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Open surgery for Zenker's diverticulum

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Open surgery for Zenker's diverticulum (ZD) continues to be a mainstay of treatment for this disorder. Details of the authors' approach are outlined below. Although endoscopic surgery for ZD appears to feature shorter operative times compared with open ZD surgery, longer term outcomes trend toward somewhat higher recurrence rate after endoscopic treatment. There is no direct comparison research, and no conclusions regarding overall treatment success can be drawn. Patients should seek out a surgeon well-versed in both open and endoscopic approaches; ideally, the surgeon should present the patient with options based on his/her experience, knowledge, and the collective experience in the field. If every patient is managed in the same manner, it is likely that a disservice is being done.

Just as in the history of vocal fold immobility treatment, management of Zenker's diverticulum (ZD) has come full circle from the endoscopic pioneers in the early part of last century[1] to those who later trailblazed open surgery, only to see a major resurgence in endoscopic surgery over the past 2 decades.

Overall, surgical treatment of ZD appears to be highly beneficial and generally safe.[2] In comparing the 2 categories of surgical treatment for ZD, it is reasonable to bemoan the lack of prospective comparative data with substantial periods for clinical follow-up; these reports are rare in otolaryngology. In one of the larger comparison articles, Narne et al[3] from Milan reported on their experience with 297 patients over a 30-year period. Of this group, 181 underwent endoscopic stapling and 116 had primary open surgery. As in other reports, operative time was markedly faster in endoscopic surgery versus open technique. This article featured admirable clinical follow-up data with 87% of patients being available for subsequent care and assessment. In the more contemporary endoscopic group, 92% were "asymptomatic or significantly improved"; this is essentially the same as the 94% rate reported for the open group. It should be noted that the open group was reported at a mean of 4-year follow-up versus 2 years for the endoscopic series.

Chang et al[4] in 2004 presented a series from Vanderbilt in which a large series of consecutively operated upon patients were assessed for clinical outcome. As seen in other studies, the duration of the case was shorter—47 minutes—in the 24 endoscopically managed patients versus 170 minutes for the 28 patients treated by open surgery. Five of 24 endoscopic cases had symptomatic recurrence/persistence of the pouch, 3 of which went on to reoperation during the follow-up period. In contrast, none of the 28 open patients required reoperation. There were no differences in complication rates or hospital stay. No cases of recurrent laryngeal nerve injury, mediastinitis, or death occurred. The authors concluded that overall outcomes are similar between the 2 approaches, but there is likely a higher recurrence rate in endoscopic surgery.

Scher et al,[5] who reported on their series of 159 endoscopic cases, also concluded that excellent results could be achieved with the endoscopic approach, with more rapid convalescence; their recurrence rate after endoscopic surgery, however, was 12%. In a report by Counter et al[6] from Bristol, a series of endoscopic staple ZD cases had an

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excellent symptom relief rate (94%), but this required reoperation in 19% of patients. Raut and Primrose[7] offered long-term follow-up (2-5 years) in a series of 25 patients undergoing endoscopic stapling for ZD; in their series, only 48% remained asymptomatic, whereas 32% required reoperation. It is not known whether the high recurrence rates in the articles by Counter et al and Raut and Primrose reflect issues inherent to the staple technique or, frankly, more careful follow-up. Again, the limitations of this comparison are evident in this example.

Gutschow et al[8] from Belgium presented their experience in the thoracic surgery literature in 2002. One hundred seventy-nine ZD patients underwent either open or endoscopic surgery; open surgery patients (n =) were significantly more likely to be asymptomatic ($P < 0.004$) than those who underwent endoscopic surgery regardless of the size of the diverticular pouch. Other authors have made the point that the size of the sac itself should play a role in the decision making for the choice of approach. In the article by Gutschow et al[8], roughly 85% of patients undergoing the open approach were asymptomatic in both the >3-cm pouch group as well as in the <3 cm group, for example. In contrast, when examining patients with occasional symptoms, size of the pouch did make a difference. Although the outcomes were better with open surgery in terms of achieving symptom reduction, this was not higher in patients with larger sacs ($P = 0.409$). This may reflect the long-standing nature of the ZD in these cases and, perhaps, some chronic effect on pharyngeal function.[9] In an interesting subset of patients studied within this large group, those ZD patients who did not undergo myotomy as part of their open approach accounted for 5 of the 6 (83%) postoperative fistulas reported in this article. Four of these patients required reoperation, further emphasizing the importance of complete cricopharyngeal (CP) myotomy in open (or endoscopic) treatment of ZD. Overall, Gutschow et al reported a lower incidence of complications from their endoscopic group—these numbers, however, were certainly impacted by the open patients who did not undergo myotomy; however, open techniques did provide superior symptom relief overall.

The only published article to focus on "quality of life" outcomes in ZD surfaced in 2006 from Wirth et al[2] In this report, 20 patients undergoing endoscopic ZD surgery were compared with 27 patients from the same practice who had open ZD surgery; data were collected from a 10-year period of clinical activity and subsequent questionnaire follow-up. As noted in many studies, operative time was much less with endoscopic treatment—in this case, an average of 32 minutes versus 106 minutes of operative time. Based on their questionnaire, dysphagia symptoms were absent in 91% of open surgical patients compared with 83% of those treated with endoscopic surgery. The significance and comparative weight of this retrospective survey are difficult to assess.

Despite the lack of direct comparative, prospective data, several aspects of open versus endoscopic management appear repeatedly in the existing literature. Open surgery appears to have a similar or greater likelihood of symptom relief as described in a number of articles, but at the cost of longer operative time. In some reports, the complication rate is higher in the open series; however, in others, it is comparable. In 2002, Smith and Genden[10] examined a small series of ZD patients with particular attention to economic issues. With the significantly faster operative time and shorter inpatient stay for endoscopic treatment, hospital charges were greatly reduced in this group compared with patients managed with open surgery. Although this likely is a universal phenomenon, a long-term analysis of cost should also include what appears to be a higher rate of reoperation and symptom persistence in those patients managed endoscopically.

How does a patient decide which path to take? Generally speaking, candidates who have favorable endoscopic anatomy also have favorable anatomy for open surgery. Reoperative surgery aside, it can be argued that those with very small or very large sacs should be offered open surgery. Even van Overbeek,[11] author of the tremendous treatise, recounting his experience with 646 endoscopically managed patients, recommends that "in patients with a small diverticulum, an external sphincterotomy (myotomy) alone is to be preferred." Another functional consideration in large sacs is the presence of a relatively hypotonic posterior sac remnant in those patients managed endoscopically. Anecdotally, these areas commonly reveal stasis and poor motility on postoperative imaging. Their functional significance is not known nor is their impact on subsequent recurrence.

Indications

The main indication for ZD surgery is dysphagia; this may or may not be accompanied by pressing indicators, such as weight loss and aspiration pneumonia. The goal of ZD surgery is to improve the safety of swallowing and secretion management. In many cases, the pharyngeal pump is so disturbed by the long-term presence of outflow obstruction or a superimposed neurological challenge (such as stroke) that meaningful oral intake postoperatively may not always be achievable. Nonetheless, operative treatment in these extreme cases can be quite useful in reducing salivary aspiration from pharyngeal pooling.

Symptomatic ZD most often present in the 8th decade of life; the significance of this should not be overlooked. When a clinician cares for a dysphagic patient with ZD, the first judgment the physician must make is whether to offer surgical intervention, and, most importantly, it is up to the patient whether they wish to have an operative treatment. The recommendations made when comparing open versus endoscopic treatment should consider short-term outcomes and complications as well as previous surgery in the neck (especially if it is revision ZD surgery). There is no extant study of the natural history of untreated ZD, so all the complication and patient satisfaction rates must be considered in judging the various treatment options.