Esophageal cancer is a highly aggressive upper gastrointestinal malignancy. According to the American Cancer Society ([ACS], 2010), 16,640 new cases of esophageal cancer were diagnosed in 2010, with 14,500 deaths caused by the disease. Most cases are diagnosed at stage III or IV (Edmondson & Schiech, 2008). The five-year survival rate is 17% for all stages of esophageal cancer (ACS, 2010); therefore, palliation is the goal for many patients. The two main types of esophageal cancer are squamous cell carcinoma and adenocarcinoma (Siersema, 2008) (see Figure 1). Each type has different risk factors. Squamous cell is associated with cigarette smoking and chronic, heavy alcohol consumption, whereas adenocarcinoma is linked to a history of gastroesophageal reflux disease, Barrett esophagus, and obesity. The risk of esophageal cancer increases with age, and men are three times more likely than women to acquire the disease (ACS, 2010).

**Case Study**

Mr. X, a 61-year-old African American, had a history of gastroesophageal reflux disease, a 40-pack-year history of smoking cigarettes, and hypertension. He was obese with a baseline weight of 210 lbs at 5’9” tall (body mass index = 31). Five months ago, Mr. X was experiencing dysphagia with solids foods with only slight modifications to meats (grades 1–2). Mr. X tolerated the procedure well without any complications of bleeding, perforation, or severe pain.

**Pathology**

Dysphagia, or difficulty swallowing, has several possible causes in esophageal cancer. Progressive dysphagia is the most common presenting symptom of esophageal cancer (Javle et al., 2006). The esophagus lacks a serosal lining, allowing for unimpeded radial distention and swallowing despite progressive tumor growth. This delays dysphagia from occurring until the tumor occupies 80%–90% of esophageal circumference (Javle et al., 2006). Dysphagia also occurs as a result of treatment for esophageal cancer. Treatment modalities such as external beam radiation, ablation therapy, photodynamic therapy, and brachytherapy can cause esophagitis, fibrosis, and strictures resulting in dysphagia (Javle et al., 2006). Esophagectomy for tumor resection also can cause postoperative anastomotic strictures, creating dysphagia (Javle et al., 2006).

**Evaluation**

Evaluating dysphagia in patients with esophageal cancer includes determining the cause and assessing the severity. Several palliative options are available for dysphagia; the clinical situation, local expertise, and cost effectiveness help determine the appropriate treatment modality.
swallowing) to 5 (unable to swallow saliva) (Javle et al., 2006). The cause of dysphagia often is patient specific. Assessing the treatment a patient has received can help to determine whether the cause is tumor obstruction, stricture, or fibrosis. An upper endoscopy also can be performed if further evaluation is needed.

Management

Options for palliation of dysphagia include dilatation, stent, ablation therapies, and brachytherapy. The clinical situation, local expertise, and cost effectiveness help determine the appropriate treatment modality (Javle et al., 2006).

Dilatation

Dilatation of the esophagus includes an endoscopic procedure and stretching the strictures with devices such as balloons or rubber tubes while the patient is under sedation. Dilatation for malignant obstruction generally is used only as a preliminary modality before endoscopic ablation therapy or tube-feeding placement because the relief is short and repeat dilatation usually is required within two weeks (Javle et al., 2006). Dilatation is used more commonly for dysphagia related to anastomotic strictures (Kight, 2008). Dilatation is not a typical palliation modality because it provides very short relief and requires frequent reinsertion, with a small risk of perforation and bleeding (Javle et al., 2006).

Stent

Self-expanding stents have become the most common means of endoscopically treating dysphagia in esophageal cancer (Javle et al., 2006). Self-expanding stents have been favored because of ease of placement, minimal associated morbidity, and rapid relief of dysphagia (Bower, Jones, Vessels, Scoggins, & Martin, 2010). Esophageal self-expanding stents are composed of metal or plastic (Siersema, 2008) (see Figure 2). The stents can be covered with a silicone or polyurethane coating that prevents ingrowth of the tumor, but the coated stents have a higher risk of migration from the original placement site (Bower et al., 2010). Plastic self-expanding stents can be removed, whereas metal stents cannot. Complications from stent placement can occur during or after the procedure as well as long term. Complications include perforation, pain, stent migration, fistulization, airway obstruction, food-bolus obstruction, and hemorrhage (Javle et al., 2006). Immediate relief of dysphagia occurs after stents are placed (Siersema, 2008). Stent placement is a one-time intervention with a relatively low complication rate, making it a good option for palliation of malignant dysphagia (Javle et al., 2006).

Ablation Therapy

Ablation therapies used for esophageal cancer include laser treatment, photodynamic therapy, argon plasma coagulation, and chemical injection (Javle et al., 2006). Laser treatment vaporizes malignant tissue to restore lumen patency. Treatments are performed every other day and usually take three to four treatments to be effective (Javle et al., 2006). Risks of ablation therapy include perforation, fistula formation, hemorrhage, and sepsis. Dysphagia relief usually last about one month (Javle et al., 2006).

Argon plasma coagulation causes tissue coagulation, desiccation, and destruction of the malignant tissue. However, only a few investigations have studied this technique for the treatment of malignant dysphagia (Javle et al., 2006). More than half of recipients in one study (N = 83) had adequate relief after one session, but most of the patients needed retreatment every three or four weeks to maintain relief (Javle et al., 2006). Perforation is a risk of argon plasma coagulation. In addition, this intervention is not widely available to date because it is a newer procedure.

Chemical injection of ethanol into the malignant tissue causes coagulation of the tissue, increasing the patency of the esophagus. This treatment can provide dysphagia relief for about one month but includes risks of chest pain, perforation, and fistulization (Javle et al., 2006).

Photodynamic therapy involves injecting the patient with a photosensitizing agent that is absorbed by the malignant cells. A few days later, the patient undergoes an endoscopic procedure in which a low-powered laser initiates a photochemical reaction resulting in tumor necrosis (Javle et al., 2006). Photodynamic therapy provides symptom relief for two months but has a higher cost than other procedures (Javle et al., 2006). Associated risks include chest pain, worsening dysphagia related to esophagitis, photosensitivity, strictures, fever, and leukocytosis (Javle et al., 2006).

Table 1. Grades of Dysphagia

<table>
<thead>
<tr>
<th>GRADE</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td>Normal swallowing</td>
</tr>
<tr>
<td>2</td>
<td>Difficulty swallowing some hard solids but can swallow semisolids</td>
</tr>
<tr>
<td>3</td>
<td>Unable to swallow any solids but can swallow liquids</td>
</tr>
<tr>
<td>4</td>
<td>Difficulty swallowing liquids</td>
</tr>
<tr>
<td>5</td>
<td>Unable to swallow saliva</td>
</tr>
</tbody>
</table>

Thermal and chemical ablative techniques provide equivalent palliation when compared to each other and to self-expanding metal stents. However, those modalities are not widely available and have increased requirements for reinter-vention, which preclude preference for self-expanding metal stents (Sreedharan et al., 2009).

**Brachytherapy**

In brachytherapy, a sealed radiation source is placed close to or inside the tumor in the esophagus; treatments usually last 1.5 days. Brachytherapy does not cause immediate relief of dysphagia but has better long-term relief than self-expanding metal stents (Sreedharan et al., 2009). Dysphagia may worsen for about a week because of tissue edema. Potential side effects include bleeding, perforation, fistula formation, and post-treatment strictures (Javle et al., 2006). Studies have shown higher quality-of-life scores related to dysphagia and general health with brachytherapy recipients compared to stent recipients (Sreedharan et al., 2009).

**Chemotherapy and Radiation**

Phase II studies using cisplatin combinations have shown dysphagia relief in a majority of patients with esophageal cancer (Ilson et al., 1999, 2000). Effective palliation of dysphagia can be achieved with systemic chemotherapy alone, but the systemic toxicities must be considered (Javle et al., 2006). Radiation for esophageal cancer palliation has a lower total dose than radiation for definitive treatment. Fistula and postradiotherapy stricture formation may occur (Javle et al., 2006). Esophagitis is a side effect of radiation to the neck and can temporarily increase dysphagia (Edmondson & Schiech, 2008). No data support the notion that chemotherapy and radiation provide better dysphagia palliation compared to newer modalities such as self-expanding metal stent insertion and brachytherapy (Sreedharan et al., 2009).

**Conclusion**

Because esophageal cancer has a poor prognosis, palliation is the goal for most patients. No single intervention palliates dysphagia all of the time for every patient; therefore, healthcare providers must assess the risks and benefits of each palliative intervention for individual patients. In addition, interventions should be chosen based on which modalities are available to the patient, which treatments have the greatest benefit with the fewest risks, and the patient’s preference and goals.

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**References**


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