Flexible Endoscopic Zenker's Diverticulotomy and Cricopharyngeal Myotomy

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Abstract

Purpose: To describe flexible endoscopic management of Zenker's diverticulum in a patient who was unable to tolerate rigid endoscopy.

Design and methods of study and analysis: Case report with pre- and postoperative imaging, and intraoperative photos. The technique is thoroughly described. A literature search was completed, investigating other similar surgical management options.

Summary of Results:

She was admitted post-operatively for observation. Chest radiographs did not demonstrate pneumomediastinum and gastrograffin swallow study was negative for an esophageal leak. She did not demonstrate any subcutaneous emphysema. She was discharged home on the first postoperative day without complaints. Her symptoms were resolved postoperatively.

Conclusions: Management of Zenker's diverticulum can be completed through open or endoscopic methods. Most endoscopic methods described use rigid endoscopy, but patient selection is limited by neck extension and transoral exposure. In this study, we describe a successful flexible endoscopic method of Zenker's diverticulotomy and cricopharyngeal myotomy in a patient with limited cervical range of motion.

Introduction

Zenker's diverticulum is a pulsion diverticulum which develops through a point of relative weakness at Killian's triangle found between the inferior pharyngeal constrictor and the cricopharyngeus muscles on the posterior hypopharyngeal wall [1]. With the development of the diverticulum, a bridge of tissue becomes defined between the anterior wall of the diverticulum and posterior wall of the esophagus. This bridge of tissue is often called the common party wall and includes the cricopharyngeus and its overlying mucosa at its most superior aspect and mucosa, submucosa, connective tissue, and a muscular layer more inferiorly [2]. The diverticulum is thought to develop from recurrent swallowing against cricopharyngeus hypertonicity or disconnection between the pharyngeal swallow and cricopharyngeal relaxation [1, 3, 4]. Affected patients are generally elderly and complain of persistent dysphagia and regurgitation of food. Multiple approaches to repair have been described and are generally categorized as open or endoscopic. Rigid endoscopic approaches utilize the diverticuloscope which isolates the bridge of tissue between the anterior wall of the diverticulum and the posterior wall of the esophagus. Transaction of this tissue bridge is completed with the endoscope [5]. The difficulties with the approach come from the exposure required with the rigid instrumentation. More recently, flexible endoscopic approaches have been described which utilize the needle knife electrocautery, monopolar and bipolar forceps, or argon laser to complete the cricopharyngeal myotomy and diverticulotomy [2, 6-10]. In this study, we present a case of Zenker's diverticulotomy and cricopharyngeal myotomy using a flexible gastroscope and wire electrocautery.

Case Report

The patient was an 83 year old female who had a history of longstanding dysphagia and delayed regurgitation of undigested food. Modified barium swallow revealed a Zenker's diverticulum and multiple cervical osteophytes. The range of motion of her neck was very limited. The patient failed rigid endoscopic Zenker's diverticulotomy and cricopharyngeal myotomy 34 months prior, due to the inability to expose the common wall of the Zenker's diverticulum with the rigid diverticuloscope. She elected not to undergo an open approach. She underwent flexible endoscopic Zenker's diverticulotomy and cricopharyngeal myotomy due to progressive worsening of the dysphagia using a modified flexible overtube, flexible gastroscope and wire electrocautery. She was admitted post-operatively for observation and chest radiographs did not demonstrate pneumomediastinum and gastrograffin swallow study was negative for an esophageal leak. Her symptoms were resolved postoperatively.

Conclusion

Flexible endoscopic management of Zenker's diverticulum is a relatively new treatment option. Due to the elderly population affected by this condition and their medical comorbidities, any treatment options must be weighed against potential complications. The reduction of general anesthetic time, decrease in time to resumption of oral intake, and decrease in postoperative monitoring and imaging. Management options for Zenker's diverticulum. Post-operative management centers around this complication with post operative monitoring and imaging. With the rigid endoscopic stapling technique, the incision is sealed with staples, but this is not the case with the flexible treatment. Up to 23% of patients have demonstrated cervical or mediastinal emphysema following needle-knife dissection [9]. Placement of endoclips on either side of the tissue bridge to help seal the edges of the diverticulotomy has been reported. With larger diverticula, the lowest point of the diverticulum is a considerable distance from the esophageal wall [11]. Transaction of the entire tissue bridge to the apex of the diverticulum with electrocautery will open the mediastinum [11]. A relatively long tissue bridge must be left at the apex of the common cavity to avoid this complication, but this also has the potential to cause continued dysphagia or recurrence of the diverticulum if the bridge edges rejoin.

References


