

ADVANCES IN GERD

Current Developments in the Management of Acid-Related GI Disorders

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Surgical Therapy for Esophageal Cancer

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G&H Could you describe the different modalities for screening esophageal cancer patients for surgical candidacy and survival prediction?

TR First, patients need to be clinically staged by classifying depth of tumor invasion (T), status of the regional lymph nodes (N), and presence or absence of distant metastases (M). Tumor staging is best determined utilizing endoscopic ultrasound (EUS), which accurately assesses tumor invasion outside the esophageal wall but does not differentiate tumors confined to the wall (T1 and T2). Lymph node ultrasound characteristics can be used to classify nodes; however, lymph node status can be better examined by biopsy, utilizing fine needle aspiration. Distant metastases are best determined through a combination of computed tomography and positron emission tomography. Radiology is combined with nuclear medicine in using the two scans. All of this information is necessary to determine clinical stage and select the patients best suited for surgery. EUS detects tumors invading or metastasizing outside the wall and is the best indicator that a patient will benefit from surgery alone. Once tumors spread beyond the esophageal wall (T3N0M0), the cure rate associated with surgery alone is only 20–25%. These patients need to be treated more aggressively, with chemoradiation and other adjuvant therapies.

Staging can predict long-term survival of cancer therapy but short-term survival after surgery is dependent on patient factors. Additional screening, most importantly assessment of cardiopulmonary status, is required. Good pulmonary function is critical to survival with any major surgery but because esophagectomy is such an extensive

procedure, the role of pulmonary function is greatly magnified. Esophagectomy shouldn't be performed on an active smoker. These patients need to enter and complete smoking cessation programs and be treated with bronchodilators for reversible asthma and antibiotics for chronic bronchitis before undergoing surgery. Other comorbidities, including hepatic dysfunction, renal impairment, and vascular disease, need to be evaluated. Surgical patients need to be selected based on comorbidities, most importantly pulmonary function.

G&H There are several esophagectomy techniques (eg, transhiatal, Ivor-Lewis). Do outcomes vary according to the specific surgical approach taken?

TR In the past, it could not be demonstrated that the surgical approach impacted survival. This, in part, is because patients had such advanced-stage cancer that the disease overwhelmed every other factor in determining outcome. Now that patients with early-stage cancer are treated, more patients are being cured, and outcome measures affecting quality of life (QOL) beyond survival need to be considered. One of the factors with a bearing on QOL is operative approach. Early-stage cancer patients who do not undergo thoracotomy have a better survival than those who do, implying that a lesser surgical insult results in optimal survival outcomes.

G&H When would each of the different approaches be used?

TR If the patient presents with high-grade dysplasia or intramucosal cancer with no evidence of regional lymph node metastases, I prefer a transhiatal esophagectomy without thoracotomy. Lymph nodes, in this approach, are removed by sampling only, to ensure that the cancer has not been mis-staged and that there is no metastasis. In these patients, the likelihood of regional lymph node metastasis is under 5%, and this doesn't warrant lymphadenectomy.

However, once the tumor has entered the submucosa, the chance of regional lymph node metastasis rises to 25% or greater. When the tumor has entered the muscularis propria, the likelihood of regional lymph node metastasis

is about 50%. When the tumor has progressed outside the esophageal wall, the chance of regional nodal metastasis is 80%. These patients require thoracotomy in order to perform a lymphadenectomy. More invasive cancer requires a more extensive lymph node resection. The question then becomes one of what type of thoracotomy to perform.

Because more patients at every stage of esophageal cancer are surviving, esophageal reconstruction is becoming as important as resection, if outcome is also to be measured in terms of QOL. The Ivor-Lewis approach, which requires entering the chest from the right side, is a good method for squamous cell cancer, which is usually a mid-thoracic cancer. Adenocarcinomas, on the other hand, generally occur lower in the chest, where a right-sided Ivor-Lewis approach may not work as well in terms of access to the tumor and compromise of the surrounding structures in the chest cavity. It is important that the stomach, postoperatively, remain tall, straight, and in the midline, and that it empties well. The Ivor-Lewis approach may cause an obligate bend of the stomach over the right diaphragm, which adversely affects gastric emptying. This approach also requires an anastomosis lower in the chest, which can result in significant reflux and the recurrence of Barrett esophagus. If at all possible, it is best to do the anastomosis in the neck. If it is necessary to go into the chest, it is best to enter from the left, which facilitates en bloc resection and keeps the stomach in the midline.

G&H With regard to esophageal reconstruction, what are the pros and cons of colonic interposition versus gastric pull-up?

TR It is important to realize that utilizing the stomach (gastric pull-up) is really a matter of shortening the esophagus, not replacing it. The upper sphincter remains intact, and the stomach is brought up into the chest where an esophagogastric anastomosis is constructed to mimic the lower gastroesophageal sphincter as closely as possible. The denervated stomach must then be made to function in the negative-pressure environment of the chest, rather than the positive-pressure abdomen. Gastric drainage by pyloroplasty or pyloromyotomy is essential, along with other nonoperative factors, in order to avoid “dumping,” a scenario where the stomach empties too quickly.

When utilizing the colon, it is important to remember the colon’s original function, which is to reabsorb water, hold feces for 6 hours to 2 days, then evacuate. The esophagus is meant to transfer a bolus of food from the

throat to the stomach in 30 seconds. The esophagus cannot replace the colon, nor vice versa. Again, with longer survival times, it has been found that the colon dilates and doesn’t provide a workable replacement for the esophagus. This finding has been shown in the long-term results of the surgeon Sir Ronald Belsey of the Frenchay Hospital in Bristol, UK, who was one of the original proponents of left colonic replacement. It also requires a much more complex operation. In gastric pull-up, the surgeon is attaching the esophagus to the stomach. With colonic interposition, the esophagus is anastomosed to the colon, the colon is anastomosed to the stomach, and the colon is anastomosed to the colon.

G&H What other advances have been made recently that improve the QOL of esophageal cancer survivors?

TR The biggest advance of the last few years has been the adoption of a semimechanical technique in the construction of the esophagogastric anastomosis. Along with mediastinal placement of the stomach and issues of stomach drainage, quality of swallowing and the avoidance of anastomotic strictures are key to good long-term outcome. The anastomosis between the esophagus and the stomach must be constructed at the right size for unimpeded swallowing and the avoidance of excessive reflux. Dr. Jean-Marie Collard of the Louvain Medical School in Brussels, Belgium, has developed a ministapling technique that reduces the need for hand sewing. This approach minimizes anastomotic leak and requires less dilation of the anastomosis, causing less discomfort. This advance has greatly benefited our patients.

Suggested Reading

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