

Role of stenting in the palliation of gastroesophageal junction cancer: A brief review

Theodoros E Pavlidis, Efstathios T Pavlidis

Theodoros E Pavlidis, Efstathios T Pavlidis, Second Surgical Propedeutic Department, Medical School, Aristotle University of Thessaloniki, Hippocraton Hospital, 54642 Thessaloniki, Greece

Author contributions: Pavlidis TE designed the research and wrote the paper; Pavlidis ET performed the research and analyzed the data.

Correspondence to: Theodoros E Pavlidis, MD, PhD, Professor, Second Surgical Propedeutic Department, Medical School, Aristotle University of Thessaloniki, Hippocraton Hospital, Konstantinoupolis 49, A Samothraki 23, 54642 Thessaloniki, Greece. pavlidth@med.auth.gr

Telephone: +30-2310-992861 Fax: +30-2310-992932

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Abstract

Gastroesophageal junction cancer has an increasing incidence in western countries. It is inoperable when first manifested in more than 50% of cases. So, palliation is the only therapeutic option for the advanced disease to relieve dysphagia and its consequences in weakened patients with an estimated mean survival under 6 mo. This article has tried to identify trends focusing on current information about the best palliative treatment, with an emphasis on the role of stenting. Self-expanding stent placement, either metal or plastic, is the main management option. However, this anatomical location creates some particular problems for stent safety and effectiveness which may be overcome by properly designed novel stents. The stents ensure a good quality of life and must be preferred over other alternative methods of loco-regional modalities, *i.e.*, external radiation, laser thermal or photodynamic therapy. Although stent placement is generally a simple, safe and effective method, there are sometimes complications, increasing the morbidity and mortality rate. Bypass operative procedures have now been abandoned as a first choice. The stomach instead of the colon must be

used for a bypass operation when it is needed. Chemotherapy, despite the toxicity, and intraluminal radiation (brachytherapy) have a well-defined role.

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Key words: Gastroesophageal junction cancer; Palliative therapy; Stent placement; Dysphagia relief; Esophageal carcinoma; Gastric carcinoma

Core tip: The topic is interesting and this manuscript contains the most recent data briefly highlighting it. More than half of the patients with gastroesophageal junction cancer present with inoperable disease at the time of diagnosis so they need palliative treatment to relieve dysphagia and its consequences. Stent placement ensures good quality of life during the short survival time but it has some additional specific problems in this particular location.

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INTRODUCTION

Cancer of the gastroesophageal junction has had an increasing incidence over the past thirty years in western countries and is now the eighth most common malignancy. However, the exact incidence cannot be precisely assessed because it can be allocated as either gastric or esophageal cancer. This confusion is not of particular importance since in both cases the management is the same. Its prognosis is not good, with a 5 year survival less than 20% and even less in younger patients under 35

years old^[1,2].

More than half of these patients present with inoperable disease at the time of diagnosis. Hence, they need palliative treatment in order to alleviate dysphagia and its further consequences for the life expectancy, given that the average survival time does not exceed 6 mo^[1-4]. Although the kind of palliation must be individualized, generally stent placement is the first choice. There are also other alternatives, such as bypass operation, external radiation, intraluminal radiation (brachytherapy), chemotherapy, laser ablation (thermal Nd: YAG or photodynamic), dilatations, chemical substance injection, mainly ethanol, as well as nutritional support *via* a nasogastric feeding tube or percutaneous endoscopic gastrostomy^[1,4].

STENT PLACEMENT

Endoscopic self-expanding metal stent (SEMS) placement provides a rapid relief of dysphagia and it is currently the most frequently chosen method^[3,5,6]. However, according to the relevant researchers, the recurrence of dysphagia varies between 22%-50%. This recurrence may occur due to various reasons, such as tissue growth in the stent space, stent migration or its obstruction by bolus. The incidence of cancerous tissue overgrowth *via* the stent is 26%-36%, while the non-cancerous granulosomatous tissue overgrowth is 20%. The former has been estimated to occur after 18 wk and the latter after 22 wk following the stent placement. This tissue overgrowth can be managed either by thermal ablation or the recently introduced self-expanding plastic stent (SEPS) placement, with the advantage of lower cost^[3].

The placement of SEMS has also been proposed for relieving dysphagia due to local recurrence after esophagogastrectomy, in which the mean survival time has been limited to 4-6 mo or even less^[7].

The application of SEMSs does not require dilatation of the stricture before placement; they are also flexible and ensure a diameter of patent lumen from 16 to 24 mm.

Dysphagia is staged in 5 grades: (0) Ability to swallow normal diet; (1) Ability to swallow part of solid diet; (2) Ability to swallow part of semi-solid diet; (3) Ability to swallow only liquids; and (4) Complete obstruction. The indication for stent placement includes grade 3 and 4 or the presence of tracheobronchial fistula irrespective of the grade^[5].

In a recent meta-analysis on published reports including 1027 patients in 16 randomized controlled trials, it was concluded that endoscopic placement of self-expanding stents is the most widely used method for the management of dysphagia in comparison to other alternative methods of loco-regional modalities, *i.e.*, radiation, laser thermal or photodynamic therapy. Despite its high cost, it is a simple and effective method (with minimal invasiveness and discomfort) to ameliorate dysphagia in the vast majority of patients with a mean survival of no more than six months. In addition, its superiority is mainly associated with the fact that, unlike what is commonly observed in alternative methods, there is no need

for re-interventions. However, in patients with one year survival, a loco-regional palliation seems better despite the need for further re-intervention. Furthermore, their higher life expectancy is possibly associated with the application of loco-regional treatment^[4]. According to the aforementioned meta-analysis, the choice of conventional self-expanding stents *vs* modern anti-reflux stents has been found to be equally effective in relieving reflux since there was no difference between them. There are minimal differences among the various types of stents with regards to the outcome^[4].

COMPLICATIONS OF STENTS

Significant differences have been noted between endoscopic and radiographic stent placements regarding the short-term complications. They encompass hemorrhage, pneumonia, exhaustion, heart abnormalities, perforation and sepsis. The morbidity and mortality rate exceeds 45% and 9%, respectively^[6].

Due to the high frequency of the manifestation of long-term complications, *i.e.*, stent migration, hemorrhage and protrusion of gastroesophageal junction mucosa, opposition to the use of metal stents has been recently expressed and the individualized design of nitinol stents in special anatomical conditions has been proposed^[8]. The placement of SEMSs for palliative management of obstruction due to gastroesophageal junction cancer has often been related to stent migration, as well as with symptoms of gastroesophageal reflux. The stent placement in this particular location has some additional specific problems compared to proximal esophageal cancer and therefore it implies less palliation and a higher rate of complications. Stent migration is more frequent due to the fact that the distal end of the stent protruding freely into the stomach fundus cannot be fixed to the wall. Hemorrhage is even more frequent in such cases. Firstly, the distal end of the stent may corrode the posterior wall of the stomach resulting in ulceration and subsequent bleeding. Secondly, the stent *via* the gastroesophageal junction cannot remain straight due to the angle of his, resulting in high pressure and ulceration with subsequent bleeding. The stent angulations are mainly responsible for the lack of significant improvement in the swallow quality. Moreover, gastroesophageal reflux is particularly common. Novel stents with specific design have certain advantages in overcoming those difficulties of the gastroesophageal junction.

TYPES OF STENTS

Thus, such stents have been designed, including the anti-reflux Z mechanism^[9]. There are different types available: (1) Z-stent with the Korean modification (Choo stent) composed of nitinol or the European version of stainless steel, both covered by polyethylene; and (2) Flamingo Wallstent (available only in Europe) composed of cobalt mixture covered by polyurethane specifically designed for gastroesophageal junction with diameter of either 30

mm (distal 20 mm) or 24 mm (distal 16 mm). Some other stent types include Ultraflex composed of a plexus of nitinol wire covered by polyurethane with a diameter of 28 mm (distal 23 mm) or 23 mm (distal 18 mm), Wallstent II composed of cobalt mixture covered by silicone with a diameter of 28 mm in both ends (20 mm in the middle) and the latest nitinol stents double layer composition (inner of polyurethane and outer of uncovered nitinol wire preventing stent migration). Reflux is prevented by a glove of polyurethane extended into the stomach^[9] or a membrane into the lower end functioning as a valve^[10]. Additionally, there are available novel SEPSs (Polyflex) consisting of polyester covered by silicone which have been used with satisfactory results^[11].

OTHER MODALITIES

The combination of stricture dilatation by balloon, chemotherapy and/or radiation, with additional metal stent placement has been proposed in some cases^[12].

Radiation and intraluminal high dose brachytherapy is indicated in advanced cancer, offering palliation by relieving dysphagia and improving the quality of life^[13-17]. Despite the toxicity and its complications, chemotherapy has a place in such condemned patients^[18-20].

The cooperation of various medical specialities is mandatory since the use of all available current diagnostic and therapeutic tools improves the outcome^[21,22]. Nowadays, in western countries, adenocarcinoma represents two thirds of esophageal cancer. The current modalities of palliative treatment are equally effective in both adenocarcinoma and squamous cell carcinoma, contributing to a satisfactory quality of life^[23].

BYPASS OPERATION

With the introduction of modern, safe and effective non-operative alternative interventional methods for the management of dysphagia, the palliative bypass operation has been applied even less, mainly due to its high morbidity and mortality rates. On the other hand, the average survival time of these patients is limited to about 6 mo. The stomach has been preferred to be used for a bypass procedure and when the stomach cannot be used, we use the colon, which historically was first used^[24-26]. The gastric conduit was introduced first by Kirschner in 1920 and so the operation was established using his name. However, it should be mentioned that this operation is now considered an obsolete planned procedure although it remains a reasonable choice in cases when unexpected findings appear that exclude any radical operation during the operative exploration^[25].

CONCLUSION

In conclusion, palliative treatment of inoperable gastroesophageal junction cancer aims at managing dysphagia. It can now mainly be achieved by interventional stent placement, ensuring good quality of life during the short

survival time. The bypass operation must be avoided as a first choice in these severely affected patients. The gastric conduit is preferred instead of colon interposition.

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