The Effect of Diaphragm Relaxing Incisions on Recurrence Rate and Complication Rate of Paraesophageal Hernias: One Academic Center's Experience, and a Review of the Literature

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INTRODUCTION

- Diaphragm Relaxing Incisions (DRIs) can aid in paraesophageal hernia repair by decreasing tension on the crural closure.[1,2]
- They have been shown to reduce paraesophageal hernia recurrence rates.[1,2]
- There is no standardized approach on *how* to perform DRIs.
- Additionally, there is no standardization of *when* a DRI is indicated.

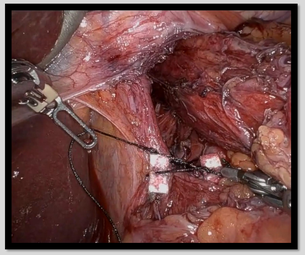
Objective:

1. To describe our institutions novel technique to performing DRIs, as well as guidelines for when this procedure is indicated.
2. Assess safety and recurrence rates following DRI using this technique.

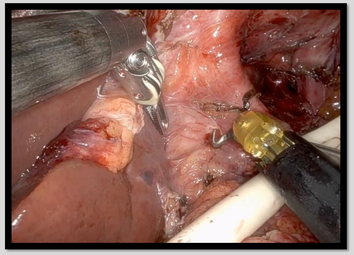
METHODS

- Retrospective review of all paraesophageal hernia repairs with diaphragm relaxing incisions using a novel technique performed at a single institution between 2023-2024.
- We begin with an attempt to close the hiatal defect using surgeon's knots; should they fail to stay anchored, we decide to perform a relaxing incision.
- We preferentially perform this on the right side if possible.[1,2]
- Hook electrocautery is used to create an incision in the peritoneum covering the diaphragm, extending to the central tendon.
- This differs from other releases discussed in the literature, as our incision is not full-thickness.[1,2]
- Similar to an abdominal component separation, this allows for medial displacement of the muscle without incision into the musculature.
- Finally, the release is reinforced with ACell biologic mesh.

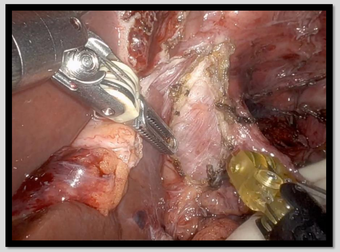
Step 1: We tie surgeon's knots to close the hiatal defect and proceed with relaxing incision should they fail to stay anchored.



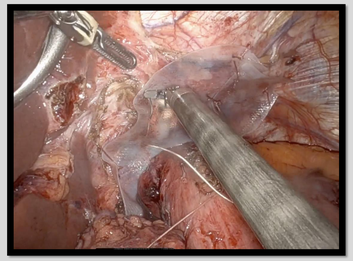
Step 2: We begin release on the right side to avoid injury to the phrenic nerves.



Step 3: We carry our incision through the peritoneum to the central tendon of the diaphragm, without making a full-thickness incision through the diaphragm, facilitating medial displacement of the muscle.



Step 4: ACell biologic mesh is used as an onlay to reinforce the diaphragm release.



Total Patients	Gender	Mean Age	Hernia Types	Redo Repairs	Diaphragm Release Location	Recurrences
13	Female: 8 (61.5%) Male: 5 (38.4%)	67 years	Type 3: 5 (38.4%) Type 4: 7 (53.8%)	6 (46.1%)	Right:8 (61.5%) Left: 3 (23.1%) Anterior: 1 (7.7%) Bilateral: 1 (7.7%)	2 (15.4%)

Table 1: Patient Characteristics

RESULTS

- Thirteen (n= 13) patients were identified.
- Two recurrences (15.4%) were identified on postoperative imaging.
- Average hiatal defect size was 6.8 cm. The majority of hernias were Type 3 or Type 4.
- The two recurrences both had a right sided release performed, which was the most common type of release performed in this group. One of these patients had significant comorbidities, as well as history of AAA repair, gastrectomy, and prior hiatal hernia repair.

CONCLUSION

- Paraesophageal hernia repair is notoriously associated with high recurrence rates (up to 50% at 5-year follow-up[2]).
- Our technique for performing a DRI in paraesophageal hernia repair demonstrates efficacy and low recurrence rates (15.4%).
- Our technique involves incision into the peritoneum only, as opposed to a full-thickness incision of the diaphragm[1,2], allowing for reduced risk of injury to the thoracic duct, aorta, and pleural space.
- Our technique allows for reduced risk of performing the relaxing incision without a statistically appreciable difference in recurrence rate to traditional full-thickness incisions.
- Limitations include small sample size and limited period of follow-up.

REFERENCES

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