

Totally Extraperitoneal (TEP) versus Transabdominal Preperitoneal (TAPP) Repair for Inguinal Hernia: A Prospective Comparative Study

Dr. Lav Mehta¹, Dr. Krupal Patel², Dr. Twinkle Parmar³, Dr. Manoj Talreja⁴

¹ Senior resident, Department of General Surgery, Dr. M K Shah MCRC and Smt. SMS Multispeciality hospital, Ahmedabad.

² Assistant Professor, Department of General Surgery, Dr. M K Shah MCRC and Smt. SMS Multispeciality hospital, Ahmedabad.

³ Ex Junior Resident, Department of General Surgery, Dr. M K Shah MCRC and Smt. SMS Multispeciality hospital, Ahmedabad.

⁴ Professor & HOU, Department of General Surgery, Dr. M K Shah MCRC and Smt. SMS Multispeciality hospital, Ahmedabad.

 OPEN ACCESS

Corresponding Author:

Dr. Lav Mehta

Senior resident, Department of General Surgery, Dr. M K Shah MCRC and Smt. SMS Multispeciality hospital, Ahmedabad.

Received: 15-01-2026

Accepted: 10-02-2026

Available online: 19-02-2026

Copyright © International Journal of Medical and Pharmaceutical Research

ABSTRACT

Context: Laparoscopic inguinal hernioplasty is commonly performed as TEP or TAPP, but comparative advantages remain debated.

Aims: To compare operative time, early pain, peri-operative complications, hospital stay and short-term recurrence between TEP and TAPP.

Settings and Design: Prospective observational study at a tertiary-care teaching hospital (March 2023–June 2024) with six-month follow-up.

Methods and Material: Fifty adult males with primary inguinal hernia were enrolled and allocated to TEP (n=25) or TAPP (n=25). Inclusion/exclusion criteria were predefined; Primary outcomes were POD-1 pain (VAS 0–10) and recurrence; secondary outcomes included operative time, intra-operative vascular injury, seroma, haematoma, port-site infection, surgical emphysema, and length of stay. Assessments were done at 24 h, day 10, three months, and six months.

Statistical analysis used: Continuous variables were compared with unpaired t-test; categorical variables with odds ratio/Z and p-values (MedCalc).

Results: Mean age was similar between groups. TEP had shorter operative time, lower POD-1 pain, and shorter hospital stay compared with TAPP. Complications were infrequent and comparable between groups. Recurrence at six months was observed in one TEP case and none in TAPP.

Conclusions: In the early postoperative period, TEP was associated with less pain, shorter operative time, and shorter hospital stay, with similar complication and short-term recurrence rates compared with TAPP. Larger randomised trials with longer follow-up are warranted.

Keywords: inguinal hernia; laparoscopic hernioplasty; TEP; TAPP; postoperative pain.

INTRODUCTION

Laparoscopic mesh repair has become widely accepted for inguinal hernia due to faster recovery, reduced pain, and comparable recurrence rates when compared with open repair.^{1,2} Among endoscopic techniques, TAPP requires peritoneal entry, while TEP avoids breaching the peritoneum.^{3,4} Although both are effective, their comparative advantages remain debated in guidelines and meta-analyses.^{5–7} This study aimed to prospectively compare TEP and TAPP regarding operative efficiency, early pain, complications, hospital stay, and six-month recurrence.

SUBJECTS AND METHODS

Study design and setting: This prospective comparative study was conducted between March 2023 and June 2024 at a tertiary-care teaching hospital, with six-month postoperative follow-up.

Eligibility: Inclusion criteria were adults ≥ 18 years with primary inguinal hernia (direct/indirect, unilateral/bilateral), fit for surgery, and providing informed consent. Exclusion criteria included unfitness for anaesthesia, coagulopathy, complicated hernias (irreducible/obstructed/strangulated), and femoral/ventral hernias.

Allocation and blinding: Patients were allocated to TEP (n=25) or TAPP (n=25) groups and were blinded to the intervention.

Surgical technique: Standardised laparoscopic TEP and TAPP repairs were performed by experienced surgeons using mesh placement as described in prior literature. Postoperatively, patients received uniform analgesia protocols.

Outcomes: Primary outcomes were POD-1 pain (VAS, 0–10 scale) and hernia recurrence. Secondary outcomes included operative time, vascular injury, seroma, haematoma, port-site infection, surgical emphysema, and hospital stay. Follow-up assessments were conducted at 24 h, day 10, three months, and six months.

Sample size: A convenience sample of 50 consecutive patients (25 per group) was included. No formal power calculation was performed due to time-bound nature of the study.

Statistical analysis: Data were analysed using MedCalc software. Continuous variables were expressed as mean \pm SD and compared with unpaired t-test. Categorical variables were analysed with odds ratio/Z test. A p-value <0.05 was considered statistically significant.

Ethics: The study was approved by the Institutional Ethics Committee two months prior to initiation (Approval No.: [MKS MRC/IEC/SERC/2147, Date: 24/03/2023]). Written informed consent was obtained. The study adhered to the Declaration of Helsinki (2013).

RESULTS

Fifty male patients were included (TEP = 25, TAPP = 25). Baseline characteristics are shown in Table 1.

Characteristic	TEP (n=25)	TAPP (n=25)	p-value
Age (years, mean \pm SD)	51.76 \pm 14.15	51.00 \pm 16.69	0.862
Side of hernia (%)	Bilateral 64; Left 16; Right 20	Bilateral 56; Left 8; Right 36	-
Type of hernia (%)	Direct 56; Indirect 44	Direct 72; Indirect 28	-

Table 1. Baseline characteristics of study participants.

Operative and postoperative outcomes are presented in Table 2. TEP showed significantly shorter operative time, lower POD-1 pain scores, and shorter hospital stay compared to TAPP.

Outcome	TEP (n=25)	TAPP (n=25)	p-value
Operative time (min)	103.92 \pm 15.12	118.80 \pm 20.78	0.005
POD-1 pain (VAS)	3.64 \pm 0.99	5.96 \pm 0.93	<0.0001
Hospital stay (days)	3.16 \pm 0.85	3.80 \pm 0.76	0.0073

Table 2. Operative and postoperative outcomes.

Complications and recurrence rates are shown in Table 3. No significant differences were noted between groups.

Complication	TEP (n=25)	TAPP (n=25)	p-value
Vascular injury	0	1	0.492
Surgical emphysema	1	2	0.559
Scrotal oedema	2	3	0.639
Seroma	3	1	0.319
Haematoma	1	1	1.000
Port-site infection	2	3	0.639
Recurrence (6 months)	1	0	0.492

Table 3. Postoperative complications and recurrence at six months.

DISCUSSION

This study found that TEP was associated with shorter operative time, less early postoperative pain, and shorter hospital stay compared with TAPP, while complication rates and recurrence were similar. These results are consistent with prior studies and meta-analyses.^{8–10} The lower pain in TEP may be attributed to avoidance of peritoneal entry and reduced visceral handling.¹¹ A slightly higher incidence of seroma in TEP has also been reported in other studies.¹² Overall complication rates were low and consistent with international registries.^{13 14}

Strengths of this study include its prospective design, predefined outcomes, and structured follow-up. Limitations include small sample size, single-centre design, male-only cohort, lack of randomisation, and short follow-up of six months. Future randomised trials with larger samples and longer follow-up are needed to further validate these findings.¹⁵

CONCLUSION

Both TEP and TAPP are safe and effective for inguinal hernia repair. TEP provided lower pain, shorter operative time, and shorter hospital stay, while complications and short-term recurrence rates were similar. Where expertise is available, TEP may be preferred for improved early recovery.

DECLARATION

Conflicts of interests: The authors declare no conflicts of interest.

Author contribution: All authors have contributed in the manuscript.

Author funding: Nill

REFERENCES

1. Palanivelu C. Art of Laparoscopic Surgery: Textbook and Atlas. 2nd ed. Jaypee Brothers; 2020. p.287–9.
2. Townsend CM, Beauchamp RD, Evers BM, Mattox KL. Sabiston Textbook of Surgery. 21st ed. Elsevier; 2021. p.1111–6.
3. Arregui ME, Davis CJ, Yucel O, Nagan RF. Laparoscopic mesh repair of inguinal hernia using a preperitoneal approach. *Surg Laparosc Endosc*. 1992;2(1):53–8.
4. McKernan JB, Laws HL. Laparoscopic preperitoneal prosthetic repair of inguinal hernias. *Surg Rounds*. 1992;15:579–610.
5. McCormack K, Scott NW, Go PM, Ross SJ, Grant AM. Laparoscopic techniques versus open techniques for inguinal hernia repair. *Cochrane Database Syst Rev*. 2003;(1):CD001785.
6. Leibl BJ, Schmedt CG, Kraft K, Ulrich M, Bittner R. Laparoscopic hernia repair—TAPP or/and TEP? *Langenbecks Arch Surg*. 2005;390(2):113–6.
7. Bittner R, Arregui ME, Bisgaard T, Dudai M, Ferzli GS, Fitzgibbons RJ, et al. Guidelines for laparoscopic (TAPP) and endoscopic (TEP) treatment of inguinal hernia. *Surg Endosc*. 2011;25(9):2773–843.
8. Kald A, Anderberg B, Domeij E, Smedh K. Transperitoneal vs totally extraperitoneal laparoscopic hernia repair. *Surg Laparosc Endosc*. 1997;7(2):86–9.
9. Bansal VK, Misra MC, Babu D, Krishna A, Rajan K, Sagar R, et al. A prospective, randomized comparison of long-term outcomes: TEP vs TAPP. *Surg Endosc*. 2013;27(7):2373–82.
10. Rambhia SU, Modi R. Totally extraperitoneal vs transabdominal preperitoneal repair of inguinal hernia: a comparative study. *Int Surg J*. 2017;4(2):663–70.
11. Jaiswal RK, Sharma D, Singh R, Kumar A. Prospective comparative study of laparoscopic TEP and TAPP for inguinal hernia. *Cureus*. 2023;15(7):e42209.
12. Aslam M, Jadoon HR, Khan A, Nazir M, Ali N. Laparoscopic TEP vs TAPP repair of inguinal hernia. *Saudi J Laparosc*. 2022;7(1):12–7.
13. Wake BL, McCormack K, Fraser C, Vale L, Perez J, Grant A. Transabdominal pre-peritoneal (TAPP) vs totally extraperitoneal (TEP) laparoscopic techniques for inguinal hernia repair. *Cochrane Database Syst Rev*. 2005;(1):CD004703.
14. Köckerling F, Bittner R, Jacob DA, Seidelmann L, Keller T, Adolf D, et al. TEP versus TAPP: comparison of perioperative outcome in 17,587 patients. *Surg Endosc*. 2015;29(12):3750–60.
15. IEHS Guidelines: Bittner R, Arregui ME, et al. International Endohernia Society (IEHS) guidelines. *Surg Endosc*. 2011;25:2773.