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ORIGINAL ARTICLE

Role of fluoroscopic guided self expandable metallic stents in the management of malignant esophageal strictures

Mohamed Shaker [a], **Ahmed Deif** [b,*], **Amr Abdelaal** [c]

[a] *Radiology Department, Faculty of Medicine, Ain Shams University, Abbaseya Square, Cairo 11566, Egypt*
[b] *Military Medical Academy, Ehsan Abdel Koddous Street, Cairo 11371, Egypt*
[c] *General Surgery Department, Faculty of Medicine, Ain Shams University, Abbaseya Square, Cairo 11566, Egypt*

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KEYWORDS

Esophageal cancer;
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Abstract *Objectives:* To evaluate the role of fluoroscopic guided self expanding metallic stents in the management of dysphagia caused by malignant esophageal strictures.
Materials and methods: During the period between April 2010 and October 2012, 31 patients with malignant esophageal strictures were subjected to fluoroscopic guided self expanding metallic stent application. The study included 22 males and 9 females ranging in age between 22 and 75 years old with mean age of 56.8 years. Lesions were located in the lower esophagus and gastroesophageal junction in 22 patients and middle esophagus in 9 patients.
Results: Technical success was achieved in all 31 cases (100%). The clinical success was 96.7% with 81% mean improvement in dysphagia according to dysphagia score. Only one major complication occured (3.2%) which was proximal stent migration.
Conclusion: Fluoroscopic guided esophageal stenting is a highly effective and safe method for palliating dysphagia in patients with obstructing esophageal cancer with significant clinical improvement.

1. Introduction

The survival rates of patients with malignant esophageal obstruction are only improved by surgical resection at a very early stage (1). In more advanced stages, therapy is usually palliative in nature, the main aims being relief of dysphagia and maintenance of nutrition. Esophageal intubation with a laparotomy induced plastic endoprosthesis has been practiced for the palliation of dysphagia from malignant esophageal obstruction. Endoscopically inserted plastic prosthesis was

* Corresponding author at: 9 El-Obour Buildings, Salah Salem St., Cairo, Egypt.
E-mail addresses: mohamedshakerghazy@yahoo.com (M. Shaker), ahmeddeif55@hotmail.com (A. Deif), aaabdelaal@yahoo.com (A. Abdelaal).
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introduced in the 1970s, with a much reduced complication rate. These stents had small internal diameter (10–12 mm), resulting in many patients having difficulty in resuming a normal diet. They had a relatively high complication rate (up to 36%), mainly due to esophageal perforation, with a high procedure-related mortality rate. Plastic stents have been superseded by the new metallic self-expanding stents which are considered safer and easier to place (2). The major impact of these stents relates to the ease of their insertion and the potential for few complications because of the small caliber delivery system (3).

In this study we evaluate the role of Fluoroscopic guided self expanding metallic stents in the management of dysphagia caused by malignant esophageal strictures.

2. Materials and methods

2.1. Patient population

In this retrospective study, over a period of 30 months, thirty-one patients with dysphagia caused by malignant esophageal strictures were presented to Interventional Radiology Unit, Ain Shams University hospitals, for esophageal stent application. The study included 22 males (71%) and 9 females (29%) ranging in age between 22 and 75 years old (mean = 56.8 - years). Lesions were located in the lower esophagus and gastroesophageal junction in 22 patients (71%) and middle esophagus in 9 patients (29%).

2.2. Inclusion criteria

Patients with irresectable esophageal cancer whether located at middle or lower third as well as at gastro-esophageal junction were included in the study. The treatment decision was made after multidisciplinary discussion between surgeons and interventional radiologists on the basis of clinical and radiological criteria.

2.3. Exclusion criteria

Patients with postcricoid carcinoma were excluded from the study due to the intolerable foreign body pharyngeal sensation. Patients with high bleeding profile liable for uncontrollable hemorrhage during or after the procedure were also excluded on the basis of International Normalization Ratio (INR) and platelets count; those with INR above 1.5 as well as those with platelet count less than 50,000 were excluded or postponed till correction of the bleeding profile. Patients who were not fit for general anesthesia or those with very poor general condition were excluded as well.

2.4. Patient preparation and preprocedural assessment

Full clinical and general examination was done to assess patient's general condition. All patients were subjected to full history taking with stress on severity of dysphagia, so all patients were given a score on the dysphagia score from 0 to 4 according to dysphagia scoring system, first utilized by Knyrim et al. (4), for describing the results of stent insertion as follows; 0 = able to eat normal diet/no dysphagia, 1 = able to swallow some solid foods, 2 = able to swallow only semi solid foods, 3 = able to swallow liquids only, 4 = unable to swallow anything/absolute dysphagia.

A complete blood count and bleeding profile were obtained within 24 h of the procedure. General laboratory studies routinely done prior to general anesthesia were also done to all patients. Oral contrast study was done for preprocedural assessment.

The procedure details were explained to the patients and their relatives and a written consent was signed; in which the risks of the procedure were clarified.

2.5. Technique

Two X-ray machines were used in the study: Toshiba machine Infinix INFX-8000V and Toshiba machine Max 1000, all stents were placed under general anesthesia in supine position, a nasogastric tube was introduced till the site of the obstruction, diluted water soluble contrast medium was then injected through the nasogastric tube to delineate the stricture, a hydrophilic coated 180 cm guidewire (Glidewire Terumo Medical Company TMC; Tokyo, Japan) was introduced through the stricture, after bypassing the stricture the nasogastric tube was removed and the hydrophilic guidewire was then replaced by a superstiff guidewire (Amplatz superstiff guidewire; Boston Scientific, Natick, MA, USA) through an exchange 5F Cobra catheter (Boston Scientific, Natick, MA, USA), the Cobra catheter was then removed and the stent was introduced over the stiff guidewire, the stent was then deployed after confirming good position under fluoroscopic guidance, and finally contrast medium was injected again to ensure proper function and position of the stent (Fig. 1).

Two types of partially covered self expanding nitinol stents were used in our study according to availability in market and in our unit: Ultraflex stent Boston Scientific, Natick, MA, USA which was used in 25 patients with 12–15 cm stent length and 18–23 mm stent diameter, and Choostent™ M.I. Tech. Co., Ltd. Seoul; Korea which was used in 6 patients with 12–17 cm stent length and 18 mm stent diameter.

In 5 patients balloon dilatation was needed prior to stent application due to tight strictures thus facilitating the insertion of stents, and we used the balloons as they have better radial force and less recoil compared to the dilators, and in 2 patients balloon dilatation was done after application. The balloon used was CRE Wireguided Balloon Dilator, Boston Scientific, Natick, MA, USA.

After the procedure we permitted patients to take fluids 4 h after the procedure to allow enough time to recover from anesthesia and for the rest of day, the next 6 days patients were only allowed to take semisolids. Then follow-up esophagography was done 1 week after the procedure, if totally patent lumen patients could take solid foods yet instructed to chew food extensively to decrease the risk of stent obstruction. In gastroesophageal junction tumors which was the majority of our cases, *Ranitidine*; *Zantac* once daily at night and *Domperidone; Motinorm* 15 min before each meal were prescribed to reduce gastroesophageal reflux through the stent. Then we followed up the patients on monthly basis assessing the dysphagia score.

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