What's New in General Thoracic Surgery

Joseph B Zwischenberger, MD, FACS, Brannon R Hyde, MD, Juan C Escalon, MD

"What's New in Surgery" evolves from the contributions of leaders in each of the fields of surgery. In every instance the author has been designated by the appropriate Council from the American College of Surgeons' Advisory Councils for the Surgical Specialties. This feature is now presented in issues of the Journal *throughout the year.*

"What's new" articles are cultivated from selected analysis of the past year's peer-reviewed literature. Although our knowledge and understanding of general thoracic surgical issues increased last year, enthusiasm is bridled by the few changes actually assimilated into clinical practice. Highlights of the past year include new trends in resident education, significant trials in adjuvant therapy for lung cancer, and continued controversy in both adjuvant therapy for esophageal carcinoma and noninvasive staging for lung cancer.

Thoracic surgery education

Spring 2005 will mark graduation of the first thoracic surgery residents who will not require American Board of Surgery certification. Currently, the American Board of Thoracic Surgery requires completion of either a full residency in general surgery followed by an Accreditation Council for Graduate Medical Education–approved thoracic surgery residency (pathway one) or completion of a 6-year categorical-integrated thoracic surgery residency (pathway two) developed along Thoracic Surgery Directors Association (TSDA) guidelines and approved by the Accreditation Council for Graduate Medical Education (RRC-TS).

Graduates this year will also be the second group privy to the Thoracic Surgery Directors Association's new educational endeavors. In 2001, the Thoracic Surgery Directors Association Prerequisite Curriculum Committee developed and implemented a didactic curriculum for residents to study before starting their thoracic surgery residency. The Internet CD-ROM thoracic surgery e-learning system was implemented to access the curriculum. A recently published prospective randomized trial tested resident acceptance and educational impact.[1] From residents who matriculated in 2002, 138 agreed to participate in the study. Sixty-nine residents were randomized to receive a CD-ROM access key, and 69 received the curriculum outline only. Using the Internet, the system was designed to track resident use and performance. Based on the American Board of Thoracic Surgery In-Training Exam performance, resident self-assessments, and program directors' assessments, the system and content have been well received. There is a trend toward improved resident performance with more frequent use of the e-learning system. The system is being updated and expanded to include a complete core curriculum to be used throughout the residency.

Esophagus

Achalasia

Controversy continues regarding primary treatment of achalasia. First-line treatment options include esophagomyotomy, pneumatic dilation, and botulinum toxin injections. We reviewed three prospective trials and two retrospective studies of different treatment modalities for both early-stage and late-stage achalasia (megaesophagus).

Zaninotto and colleagues[2] reported a prospective, randomized controlled trial of newly diagnosed achalasia patients assigned to either botulinum toxin injection (Botox [Allergan], 100 units injected twice, 1 month apart, at the gastroesophageal junction, $n = 40$) or laparoscopic cardiomyotomy and fundoplication (anterior partial or Nissen, $n = 40$). For myotomy patients, median hospital stay was 6 days, but Botox patients were discharged the same day. There was no mortality in either group. At 6 months, symptom scores in myotomy patients were significantly better than those in Botox patients ($p < 0.05$). Reduction in esophageal diameter (19% myotomy versus 5% Botox, $p < 0.05$) and the probability of being symptom free at 2 years followup

Received April 25, 2005; Accepted April 25, 2005.
From the Department of Surgery, The University of Texas Medical Branch, Galveston, TX.
Correspondence address: Joseph B Zwischenberger, MD, Division of Cardiothoracic Surgery, Department of Surgery, The University of Texas Medical Branch, 301 University Blvd, Galveston, TX 77555.

ISSN 1072-7515/05/$30.00
doi:10.1016/j.jamcollsurg.2005.04.028

Abbreviations and Acronyms

CR = contrast ratio
FDG-PET = positron emission tomography with ^{18}fluorodeoxyglucose
GER = gastroesphageal reflux
HR = hazard ratio
LVRS = lung volume reduction surgery
NSCLC = non-small cell lung cancer
P-CRT = preoperative chemoradiation therapy
UFT = uracil-tegafur
VATS = video-assisted thoracic surgery

(87.5% myotomy versus 34% Botox, $p < 0.05$) also significantly favored myotomy. There was no significant difference in posttreatment lower esophageal pressure between groups. The authors concluded that Botox does not have a safety advantage over laparoscopic myotomy and requires multiple attempts to achieve lesser results. But, we note Botox injections are less invasive with a significantly decreased length of hospital stay. Clearly, a longer followup period would add to the risk/benefit assessment.

In a prospective outcomes study, Gockel and colleagues[3] reported on 19 patients who had unsuccessful repeated pneumatic dilation for achalasia and subsequently underwent a Heller myotomy. Outcomes were compared with those in patients who underwent successful pneumatic dilation (n = 34) or dilations (n = 14). Based on the 0-to-12-point clinical classification of achalasia scale (0 to 3 points each are given to weight loss, dysphagia, retrosternal pain, and regurgitation), the 10-year remission rate (defined as a score of less than 3 for 6 months) was 77% in the myotomy group compared with 72% in the single pneumatic dilation group and 45% in the multiple dilation group. The prognosis of patients in whom pneumatic dilations failed and who subsequently underwent myotomy was at least as favorable as that in patients who responded to a single pneumatic dilation. Also observed were eventual myotomy risks of 70% if diagnosed at age 15, 35% if diagnosed at age 40, and 8% at age 70. Duration of symptoms, symptom score, lower esophageal sphincter pressure, and diameter of the esophageal body were not predictors of the eventual need for operation. Previous dilations (maximum 3) also did not affect operation or outcomes. The authors plea for a randomized trial comparing pneumatic dilation to laparoscopic myotomy with stratification of patient groups according to age. We note that with either Botox or pneumatic dilatations, one-third to two-thirds of patients can achieve meaningful palliation of their disease.

To assess the incidence of postoperative gastroesophageal reflux (GER), Richards and colleagues[4] reported on patients with achalasia randomized to either Heller myotomy (n = 21) or Heller myotomy with Dor (180-degree anterior) fundoplication (n = 22). Within 6 months postoperatively, patients completed a questionnaire concerning the severity and frequency of their postoperative dysphagia. At the same visit, they underwent manometry and 24-hour pH monitoring. There were no significant differences in preoperative age, gender, preoperative lower esophageal sphincter pressure, or preoperative dysphagia score between the two groups. Pathologic GER (pH < 4 for more than 4.2% of a 24-hour period) occurred in 47.6% of the Heller group and in 9.1% of the Heller-Dor group ($p = 0.005$), corresponding to a ninefold risk reduction of pathologic GER for the Heller-Dor group. Median distal acid exposure time was also lower in the Heller-Dor group than in the Heller-alone group (0.4% versus 4.9%). There was no difference observed in lower esophageal sphincter pressure or postoperative dysphagia between the two groups. The authors recommended Dor partial fundoplication for control of pathologic reflux.

In a retrospective study of 51 consecutive patients who underwent laparoscopic myotomy with (n = 29) or without (n = 22) anterior hemifundoplication, Dempsey and associates[5] concluded that the addition of the partial wrap does not change clinical outcomes in terms of symptomatic reflux or patient satisfaction. The risk/benefit of controlling pathologic GER after myotomy is still undefined.

Management of late-stage (sigmoid) achalasia, or megaesophagus, continues to evoke controversy. Some surgeons recommend myotomy; others proceed directly to esophagectomy. In a series of 14 patients with sigmoid achalasia treated with Heller myotomy and anterior fundoplication through an open (n = 8) or laparoscopic (n = 6) approach, longterm outcomes (median followup, 85 months) were assessed.[6] Myotomy with partial fundoplication achieved at least "satisfactory" symptom relief in 12 of 14 patients. Esophageal width decreased by 10 mm ($p = 0.003$) and lower esophageal sphincter pressure by 17 mmHg ($p = 0.001$). Dysphagia and regurgitation scores (1 = no symptoms; 4 = persistent symptoms) decreased from a median of 4.0 to 1.0 ($p < 0.003$).