Safe Endoscopic Removal of a Migrated Esophageal Stent Using a Protection Hood

Marta Serrani*, Liza Ceroni, Pietro Fusaroli, M. Cristina D’Ercole, Giancarlo Caletti

Department of Medical and Surgical Science, U.O.C. of Gastroenterology, University of Bologna, Hospital of Imola, Via Montericco 4, 40026 Imola, Bologna, Italy

Received 8 May 2014; received in revised form 11 June 2014; accepted 18 June 2014

Abstract

Delayed esophageal metallic stent migration after a neo-adjuvant therapy of advanced esophageal cancer is a relatively frequent event, which is sometimes due to tumor response to chemotherapy.

Stent migration in the stomach is usually asymptomatic but it can cause potentially life-threatening complications as bowel obstruction or perforation.

Most gastric migrations can be managed endoscopically; however endoscopic stent removal could also be a risky procedure due to hemorrhage or esophageal perforation.

This case report describes a safe and quick endoscopic method to remove a migrated esophageal metallic stent from the stomach using a protection hood mounted on the tip of the endoscope.

© 2014 The Authors. Published by Elsevier GmbH. This is an open access article under the CC BY-NC-SA license (http://creativecommons.org/licenses/by-nc-sa/3.0/).

1. Case report

- In June 2013 a 71-year-old male patient with dysphagia and weight loss was referred to our Unit.
- An upper endoscopy showed a stenotic tumor of the distal esophagus (adenocarcinoma at the biopsies).
- EUS and CT-scan documented an advanced tumor with lymph nodes infiltration and a spleen metastasis (T3N1M1).
- An uncovered self expanding esophageal metallic stent was placed in order to relieve symptoms and improve oral food intake. No complications occurred during the procedure.

*Corresponding author. Tel.: +39 0542662407; fax: +39 0542662409. E-mail address: m.serrani@ausl.imola.bo.it (M. Serrani).
The patient underwent a neo-adjuvant chemotherapy. Four months later, a follow-up CT-scan was performed showing the stent migration in the gastric antrum (Figure 1). No radiological signs of perforation occurred. The patient had no symptoms. 24 h after the CT-scan, we performed an EGD to remove the stent. After endoscopic procedure no major complications occurred. Neoplastic tissue of the distal esophagus presented a mild self-limiting bleeding due to the stent extraction in the narrow lumen at the distal esophagus, although post-procedural lab tests did not show significant alterations. The patient was discharged six hours after the endoscopy and resumed his eating habits with no complications.

2. Technique
Esophagogastroduodenoscopy and esophageal stent removal.

3. Materials
- Endoscope: GIF-Q165, Olympus, Tokyo, Japan.
- Self-expanding non-covered metal stent (Ultraflex™ Esophageal NG Stent System, proximal release, length 15 cm, Boston Scientific, Natick, USA).
- Reusable alligator jaw grasping forceps, FG-7L-1; Olympus, Tokyo, Japan.
- Capuchon hood, Ref. AS0420000; ABS Bolton Medical, France.

4. Endoscopic procedure
- EGD with standard gastroscope under deep sedation with tracheal intubation to protect the airways.
- Visualization and grasping of the migrated esophageal stent in the stomach in order to verify that it is still removable.
- Extraction of the gastroscope and mounting of the foreign body hood protector on the tip of the gastroscope. Before re-intubating the patient, the hood is reflected back so that it does not interfere with view while it passes through the esophagus.
- Visualization of the stent in the gastric antrum and grasping of its proximal retrieval string with the alligator jaw grasping forceps.
- Gastroscope slow withdrawal to extract the stent.
- At the level of the cardias, the hood is mechanically pulled down over the stent.
- Further endoscopy to verify that no complications occurred during the extraction procedure.

5. Discussion
Delayed esophageal metallic stent migration after a neo-adjuvant therapy of esophageal cancer is a frequent (up to 40%) complication [1]. Migrated stent removal is recommended to avoid complications such as bleeding, bowel obstruction and perforation [2].

Most gastric migrations can be managed endoscopically; however endoscopic stent removal could also be a risky procedure due to hemorrhage or esophageal perforation [3,4]. In order to safely remove a migrated stent and prevent lacerations in the cardias or the upper esophageal sphincter, we used a foreign body hood protector.

The foreign body hood protector consists of a soft rubber bell-shaped hood which is placed on the tip of the gastroscope. At the beginning of the exam it is reflected back so that it does not interfere with the endoscopic view while passing through the esophagus. The proximal side of the hood is 8.3 mm in diameter; the elasticity of the material allows for easy mounting on the tip of the principal diagnostic and therapeutic gastroscopes. Its secure fixation is provided by an additional elastic band which is included in the kit. The hood is 25 mm long and has a distal opening diameter of 40 mm thus allowing sufficient capacity to embrace the flanged end of metallic stents of various sizes.

After grasping the stent retrieval string with the alligator jaw grasping forceps the endoscope is withdrawn to extract the stent. At the level of the cardias, the hood is mechanically pulled down over the stent, protecting the esophagus from lacerations.

In the literature there are many different techniques for migrated stent removal [2,5-7] but only few cases reported the use of the “hood technique” [8]. We think that ours is a safer and quicker technique for removal of migrated stents compared to forceful extraction just by pulling the stent with a forceps.

6. Scripted voiceover

The neoplastic stenosis is traversed with a standard gastroscope. Migrated stent is identified in the body and grasped to assess whether it is still possible to remove it. After mounting the hood protector on the tip, the gastroscope is reintroduced.
The proximal retrieval string of the stent is grasped with an alligator jaw grasping forceps. The gastroscope is slowly withdrawn. As the lumen physiologically narrows down at the level of the cardias, the hood is mechanically rolled back covering the stent. The withdrawal of the stent continues slowly through the cancer and the upper esophageal sphincter encountering minimal resistance unlike standard technique. The stent is safely pulled out from the mouth. Upper endoscopy is performed in order to verify that no complications occurred during the extraction procedure. Only a small amount of blood is seen but no major tears or damage of the esophageal wall.

**Conflict of interest**

The authors have no conflict of interests to disclose.

**Human and animal rights**

The work described in this article has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans.

**References**

[1] Langer FB, Schoppmann SF, Prager G, Tomaselli F, Pluschnig U, Mejna M, et al. Temporary placement of self expanding oesophageal stents as bridging for neo-adjuvant therapy. Ann Surg Oncol 2010;17:470-5.

[2] Molina-Infante J, Fernandez-Bermejo M, Perez-Gallardo B. Removal of a migrated covered metallic stent through an esophageal stricture, with multiple endoloops. Endoscopy 2010;42:E268-9.

[3] Homann N, Noftz M, Klingenberg-Noftz R, Ludwig D. Delayed complications after placement of self-expanding stents in malignant esophageal obstruction: treatment strategies and survival rate. Dig Dis Sci 2008;53:334-40.

[4] Ramirez FC, Dennert B, Zierer ST, Sanowski RA. Esophageal self-expandable metallic stents- indications, practice, techniques and complications: results of a national survey. Gatrointest Endosc 1997;45:360-4.

[5] Martins B, Sorbello MP, Retes F, Kawaguti FS, Lima MS, Hondo FY, et al. Endoscopic removal of migrated stent- the “grasper and pusher” method. Endoscopy 2012;44:E10.

[6] Weickert U, Jakobs R, Siegel E, Schilling D, Riemann JF. Lasso technique for retrieval of a dislocated and impacted esophageal stent. Endoscopy 2004;36:575.

[7] Dinani AM, Cortes R, Sridhara S, Reichert S, Somnay K. Retrieval of a migrated Polyflex stent- a novel technique. Endoscopy 2009;41:E304-5.

[8] Munoz JC, Khoury JE, Alizadeh M, Pudhota S, Smith-McCutchen A, Corregidor AM. Modified technique to extract malpositioned or migrated self-expanding stents from the esophagus and stomach. J Gastroenterol Hepatol 2009;24:547-51.