

Endoscopic Stapler-Assisted Diverticulotomy Repair of Killian-Jamieson Diverticulum

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Abstract

The Killian-Jamieson diverticulum is a rare esophageal diverticulum. It originates inferior to the transverse portion of the cricopharyngeal muscle, resides anterolateral to the esophagus, and has a close relationship with the recurrent laryngeal nerve. Surgical management of symptomatic Killian-Jamieson diverticulum has been described via open cervical and flexible endoscopic diverticulotomy (needle-knife cautery) approaches. The safety and efficacy of rigid endoscopic approaches have not yet been described. We describe a safe and efficacious rigid endoscopic approach to treatment of symptomatic Killian-Jamieson diverticulum in two patients.

We present two cases of symptomatic Killian-Jamieson diverticulum successfully treated with a rigid endoscopic stapler-assisted diverticulotomy technique. In both patients, exposure was obtained with an expansible diverticuloscope and the common wall was divided with a single incision line, controlled with staples. Both patients experienced symptomatic relief and had no evidence of injury to the recurrent laryngeal nerve. The endoscopic stapler-assisted diverticulotomy can serve as a safe and efficacious technique for treatment of symptomatic Killian-Jamieson diverticulum.

Case Presentation

Case 1. A 55 year old female presented with a two-year history of solid and liquid food dysphagia with frequent choking, and regurgitation after laying supine. Barium swallow revealed a left sided one to two centimeter upper esophageal diverticulum with internal debris. Endoscopic esophageal video swallowing evaluation showed rapid swallowing of soft and liquid food boluses and no regurgitation with applied neck pressure. She was taken to the operating room where the diverticulum was inspected and found to be consistent with a Killian-Jamieson diverticulum (Figure 1a). It was repaired via endoscopic stapler assisted diverticulotomy technique without complication (Figure 1b). One week post-operatively she had improvement in her swallowing with complete resolution of her symptoms by three months post-operatively. She had no changes to her voice following the procedure and post-operative strobolaryngoscopy showed stable pre-operative left superior laryngeal nerve paresis and otherwise normal vocal fold motion.

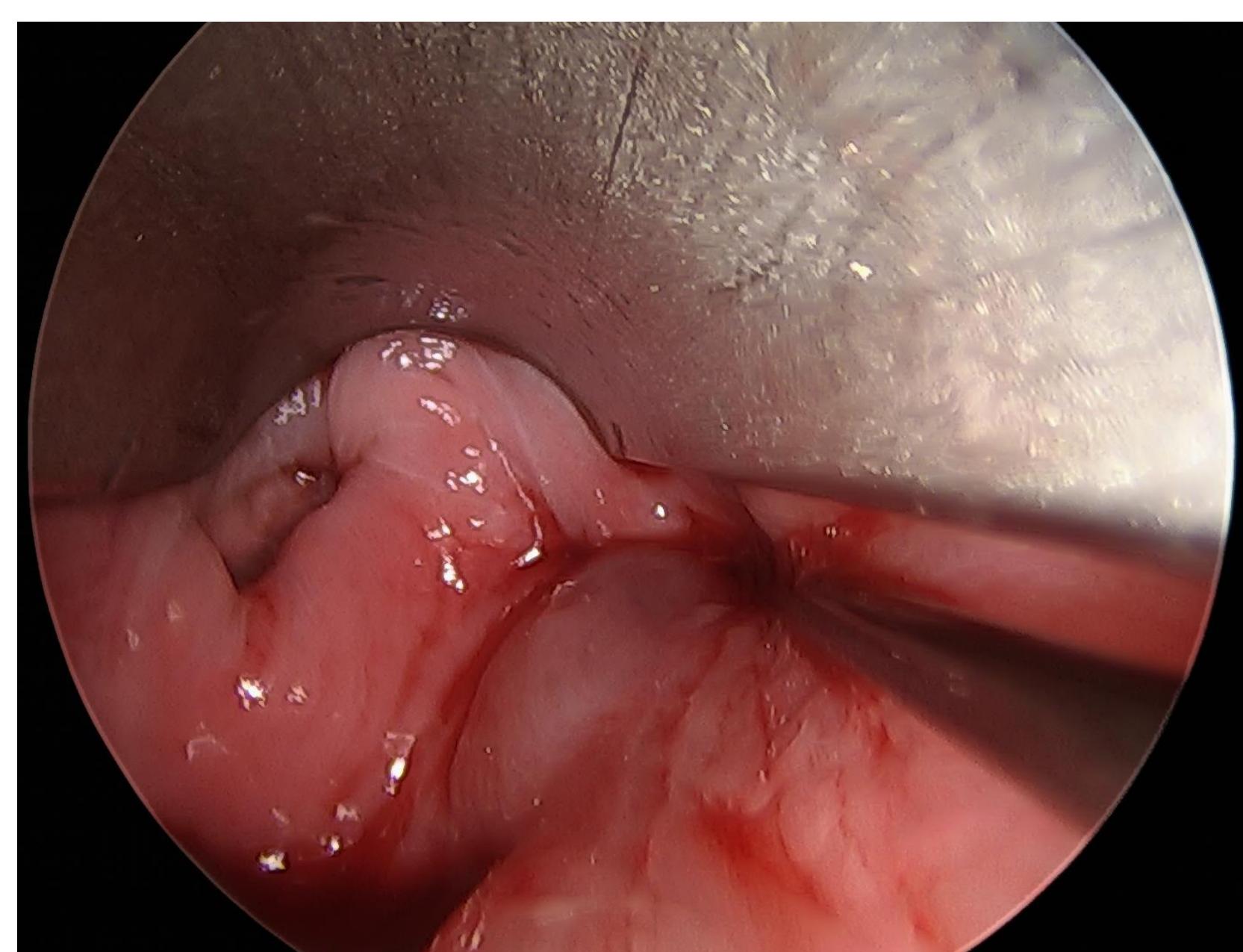


Figure 1a: Case 1, exposure of the Killian-Jamieson diverticulum anterolateral to the esophagus separated by a common wall. Lumen finder is placed in the esophagus on the right.

Case Presentation

Case 2. 66 year old female presented with a one-year history of frequent choking, solid food dysphagia, and occasional regurgitation of food. An esophagram revealed a 2.5 centimeter upper esophageal diverticulum concerning for Killian-Jamieson diverticulum (Figure 2a). Video esophageal swallowing evaluation showed rapid swallowing of soft food bolus without residual, however a small amount of regurgitation occurred with Valsalva maneuver. She was taken to the operating room where endoscopic stapler-assisted diverticulotomy was performed (Figure 2b). She had persistent dysphagia post-operatively and was taken back to the operating room two weeks post-operatively where endoscopic evaluation showed partial division of the common wall. Endoscopic stapler-assisted diverticulotomy was again performed on the remaining common wall and allowed creation of a common cavity from the diverticulum into the esophagus. She had no complications post-operatively, and at 6 month follow up was tolerating a regular diet.



Figure 2a: Case 2, esophagram showing a 2.5 centimeter upper esophageal diverticulum filling with contrast concerning for Killian-Jamieson diverticulum.

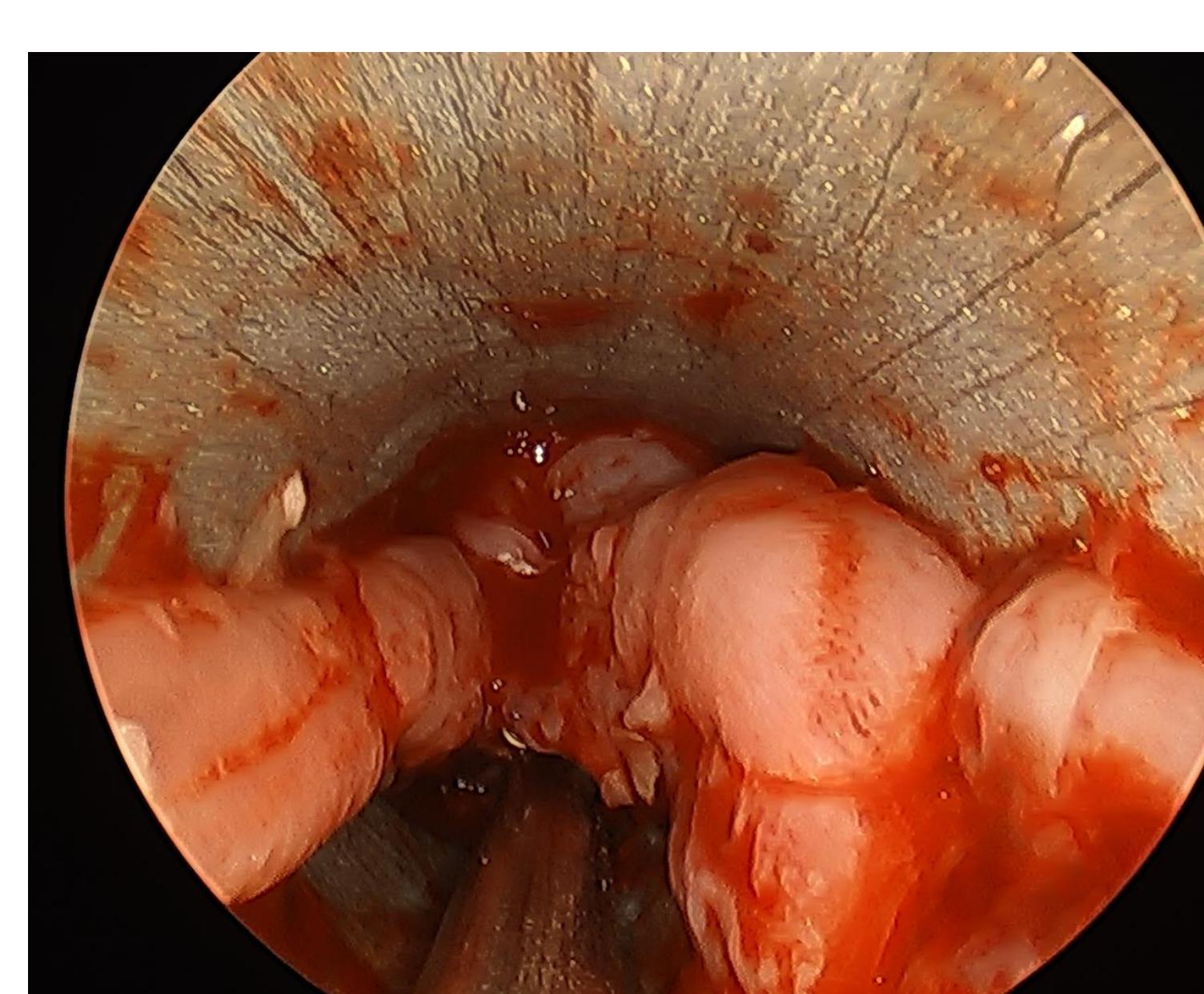


Figure 2b: Case 2, exposure of the Killian-Jamieson diverticulum anterolaterally, separated from the esophagus by a common wall.

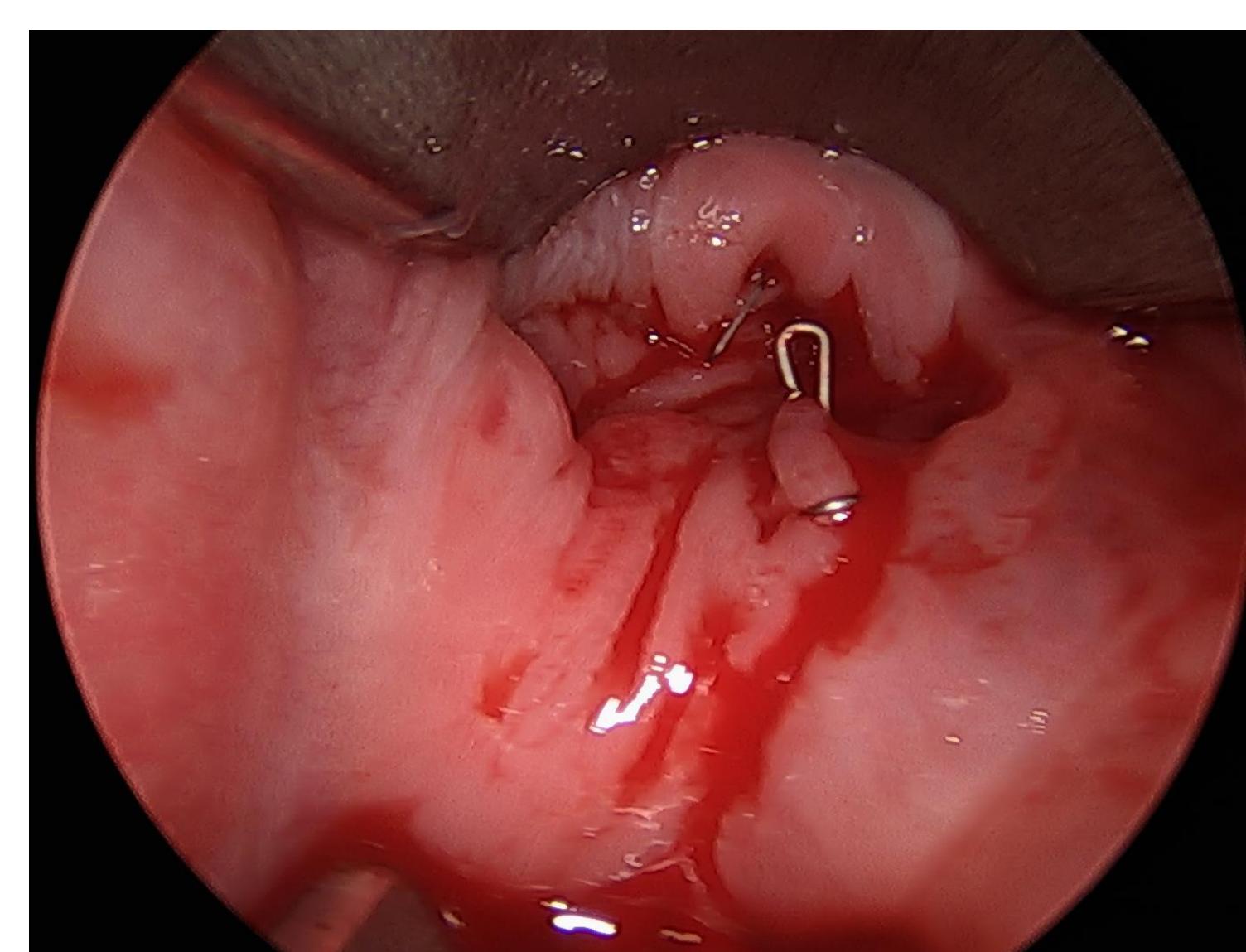


Figure 1b: Case 1, completed endoscopic stapler diverticulotomy.

Methods

The endoscopic stapler-assisted diverticulotomy repair was performed in both cases to repair a Killian-Jamieson diverticulum. In this technique, the patient is placed under general anesthesia with orotracheal intubation. Flexible esophagoscopy is performed to inspect the entire esophagus and to visualize the diverticulum. Next the Weerda bivalve diverticuloscope is used to directly visualize the diverticulum. In the case of Killian-Jamieson diverticulum, the common wall between the esophagus and diverticulum is vertically oriented with the diverticulum to the left (anterolaterally). This differs from the Zenker's diverticulum where the common wall is horizontally oriented due to a posterior diverticulum. The endoscopic 35mm stapler is then used to perform the diverticulotomy to create a common cavity from the diverticulum into the esophagus.

Discussion

The Killian-Jamieson diverticulum is a rare esophageal diverticulum which originates inferior to the transverse portion of the cricopharyngeal muscle and resides anterolateral to the esophagus. It has a close relationship with the recurrent laryngeal nerve. It was first described in 1983 by Ekberg and Nylander.¹ It differs from the Zenker's diverticulum which originates posteriorly below the inferior constrictor and above the cricopharyngeus muscle.² Endoscopic stapler-assisted repair for Zenker's diverticulum has been well described and is a safe and efficacious technique for Zenker's diverticulum repair. There are few reports in the gastroenterology literature^{3,4} that have described flexible endoscopic repair of the Killian-Jamieson diverticulum; however, there have been no reports describing rigid endoscopic stapler-assisted diverticulotomy repair of the Killian-Jamieson diverticulum.

Undavia et al⁵ report a case of open transcervical excision for treatment of Killian-Jamieson diverticulum and advocate the open approach to avoid inadvertent transection of the recurrent laryngeal nerve. The endoscopic approach does take into account the risk to the recurrent laryngeal nerve by taking care to conservatively divide the common wall. In addition, careful patient selection is imperative. Patients with limited mouth opening and/or restriction in neck hyperextension are likely to limit endoscopic exposure of the diverticulum, and thus, would not be ideal candidates for this technique. Aside from the risk to the recurrent laryngeal nerve, the endoscopic technique also includes risk of injury to the esophagus, hypopharyngeal structures, teeth, and lips. The benefits of the endoscopic technique are expected to be similar to those seen in endoscopic Zenker's diverticulum repair such as decreased operative time, decreased length of stay, and quicker return to oral intake.

Conclusion

The endoscopic stapler-assisted diverticulotomy can serve as a safe and efficacious technique for treatment of symptomatic Killian-Jamieson diverticulum. However additional cases and research are necessary to further assess the technique's safety and efficacy.

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