Efficacy of Combined Hiatal Hernia Repair and Transoral Fundoplication for Large Paraesophageal Hernias

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Background

Fundoplication is a standard component of paraesophageal hernia (PEH) repair. However, performing a fundoplication is technically challenging in large PEH due to a thick sac at the gastroesophageal junction after its reduction from the mediastinum, potentially increasing risk of thermal injury to the esophagus, vagal nerves, and other vital structures.

Data is limited on simultaneous transoral fundoplication (TIF) and hiatal hernia repair of large PEH. We aimed to assess the safety, patient satisfaction, and symptom resolution following a hybrid PEH repair and TIF with the third generation EsophyX Z Device (EndoGastric Solutions, Inc).

Methods

- All single session hybrid procedures involving minimally invasive hiatal hernia repair combined with TIF performed between June 2017 and September 2020 were evaluated.
- Data regarding procedure indication, pre- and post-procedure symptoms, proton pump inhibitor use, patient satisfaction, and perioperative complications were collected.
- The hybrid procedure was performed in the operating room under general anesthesia with laparoscopic or robotic-assisted PEH reduction, mediastinal dissection, and diaphragmatic defect repair with biologic mesh followed by endoscopic TIF.

Results

Fifteen patients with type III PEH were included. Pre-procedure symptoms included dysphagia in 66% (10/15) of patients and heartburn in 30% (5/15). Mean hiatal defect measured 6.6 cm. Mean operating time was 165 minutes. There were no conversions to open or intraoperative complications. One patient reported post-operative dysphagia and required endoscopic dilation with resolution of dysphagia. No gas bloat symptoms were reported. At mean follow-up of 22 months, patients demonstrated significant improvement in Reflux Symptom Scores (18.02 to 3.04, $p<0.05$) and Health Related Quality of Life Scores (20.22 to 4.15, $p<0.05$).

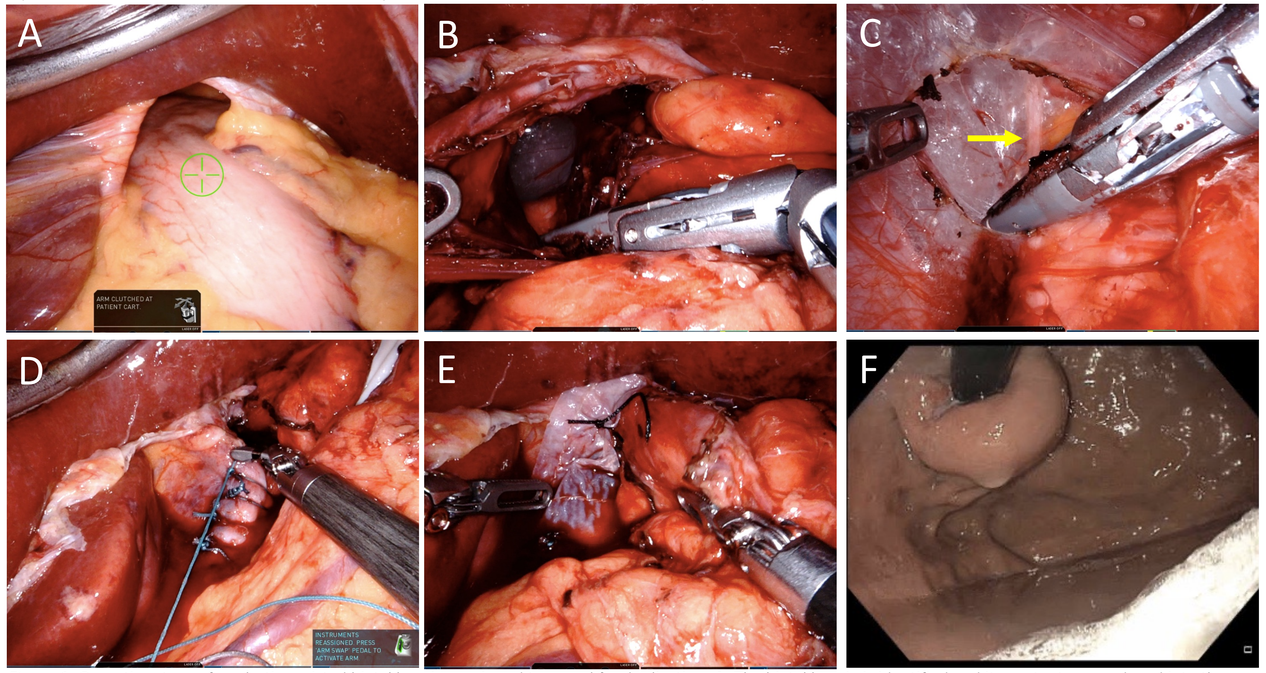


Figure 1. Operative steps of a robotic-assisted hiatal hernia repair and transoral fundoplication. **A.** The hiatal hernia is identified and its contents are reduced into the abdomen. **B.** Utilizing a right to left approach, dissection to mobilize the esophagus is started along the inner border of the right crus of the diaphragm. **C.** The dissection is continued superiorly, exposing the underlying fibro-avascular tissue of the mediastinum while avoiding injury to the anterior vagus nerve (yellow arrow). **D.** The hiatal defect is reapproximated with interrupted nonabsorbable sutures. **E.** A biologic horseshoe-shaped mesh is tailored to cover the hiatus and anchored in place with nonabsorbable sutures. **F.** A transoral fundoplication is performed endoscopically.

Conclusions

In our experience, hybrid minimally invasive hiatal hernia repair followed by TIF is a safe and an effective therapeutic option for patients with large PEH. A hybrid approach allows for shorter operative times and less extensive surgical dissection, thereby minimizing risks of vagal nerve injury and bleeding from surrounding vessels. The hybrid procedure results in effective symptom management with low rates of post-fundoplication dysphagia and gas bloat. Most importantly, pursuit of TIF over surgical fundoplication eliminates the risks associated with revisional surgery in the case of symptom recurrence requiring reintervention. Further prospective studies are needed to validate these results and identify potential advantages of using a hybrid surgical and endoscopic approach in patients with symptomatic, large PEH.

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