ROBOTIC TOTALLY EXTRAPERITONEAL ACCESS PREPERITONEAL (R-TEPP) HERNIA REPAIR

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Background

R-TEPP enables repair of ventral hernias and concomitant diastasis recti (DR) by accessing the preperitoneal space without entering the abdominal cavity. This study aims to evaluate the feasibility and outcomes of R-TEPP.

Methods

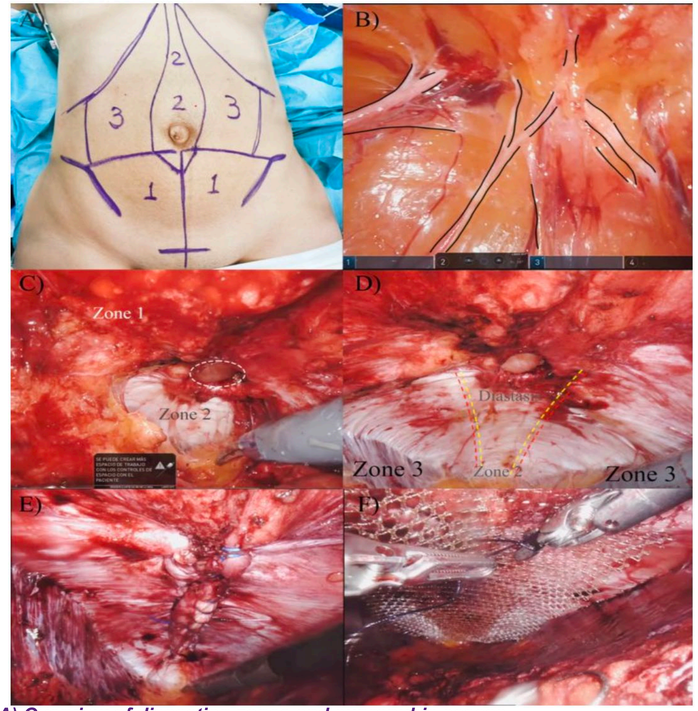
Our study is a retrospective review of patients who underwent R-TEPP from December 2022 to November 2023. Surgical technique is as follows:

- A 5 mm incision is made 2 cm above the pubis and direct preperitoneal access is achieved using an optical trocar.
- The preperitoneal space is insufflated with CO2, medial and median ligaments are identified.
- Robotic 8 mm trocars are placed under direct visualization in the right and left lower quadrants. The midline 5 mm trocar is replaced by a third 8 mm trocar.
- Three zones of dissection are proposed: **Zone 1** is the suprapubic region, where peritoneum is the thinnest. Dissect above the median and medial ligaments until the transversalis fascia is clearly identified. **Zone 2** is a narrowing stretch under the Linea alba from the umbilicus to the xiphoid process. **Zone 3** is the lateral extension of zone 2 reaching roughly the midclavicular line.
- Dissection is carried in a cephalad direction separating the transversalis fascia from the peritoneum. Lateral dissection of the edges of preperitoneal space will allow a proper position of the mesh.
- Hernia defect is identified, abdominal contents are reduced, and peritoneal defect is closed.
- The edges of the rectus diastasis are identified. Midline ventral hernia defects should be closed. A second suture is used to reinforce DR plication.
- Mesh is inserted and unfolded laterally overlapping the whole plication. Additional fixation is rarely necessary.

Results

This technique was planned for in 14 patients, one patient required early conversion to a robotic transabdominal approach due to subcutaneous emphysema. The median age was 49 years (IQR 41.5 - 62.5), 92.3% had primary ventral hernias, median hernia width was 3.5 cm (IQR 2.5-4), and 84.6% had diastasis recti.

Figure 1. R-TEPP technique



A) Overview of dissection zones and suprapubic access,
B) Visualization of medial and median ligaments in the preperitoneal space,
C) Hernia reduction and closure of peritoneal defect, D) Diastatic Linea alba,
E) Diastasis recti plication, F) Mesh fixation

Characteristics	*n* = 13
Age, median (IQR) [α]	50 (41.5-61)
Male sex, ***% (n)***	84.62 (11)
BMI, ***median*** **(IQR)**	32 (28.8-33.5)
ASA class 1	38.5 (5)
ASA class 2	61.5 (8)
Diastasis Recti, ***% (n)***	84.62 (11)
Hernia Width, ***median cm*** **(IQR)**	3.5 (2.5-4)
Incisional, % (n)	7.7 (1)
Multiple defects, ***% (n)***	30.8 (4)
Mesh length, median cm (IQR)	25 (23-25)
Mesh width, median cm (IQR)	12 (12-12)
Mesh Type, % (n)	
Nonabsorbable	100 (13)
Self fixating	46.2 (6)
Operative time, median min (IQR)	126 (119-140)
Length of stay, median days (Range)	0 (0-1)
Outpatient, % (n)	76.9 (10)
Postoperative Hematoma	15.4 (2)
Follow up, median days (IQR)	39 (23-180)

Table 1. Case-series characteristics and outcomes of R-TEPP.

Median operative time was 126 minutes (IQR 119-140). Most patients had successful outcomes, with only two (15.4%) developed hematomas. No adverse outcome occurred during follow up.

Conclusion

R-TEPP is a feasible technique for hernia repairs. It might reduce the risk of neurovascular bundle injuries and bowel injury. This approach may not be suited for more complex scenarios, including incisional hernias and hernia defects below the arcuate line.

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