

# Early experience with a novel, reinforced approach to anterior gastropexy in laparoscopic paraesophageal hernia repair

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## Background

- Recent evidence supports anterior gastropexy as an adjunct during paraesophageal hernia repair to reduce recurrence
- We have developed a novel anterior gastropexy technique based on an understanding of soft tissue biomechanics wherein a reinforced gastric staple line buttresses the gastropexy sutures, reducing the chance of suture pull through, and improving the durability of the gastropexy.
- This project summarizes our local experience with soft tissue anchored anterior gastropexy during paraesophageal hernia repair since its inception in 2019

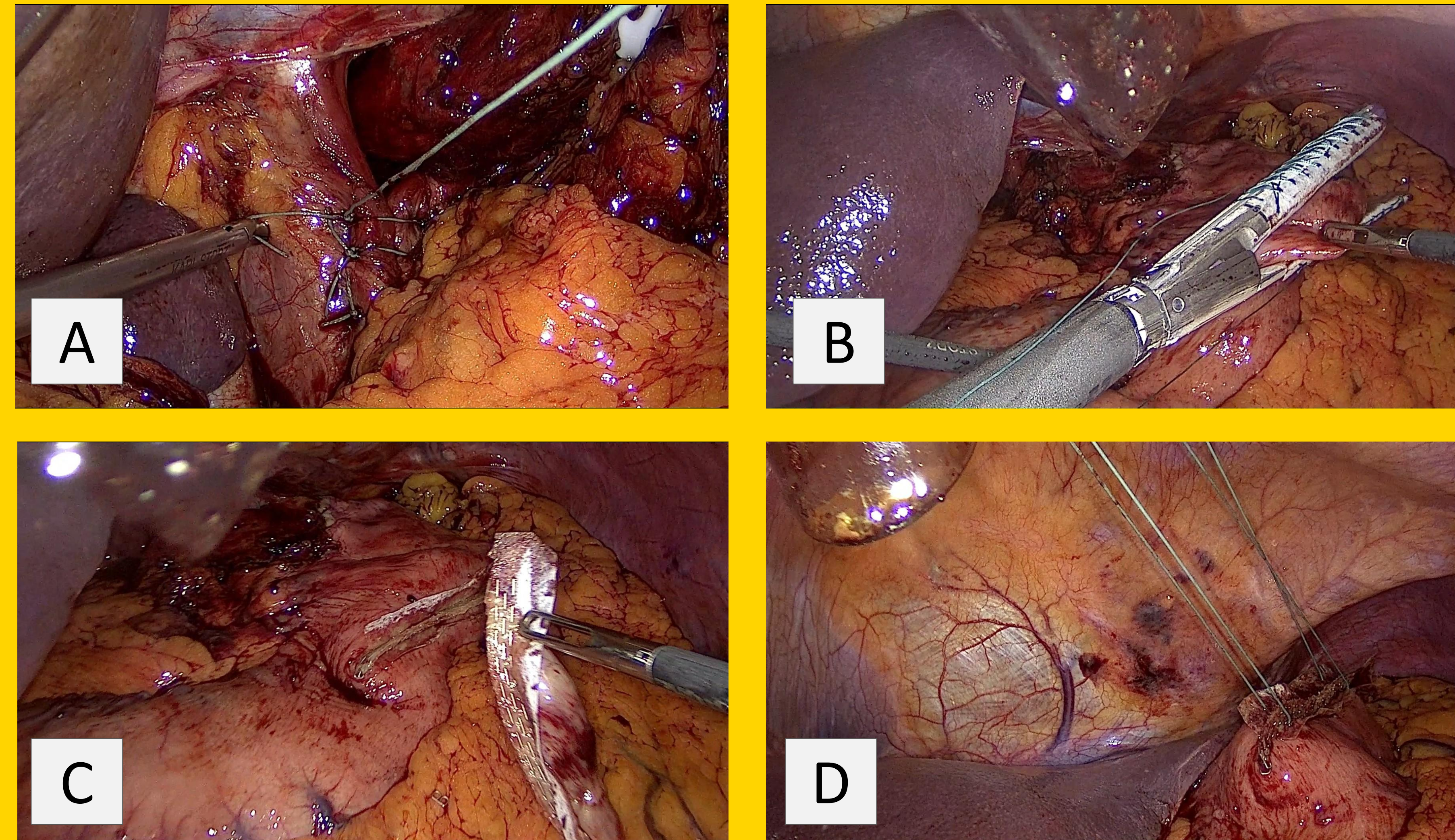
## Methods

- Single-centre retrospective case series
- All hiatal hernia repairs performed by the MIS Foregut group January 2020 - December 2025
- Exclusion criteria: open cases; recurrent hiatal hernia; prior or concomitant gastric operations; concomitant procedures; emergency repairs; use of hiatal mesh; and concomitant inflammatory bowel disease
- Primary outcome: hiatal hernia recurrence within one year.

## Soft Tissue Reinforced Anterior Gastropexy Technique

- Cruroplasty is completed using permanent, braided suture.
- A small stapled wedge gastrectomy is performed along the anterior stomach using a bioabsorbable staple line reinforcement.
- Two gastropexy sutures are placed, one at either end of the reinforced staple line.
- Staple line is fixated to the anterior abdominal wall with transfascial sutures using a suture passer.

This anterior gastropexy technique can be utilized alone or in conjunction with fundoplication.



**A.** Cruroplasty is completed. **B.** and **C.** A small wedge gastrectomy is performed along the anterior stomach using a bioabsorbable staple line reinforcement. **D.** Two gastropexy sutures are placed, one at either end of the reinforced staple line and fixated to the anterior abdominal wall with a suture passer.

## Results

Table 1: Demographic data

|                | N (%)              |
|----------------|--------------------|
| Sex            |                    |
| Female         | 20 (69%)           |
| Male           | 9 (31%)            |
| Hernia subtype |                    |
| I              | 12 (41%)           |
| II             | 1 (3%)             |
| III            | 16 (55%)           |
| IV             | 0                  |
|                | Median (IQR)       |
| Age (years)    | 67 (63 - 73)       |
| BMI            | 29.2 (25.5 - 31.6) |

Table 2: Postoperative outcomes

|                                  | N (%)           |
|----------------------------------|-----------------|
| Recurrence                       | 1 (3%)          |
| Persistent symptoms at follow up | 4 (14%)         |
| Postoperative MI/ VTE/ PE        | 0               |
| 90 day mortality                 | 0               |
|                                  | Median (IQR)    |
| Operative time (minutes)         | 134 (114 - 145) |
| Hospital length of stay (days)   | 3 (3 - 5)       |

## Discussion

- Gastropexy during paraesophageal hernia repair was first described by Boerema and Germs in 1955
- Traditionally utilized as a damage control maneuver; over time, gastropexy has become more commonly utilized in elective repairs to restore normal anatomy and to reduce recurrence risk
- We observed that standard suture gastropexy or PEG-based gastropexy had often failed at the time of revisional surgery, likely from tissue cut-through
- Load distribution over a longer segment of tissue reduces localized stress and risk of tissue cut-through. Our method uses just two gastropexy sutures but the applied load is distributed across all titanium staples within the suture line
- An endoGIA staple line typically contains approximately 90 staples, meaning each individual staple bears roughly 1/90th of the total gastropexy load
- In our series of patients, there were no major complications and no returns to the OR in the immediate postoperative period
- The soft tissue reinforced anterior gastropexy did not seem to add any additional risk in the patients we have reviewed thus far.

## Conclusion

Soft-tissue anchored gastropexy during paraesophageal hernia repair is a safe technique showing promising results in terms of durability, likely due to the distribution of tension along multiple staples, preventing suture migration and tissue cut-through.