Endoscopic Zenker’s Diverticulotomy: Laboratory to Operating Room

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OBJECTIVES

Endoscopic stapling esophagodiverticulostomy utilizes devices that are designed for general and thoracic surgery purposes, and not very familiar to the Otolaryngology trainees. Familiarization with the variety of devices available and their proper use is paramount to safe practice of this technique. This study describes a single surgeon’s experience in learning the technique of endoscopic Zenker’s esopha godiverticulostomy and reports the outcomes from the first 20 cases done by this technique.

LABORATORY EXPERIENCE

Canine and porcine models were utilized to obtain experience with application of stapling gun through laparoscopic ports. Experience with two different stapling systems – Endo GIA-30 (US Surgical Corp, Norwalk, Conn) and Endopath ETS Flex-45 (Ethicon Endo-surgery Inc, Cincinnati, OH) was obtained. In addition, the technique of endoscopic suture placement utilizing ENDO STITCH™ (US Surgical Corp, Norwalk, Conn) was also learnt.

A double glove model (modification of previously described model) - non latex inner and latex outer, filled with saline was also used to test the security of staple line using different 2 different cartridges- Endo GIA 3.5 (US Surgical Corp, Norwalk, Conn) and TR 45W 2.5 (Ethicon Endo-surgery Inc, Cincinnati, OH).

CLINICAL RESULTS

A total of twenty endoscopic stapling procedures have been performed in 19 patients (10 men and 9 women, average age 77.8, range 56 – 92). Satisfactory exposure was obtained in all patients; one required a second attempt due to the presence of a stricture at the cricopharyngeal level requiring dilatation. One patient (the second case performed in the series) required a revision. There was inadequate division of the septum during the first attempt due to the short length of the pouch. Placement of traction sutures by ENDOSTITCH helped overcome this problem, and has been a routine in all subsequent cases except one. One patient experienced an iatrogenic tear of the diverticulum at the time of exposure which was immediately identified and the procedure converted to an open repair. Average surgical time was 49 minutes (range 20 – 100). Average hospital stay was 1.3 nights. All patients had resolution of symptoms. In three patients, successful repair allowed avoidance of gastric feeding tube placement for failure to thrive. There have been no delayed complications.

CLINICAL DATA

Retrospective analysis of data from patients treated for Zenker’s diverticulum in a community-based practice over seven years was undertaken. A total of 27 charts were reviewed. Prior to incorporation of endoscopic technique, two patients were treated by conventional open techniques. The first five endoscopic cases utilized the carbon dioxide laser to perform the cricopharyngeal myotomy. However, due to a complication of a leak in one patient requiring prolonged hospitalization, use of alternative stapling technique was explored and learnt. Endoscopic stapling esophagodiverticulostomy has since been performed in a total of 20 cases in 19 patients (one revision) over the last three years.

For all patients, operative reports and hospital records were reviewed. Comorbidities and ASA status were recorded. Length of the operative procedure, amount of time until resumption of oral intake following repair, and post-operative length of hospital stay as well as any perioperative complications were analyzed. Statistical analysis was performed using the student t-test.

CONCLUSIONS

Zenker’s diverticulum is a relatively uncommon, but often disabling condition in the elderly population. Endoscopic repairs are ideal as they shorten surgical time and postoperative recovery. As experience during training in Otolaryngology programs is limited due to small numbers, there is a need for hands-on learning in the laboratory setting. Endoscopic stapling repair of Zenker’s diverticulum is an easily learnt, safe and desirable technique.

REFERENCES