Comparison of Laparoscopic Totally Extraperitoneal (TEP) Inguinal Hernia Repair vs. Robotic Inguinal Hernia Repair: A Retrospective Study

Eric Chuang, MD[1]; Yassmen Hammam, MD[1]; Daehan J Yi, MD[1]; Alexander H Vu, MD[1]; Yunzhi Qian, PhD[2]; Nilufar Tursunova, MD[1]; George S Ferzli, MD, FACS[1]
[1]New York University Langone Health; [2]University of North Carolina at Chapel Hill

Background

- Although laparoscopic TEP remains a part of the hernia surgeon's repertoire, it has declined in popularity in recent years.
- There has been a rise of other preperitoneal and intra-abdominal approaches for inguinal hernia repair.
- This study presents a comparison of laparoscopic TEP with robotic inguinal hernia repair.

Methods

- Evaluated all adult patients at a single institution from January 2019 to September 2024 who underwent primary inguinal hernia repair, either via laparoscopic TEP or robotically (including eTEP, TAPP, and other robotic approaches).
- Primary outcomes included total operative time, readmission rates, complication rates, risk scores for admission or emergency department visits, and length of postoperative hospital stay.
- Continuous variables were compared using the two-sample t-test, and categorical data were analyzed using the Chi-Square test.
- In addition, we describe the specific approach for laparoscopic TEP utilized.

Table 1. Comparison between Laparoscopic TEP and Robotic Inguinal Hernia

	Laparoscopic TEP (n = 184)	Robotic Inguinal (n = 724)	Statistic	P-value
Age (years)	63.41 ± 14.19	58.18 ± 15.58	t=-4.371	<0.001*
Gender: Male/Female	173/11	635/89	X^2=5.342	0.021*
Operative time (min)	36.06 ± 13.34	110.76 ± 48.89	t = 32.902	<0.001*
Risk of Admission or ED visit (%)	11.389 ± 14.81	16.563 ± 20.60	t=3.388	<0.001*
Complications overall	3	23	X^2<0.767	0.381
Readmission	1	21	X^2=2.523	0.112
Postoperative hospital stay (days)	2.000 ± 2.10	3.450 ± 3.60	t=2.316	0.028*

Figure 1. Ideal port placement for laparoscopic TEP hernia repair.

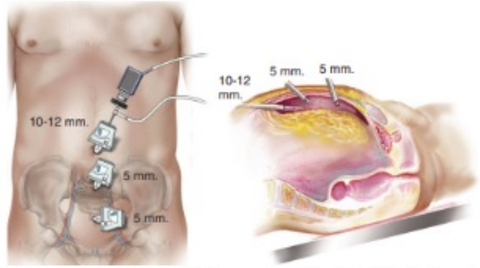
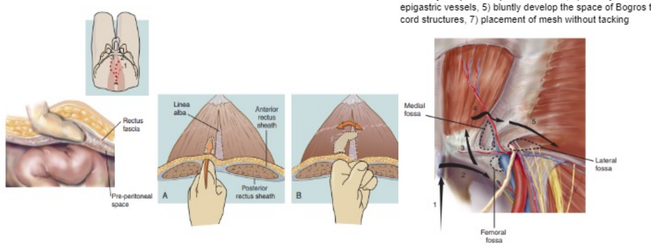


Figure 2. Balloon-less finger dissection technique for the preperitoneal space.

Figure 3. Steps of TEP: 1) Identify pubic symphysis, 2) bluntly sweep Cooper ligament bilaterally to open the space of Retzius, 3) identify the Hesselbach triangle, 4) elevate the epigastric vessels, 5) bluntly develop the space of Bogros to the level fo the ASIS, 6) dissect cord structures, 7) placement of mesh without tacking



Results

- A total of 184 patients underwent laparoscopic TEP hernia repair, while 724 patients received robotic inguinal hernia repair.
- The laparoscopic TEP group was statistically older (P < 0.01) and had a higher proportion of male patients (P = 0.021) than the robotic group.
- The laparoscopic TEP group also had a significantly lower risk score for admission or emergency department visits.
- Operative time (P < 0.01) and postoperative hospital stay (P = 0.028) were significantly shorter in the laparoscopic TEP group compared to the robotic group.
- No significant differences were found between the groups in terms of complication rates or readmission rates.

Discussion

- Our findings suggest that laparoscopic TEP, compared to robotic inguinal hernia repair, remains an effective and time-efficient approach for inguinal hernia surgery.
- Future studies may benefit from employing propensity score matching and accounting for surgeon experience to refine these comparisons further.

References

1. Aiolfi A, Cavalli M, Del Ferraro S, Manfredini L, Lombardo F, Bonitta G, Bruni PG, Panizzo V, Campanelli G, Bona D. Total extraperitoneal (TEP) versus laparoscopic transabdominal preperitoneal (TAPP) hernioplasty: systematic review and trial sequential analysis of randomized controlled trials. Hernia. 2021 Oct;25(5):1147-1157. doi: 10.1007/s10029-021-02407-7. Epub 2021 Apr 13. PMID: 33851270; PMCID: PMC8514389.
2. Shah MY, Raut P, Wilkinson TRV, Agrawal V. Surgical outcomes of laparoscopic total extraperitoneal (TEP) inguinal hernia repair compared with Lichtenstein tension-free open mesh inguinal hernia repair: A prospective randomized study. Medicine (Baltimore). 2022 Jul 1;101(26):e29746. doi: 10.1097/MD.0000000000029746. PMID: 35777031; PMCID: PMC9239617.

Disclosures

The authors declare that they have no relevant or material financial interests that relate to the research described in this poster