for the stent to migrate to the ileocecal valve and cause obstruction. The ileocecal valve is the narrowest part of the small intestine, making it the most common place for foreign objects to stop, while passing through the digestive track, and consequently cause obstruction.

We cite a summary of clinical series evaluating Polyflex esophageal stents for benign diseases in which the technical success, the migration percentage and the clinical success are measured [8] (Table 1).

In the last study by Suzuki et al. global treatment success rate was 55.7%. Treatment success rate was 33.3% in refractory benign strictures, 23.1% in anastomotic strictures, 100% in perforations, 71.4% in fistulae, and 80% in anastomotic leaks. Stent migration was noted in 28 of 70 patients (40%), most commonly seen in refractory benign strictures.

Consequently, migration was the most common complication, occurring 27% (range 7-57%) of the time. Other major complications include bleeding, direct perforation, prolonged chest pain, stent occlusion, development of esophageal fistulae, and recurrence of strictures. In some cases, stents were repositioned or replaced and, in other cases the stricture, perforation and/or fistula had resolved and the stents were removed. The migrated stents did not cause any intestinal obstruction or require surgical interventions, unlike our case, and they were recovered endoscopically in almost all case, with one occurrence of spontaneous elimination [4].

In conclusion, esophageal stents are an effective minimally invasive technique for the treatment of various benign (for example restrictions after surgery or due to peptic ulcers or radiation) and malignant diseases

**Table 1:** Summary of clinical series evaluating Polyflex esophageal stents for benign diseases.

Study	N	Technical success (%)	Migration (%)	Clinical Success (%)
Radecke K, et al. [2]	39 (12)	100	21*	69*
Schubert D, et al. [3]	12	100	17	92
Evrard S, et al. [4]	21	100	57	81
Freeman RK, et al. [5]	21	100	24	95
Gelbmann CM, et al. [6]	9	100	30	78
Repici A, et al. [7]	15	100	7	80

Numbers in parentheses are the number of patients from the total cohort with benign esophageal disease.

\*Rates for benign versus malignant indications could not be separately ascertained.

(as palliative care) of the esophagus, especially in elderly patients with various pathologies, malnourished and immunosuppressed patients. But, their more widespread use over the recent years has revealed numerous complications. The modern physician should take these into account in the daily clinical practice as a not so common cause of gastrointestinal complications or even an unusual but possible cause of acute abdomen.

#### Conflict of Interest

There is no conflict of interest regarding the publication of this paper.

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