



LESS PAIN, FASTER RECOVERY, LONGER SURGERY: TAPP VERSUS LICHTENSTEIN INGUINAL HERNIA REPAIR

General Surgery

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ABSTRACT

Background: Laparoscopic inguinal hernia repair may reduce pain and hasten functional recovery, but requires general anesthesia, expertise, and longer operating time. **Objective:** To compare early outcomes of transabdominal preperitoneal (TAPP) and open Lichtenstein mesh repair. **Materials and Methods:** In this prospective randomized comparative study, 106 adults with uncomplicated unilateral or bilateral inguinal hernia were allocated equally to TAPP or Lichtenstein repair. Outcomes included operating time, postoperative pain, seroma, day-specific signs of wound infection, and return to work. Continuous and categorical variables were compared using t, Mann-Whitney U, chi-square, or Fisher's exact tests; serial pain was assessed by repeated-measures analysis. **Results:** Mean operating time was longer with TAPP (75.23 ± 9.11 vs. 54.75 ± 10.28 minutes; $p < .001$). Median overall postoperative VAS pain was lower (3 vs. 5; $p < .001$), and serial VAS values favored TAPP from 1 to 24 hours (group effect $p < .001$). Return to work was earlier after TAPP (7.91 ± 2.41 vs. 12.26 ± 3.04 days; $p < .001$). Recorded seroma was less frequent after TAPP (24/53; 45.3%) than after open repair (35/53; 66.0%; $p = .031$). Signs of wound infection were uncommon and similar on postoperative days 1, 3, and 7. **Conclusion:** TAPP provided less early pain and faster return to work but required approximately 20 additional operative minutes. Early wound-infection findings were comparable.

KEYWORDS

Inguinal Hernia; TAPP; Lichtenstein Repair; Postoperative Pain

INTRODUCTION

Mesh repair is standard treatment for symptomatic inguinal hernia. Open Lichtenstein repair is accessible, reproducible, and can be performed under regional or local anesthesia, whereas laparo-endoscopic repair offers posterior mesh placement, smaller incisions, and bilateral access [1,2]. The optimal approach depends on patient characteristics, recurrence pattern, surgeon expertise, resources, and patient preference.

Randomized trials and meta-analyses generally show less early and chronic pain and faster return to activity after laparoscopic repair, often at the cost of longer operating time and a demanding learning curve [3-8]. Contemporary guidelines favor a tailored approach rather than one universal technique [1,2]. This study compared TAPP with open Lichtenstein repair in a tertiary teaching hospital, focusing on pain, operative time, wound outcomes, and return to work.

MATERIALS AND METHODS

This prospective randomized comparative study was conducted over 18 months in the Department of General Surgery, K.D. Medical College and Research Centre, Mathura. Adults aged 18 years or older with uncomplicated unilateral or bilateral inguinal hernia and fitness for general and spinal anesthesia were eligible. Exclusion criteria were ASA physical status above III, pregnancy, recurrent hernia, age below 18 years, and previous abdominal surgery or trauma.

The sample included 106 patients. Allocation to laparoscopic TAPP (Group 1; $n = 53$) or open Lichtenstein repair (Group 2; $n = 53$) was generated using Microsoft Excel. Allocation concealment and blinding were not documented. Patients received standardized perioperative evaluation and postoperative analgesia. Follow-up was planned for six months, although recurrence and chronic-pain outcomes were not reported.

Outcomes included operating time, VAS pain, seroma, hematoma, urinary retention, inguinal paresthesia, signs of wound infection, and time to return to work. Data were analyzed using SPSS version 26. Continuous variables were compared with independent-samples t tests; ordinal pain with the Mann-Whitney U test; categorical outcomes with chi-square or Fisher's exact tests; and serial pain with repeated-measures analysis. A two-sided p value $< .05$ was significant.

The Institutional Ethics Committee approved the study (KDMCHRC/IEC/2024/51; project reference KDMCHRC/PG/IEC/2024/32; October 10, 2024). Written informed consent was obtained.

RESULTS

All 106 participants were analyzed. Age, sex, height, weight, occupation, comorbidity, diagnosis type, and laterality were similar between groups. Indirect hernia was the most common diagnosis.

Table 1. Principal Outcomes After TAPP and Lichtenstein Repair

Outcome	TAPP (n=53)	Lichtenstein (n=53)	p value
Age, years	45.58 ± 9.34	44.06 ± 10.68	.435
Female sex, n (%)	23 (43.4)	28 (52.8)	.331
Operating time, min	75.23 ± 9.11	54.75 ± 10.28	$< .001$
Overall VAS pain, median	3	5	$< .001$
Return to work, days	7.91 ± 2.41	12.26 ± 3.04	$< .001$
Seroma, n (%)	24 (45.3)	35 (66.0)	.031
Wound signs on day 3, n (%)	3 (5.7)	5 (9.4)	.716
Wound signs on day 7, n (%)	2 (3.8)	3 (5.7)	1.000

TAPP took 20.48 minutes longer on average (95% confidence interval, 16.73-24.21) but patients returned to work 4.35 days earlier (95% confidence interval, 3.30-5.42). Serial VAS scores were lower after TAPP at every recorded interval (Table 2). Pain decreased over time in both groups (time effect $p < .001$), with a significant group effect ($p < .001$) and no time-by-group interaction ($p = .768$).

Table 2. Early Postoperative VAS Pain

Time after surgery	TAPP	Lichtenstein	Analysis
1 hour	3.94 ± 1.08	6.23 ± 1.07	Group effect $< .001$
4 hours	3.00 ± 0.94	5.21 ± 1.06	Group effect $< .001$
12 hours	2.28 ± 0.97	4.58 ± 1.03	Group effect $< .001$
24 hours	1.91 ± 1.02	4.09 ± 1.06	Group effect $< .001$

DISCUSSION

TAPP produced a clear early recovery advantage: lower pain at every time point and return to work about four days earlier. The trade-off was approximately 20 additional operative minutes. These findings align with randomized evidence and meta-analyses showing less pain and quicker functional recovery with laparo-endoscopic repair, while open repair is often faster [3-8].

The seroma result favored TAPP, but the recorded proportions were high in both groups. Because the dissertation did not specify an imaging threshold, aspiration requirement, or standardized clinical definition, minor postoperative fluid collections may have been included. The finding should therefore be interpreted cautiously. Day-specific wound signs were infrequent and statistically comparable, consistent with evidence that absolute differences in early infection are usually small when mesh repair and prophylaxis are standardized [3-6].

The study addresses outcomes important to working-age patients and uses equal groups with serial pain measurement. Limitations include its single-center setting, modest sample, unreported allocation concealment, inability to blind surgeons, and absent cost analysis. An overall wound-infection variable conflicted with the internally consistent day-specific assessments; the day 1, 3, and 7 series was

therefore used. Definitions and assessment timing for several complications were incomplete. Although six-month follow-up was planned, recurrence, chronic pain, and quality of life were not reported. These limitations restrict long-term conclusions.

CONCLUSION

Compared with open Lichtenstein repair, TAPP was associated with less early postoperative pain and faster return to work, but a longer operation. Early wound-infection signs were comparable. Technique selection should balance recovery priorities, anesthetic fitness, surgeon expertise, and available resources.

Declarations

Ethical Approval: Institutional Ethics Committee, K.D. Medical College, Hospital & Research Center (KDMCHRC/IEC/2024/51; project KDMCHRC/PG/IEC/2024/32; October 10, 2024).

Informed Consent: Written informed consent was obtained from all participants.

Conflict of Interest: Not reported in the source dissertation; the author should confirm before submission.

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