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Advances in Stent Technology for Esophageal Cancer

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Introduction

Esophageal stricture and tracheoesophageal fistula in the setting of advanced esophageal cancer can have a devastating effect on quality of life due to severe dysphagia, aspiration pneumonia, and the inability to sustain nutrition or enjoy meals.¹ Management of dysphagia is indicated for palliative purposes in patients with unresectable esophageal cancer¹ and in order to optimize nutrition prior to surgery in the neoadjuvant setting.^{2,3}

Historically, management of malignant dysphagia consisted of radiation therapy with or without systemic chemotherapy, endoscopic tumor ablation, stricture dilation or enteral feeding.^{4,5} Although radiation therapy provides excellent palliation, its effect is delayed by weeks.^{6,7}

Esophageal Stenting

Endoscopically placed stents are being used for immediate palliation of dysphagia as well as tracheoesophageal fistulae.^{1,3} The SIREC (Stent or Intraluminal Radiotherapy for Inoperable Esophageal Cancer) study

found that newer stents produced more immediate relief of dysphagia than radiation therapy,⁸ although the latter offers a more durable result for patients with more than 3 months' life expectancy.⁸ Thus, the paradigm of esophageal stenting for immediate relief followed by radiation therapy may be the most effective way to palliate dysphagia in patients with malignant dysphagia and a life expectancy of at least 3 months.

The WallFlex[®] (Boston Scientific) fully or partially covered esophageal stent, constructed of multiple braided radiopaque nitinol wires, is indicated for the maintenance of esophageal luminal patency in malignant esophageal strictures or for the occlusion of concurrent esophageal fistulae.⁹

A prospective study¹⁰ assessed the clinical efficacy and safety of the esophageal WallFlex[®] stent for dysphagia palliation in 37 patients with esophageal cancer.¹⁰ Stent placement was successful in 36 of 37 patients, who experienced significant palliation.¹⁰ Major complications occurred in 3 patients (pneumonia in 1, severe pain in 2); 8 patients developed recurrent dysphagia because of stent migration, food impaction, or tissue ingrowth or overgrowth.¹⁰

Our Experience

Multidisciplinary tumor board conferences present the perfect time to discuss our patients and select the most appropriate form of dysphagia palliation in esophageal cancer patients. The typical WallFlex[®] stent candidate at our institution presents with a T3 tumor and dysphagia; the stent is placed either for palliative purposes or to maintain nutrition and quality of life before neoadjuvant therapy and surgical management (Figure). Radiation therapists at our institution have no difficulty simulating and delivering treatment in the presence of an esophageal stent.¹¹

For those patients who require nutritional support, I favor stenting in lieu of the placement of a jejunostomy feeding tube (J-tube). Placing a J-tube may require a 5-day hospital stay because bolus feeding needs to be gradually instituted. The stent is easier to place and quicker to re-establish enteral nutrition.

Stent placement at our hospital is done under general anesthesia and fluoroscopic guidance, and is frequently performed at the time of endoscopic ultrasound staging. We do not predilate except when the stricture is so tight that we cannot pass the deployment system. We usually select the 18-mm diameter stent to relieve solid-food dysphagia. In instances when the stricture is not as tight, we will place a 23-mm diameter stent. We tend to put in longer stents if we have to stent across



Figure. Esophageal tumor before and after placement of the WallFlex[®] stent.

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the gastroesophageal junction due to tumor involvement since we believe they help address higher migration rates in these instances. We admit the patient for overnight observation and obtain a chest x-ray the following morning to confirm proper stent position.

Patients receiving the esophageal stent are initiated on a clear liquid diet with a stepwise progression to a soft solid diet. The patient's ultimate diet can be determined by trial and error. Patients who are stented across the gastroesophageal junction are instructed to follow aspiration precautions and prescribed twice-daily proton pump inhibitors. Patients are seen in the outpatient clinic 1 week after stent placement for symptom assessment and repeat chest x-ray to evaluate stent position and to assess clinical response. The majority of patients experience immediate dysphagia palliation, but patients often have variable amounts of retrosternal pain, which tends to resolve within 3 to 5 days with the use of oral narcotic pain medication. Reflux symptoms and stent migration remain concerns during follow-up of patients receiving esophageal stents. Stent migration very rarely requires emergent intervention or hospitalization. We usually perform endoscopy within 2 to 4 days.

My advice for learning how to place the WallFlex® stent is to approach someone with significant experience and observe the procedure. Ask them how they select patients for this procedure, under which conditions they use general anesthesia and fluoroscopy, and how they ensure proper positioning, and make note of technical pearls.

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