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Strategies for Closing the Posterior Rectus Sheath During Enhanced View Totally Extraperitoneal Rives-Stoppa Repair

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Introduction

- Endolaparoscopic sublay repairs have become popular for treating ventral hernias.
- Enhanced view totally extraperitoneal (eTEP) Rives-Stoppa repair offers advantages such as minimal fixation, reduced postoperative adhesions, and early return to daily activities.
- The challenge: Posterior rectus sheath (PRS) rupture leading to complications like bowel obstruction.
- Objective: Present modifications in the technique to reduce tension during PRS closure.

Materials and Methods

- **Study Design:** Prospective case series.
- **Duration:** January 2018 - January 2022.
- **Participants:** 105 patients who underwent eTEP repair.
- **Groups :**

1. Group A (n = 68): Original technique.
2. Group B (n = 37): Modified technique (preservation of peritoneal bridge, complete dissection of space of Bogros, transverse/oblique PRS closure).

Modified surgical technique

- Dissect and preserve the hernia sac.
- Dissect the peritoneum behind the linea alba to maintain a large posterior peritoneum-PRS complex.
- Use bladder flap, preperitoneal fat, peritoneum, and falciform ligament for suturing to develop a posterior platform for mesh placement.
- Perform suturing in a transverse or diagonal manner.

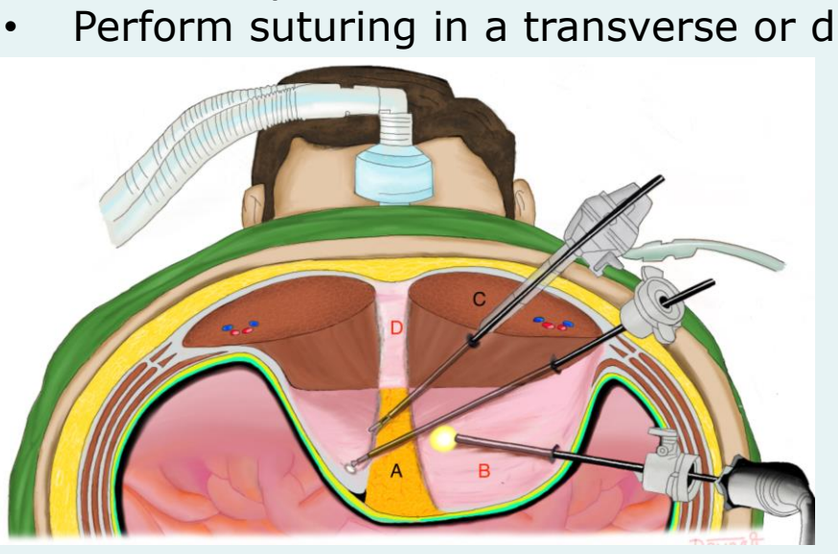
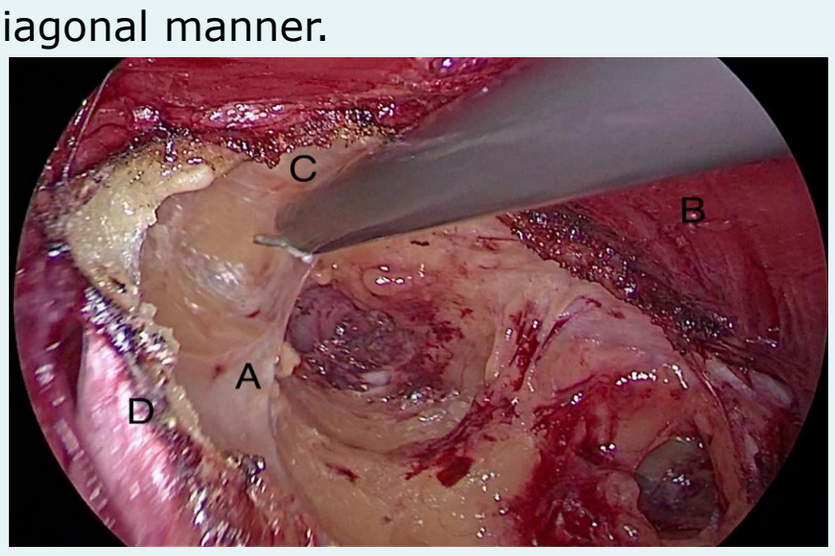
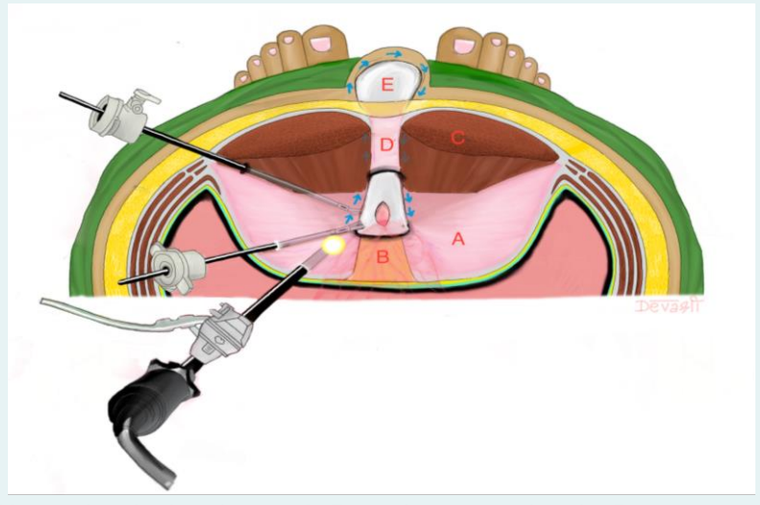


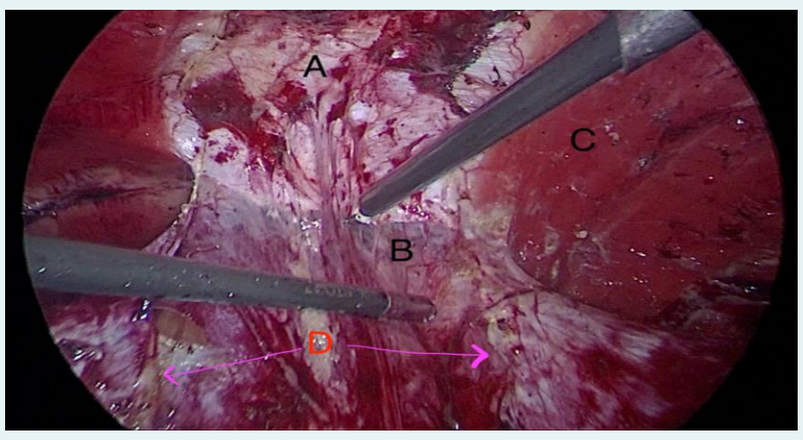
Illustration of superior crossover above falciform ligament. A: Falciform pad of fat; B: Posterior rectus sheath (PRS); C: Rectus Abdominis muscle; D: Linea Alba.



Intraoperative image showing superior crossover falciform ligament. A: Falciform pad of fat; B: Rectus Abdominis Muscle; C: Linea Alba; D: Cut edge of PRS



Harvesting the hernia sac. A: Posterior rectus sheath; B: Preperitoneal pad of fat; C: Rectus Abdominis muscle; D: Linea Alba; E: Hernia sac; blue arrows indicate the line of dissection to bring the sac down (the white structure between the lines).



Retaining the Posterior rectus sheath (PRS)-Peritoneum complex. A: Linea Alba; B: Peritoneum under the linea alba; C: Rectus abdominis muscle; D: Cut edges of PRS

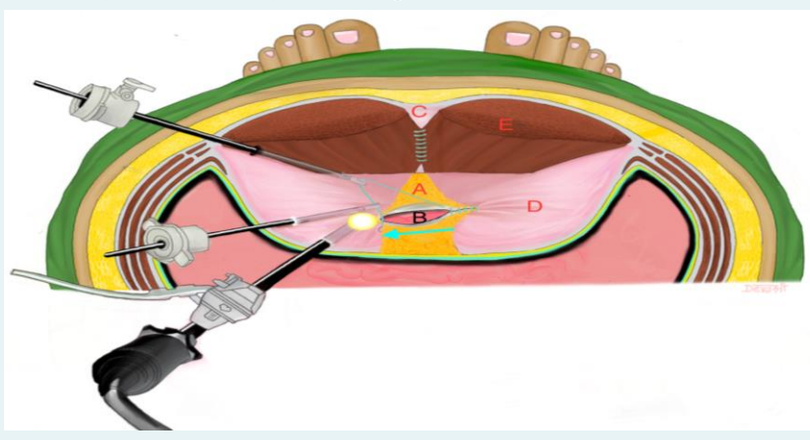
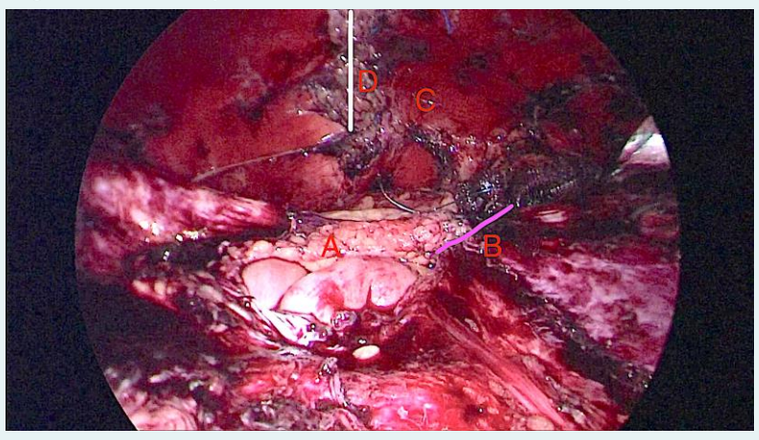


Illustration showing oblique suturing of the PRS defect. A: Preperitoneal pad of fat; B: Defect in Posterior rectus sheath (PRS); C: Linea Alba; D: PRS; E: Rectus abdominis muscle; Blue Arrow: Represents the transverse line of suturing.



Intraoperative image showing oblique suturing of the PRS. A: edge of the defect in the PRS; B (pink line): Oblique line of suturing; C: Rectus abdominis muscle; D (white line): Linea alba

Results

Characteristic	Group A (n=68)	Group B (n=37)
Age, mean (SD)	50.7 (11.1)	51 (10.1)
Female gender, n (%)	45/68 (66)	29/37 (78.3)
BMI (kg/m²)	31.6 (3.05)	31 (3.23)
DM, n (%)	10/68 (14.7)	5/37 (13.5)
Smokers, n (%)	2/68 (2.9)	2 (5.4)
Hernia width (cm)	5.6 (1.03)	5.6 (0.76)

Characteristic	Group A (n=68)	Group B (n=37)
Seroma	2	0
SSI	1	1
SSOPI	0	0
Recurrence	0	0
Need for TAR	3	0
Median operating time (min)	105	100
Median follow-up (months), range	50 (5.6–67)	15.6 (5.6–36)

Discussion

- With the modified technique, the need for TAR to bring the posterior layer together has been reduced, leading to more tension-free repairs as assessed by surgeons.
- Factors contributing to PRS rupture include suturing under tension, pneumoperitoneum causing PRS edge separation, postoperative coughing/straining, and suturing weak tissue.
- Transverse suturing reduces distracting forces on the suture line and is used in TARM for PRS closure.
- PRS ruptures are underreported; it's important for surgeons to report complications.
- Study limitations include a small sample size and lack of objective PRS tension evaluation, with the need for longer follow-up to assess PRS dehiscence.

Conclusion

- The modified technique significantly reduces the incidence of PRS rupture and the need for TAR.
- Modifications lead to tension-free PRS closure, making the procedure safer and more effective.
- Further research with larger sample sizes and longer follow-up periods is required to validate these findings.

Key References

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