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Original Article

Comparison of laparoscopic (TAPP mesh repair) and open hernia repair: A prospective cross-sectional study.

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Abstract

Background:
Inguinal hernia repair is among the most frequently executed surgical interventions globally. Historically, open mesh repair has been the conventional method; however, laparoscopic procedures such as transabdominal preperitoneal (TAPP) repair have surged in popularity owing to their minimally invasive characteristics and potential for enhanced postoperative results. The selection between these methodologies is a subject of ongoing clinical assessment.

Objective:
To evaluate the clinical outcomes of laparoscopic tapp surgery against open hernia repair regarding postoperative pain, length of hospital stay, and complication rates.

Methods:
A prospective cross-sectional study was performed over six months, involving 98 patients diagnosed with inguinal hernia. Patients were categorised into two groups according to the surgical method: Laparoscopic tapp repair and open mesh repair. The primary outcome measures comprised postoperative pain evaluated via the visual analogue scale (VAS), duration of hospital stay, and occurrence of postoperative complications. Statistical analysis was conducted, with a p-value below 0.05 being statistically significant.

Results:
Patients who had TAPP surgery exhibited markedly reduced postoperative pain scores in comparison to those who underwent open repair ($p = 0.001$). The length of hospital stay was markedly reduced in the tapp group ($p = 0.002$), indicating expedited recovery and earlier mobilisation. The occurrence of postoperative problems, particularly wound-related difficulties, was reduced in the tapp group ($p = 0.04$), signifying enhanced safety and surgical results.

Conclusion:
Laparoscopic TAPP surgery provides enhanced postoperative results relative to open hernia repair, encompassing less pain, abbreviated hospitalisation, and a lower incidence of complications. It signifies a secure and efficient choice and may be regarded as the optimal method in facilities with sufficient experience.

Recommendation:
Laparoscopic TAPP repair is recommended in centers with adequate expertise and resources due to its superior postoperative outcomes.

Keywords: *Transabdominal preperitoneal repair, laparoscopy, hernia repair, hospitalisation, inguinal hernia.*
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Introduction
An inguinal hernia is a prevalent medical problem in clinical practice that frequently necessitates surgical intervention to avert consequences, including blockage or strangulation. For numerous years, open mesh repair, especially the Lichtenstein approach, has been regarded as the gold standard owing to its simplicity, efficacy, and minimal recurrence rates. Nonetheless, developments in minimally invasive surgery have led to the growing

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acceptability of laparoscopic techniques, such as transabdominal preperitoneal (TAPP) repair. (1).

The tapp repair entails the insertion of a mesh into the preperitoneal region by a laparoscopic technique, facilitating enhanced visualisation of the myopectineal orifice and the detection of bilateral or hidden hernias. This approach minimises tissue dissection and mitigates harm to adjacent tissues, particularly nerves, perhaps leading to reduced postoperative pain. The minimally invasive characteristics of TAPP result in smaller incisions, enhanced cosmetic results, and expedited postoperative recovery, facilitating early mobilisation and resumption of everyday activities(2).

Notwithstanding these benefits, apprehensions persist surrounding the expenses, requisite technical proficiency, and long-term results, including recurrence rates, in comparison to open repair. A direct comparison between laparoscopic TAPP and open hernia repair is crucial to assess their respective advantages and disadvantages. This study seeks to evaluate clinical results between laparoscopic TAPP and open hernia repair, emphasising postoperative discomfort, length of hospital stay, complications, and overall patient recovery, to ascertain the most successful surgical method. (3).

Methods

Study design

This was a hospital-based prospective cross-sectional study conducted to compare clinical outcomes between laparoscopic TAPP repair and open mesh repair.

Study setting

The study was conducted at the Department of General Surgery, Patna Medical College and Hospital, Patna, Bihar, India. It is a tertiary care teaching hospital providing advanced surgical services and catering to a large population from both urban and rural regions of Bihar and nearby states.

Duration

The study was conducted from January 2025 to June 2025.

Sample size: 98 patients

Groups

Patients were divided into two equal groups: Laparoscopic TAPP repair (n=49) and open mesh repair (n=49).

Parameters assessed included postoperative pain (vas score), duration of hospital stay (in days), and postoperative complications such as wound infection, seroma, and hematoma.

Parameters

- Postoperative pain (VAS score)
- Hospital stay
- Complications

Inclusion criteria

- Patients aged 18–70 years diagnosed with inguinal hernia
- Patients scheduled for elective hernia repair
- Both primary unilateral or bilateral inguinal hernias
- Patients fit for either laparoscopic (TAPP) or open repair under anesthesia
- Patients are willing to provide informed consent and comply with follow-up

Exclusion criteria

- Patients with recurrent hernia (previously operated cases)
- Complicated hernias (strangulated, obstructed, or incarcerated)
- Patients with severe comorbidities contraindicate laparoscopy or general anesthesia
- Patients with coagulopathy or bleeding disorders
- Previous major lower abdominal surgery (contraindication for TAPP)
- Pregnant patients
- Incomplete data or patients lost to follow-up

Bias

Selection bias was minimized by including consecutive eligible patients. Measurement bias was reduced by using standardized tools such as the visual analogue scale (VAS). Observer bias was minimized by using uniform assessment protocols.

Sampling method

A consecutive sampling method was used. All eligible patients presenting during the study period and meeting the inclusion criteria were included until the desired sample size was achieved.

Sample size

The sample size of 98 patients was determined based on previous similar studies, considering a confidence level of 95% and power of 80%, with expected differences in postoperative pain scores between groups.

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Statistical analysis

Data were analyzed using SPSS software. Continuous variables were expressed as mean ± standard deviation and compared using an independent t-test. Categorical variables were analyzed using the chi-square test. A p-value <0.05 was considered statistically significant.

Results

A total of 110 patients were assessed for eligibility. Out of these, 98 patients met the inclusion criteria and were enrolled. Twelve patients were excluded due to not meeting the criteria or refusal to participate. All enrolled patients completed the study.

Table 1; sociodemographic data

Variable	Tapp	Open
Mean age	45	47
Male (%)	90%	88%

Table 2: Pain score

Approach	Vas score
Tapp	3.2
Open	5.8

P = 0.001 (significant)

Table 3: Hospital stay

Approach	Days
Tapp	2.5
Open	4.2

P = 0.002 (significant)

Table 4: Complications

Approach	Complications	No complications
Tapp	8	41
Open	15	34

P = 0.04 (significant)

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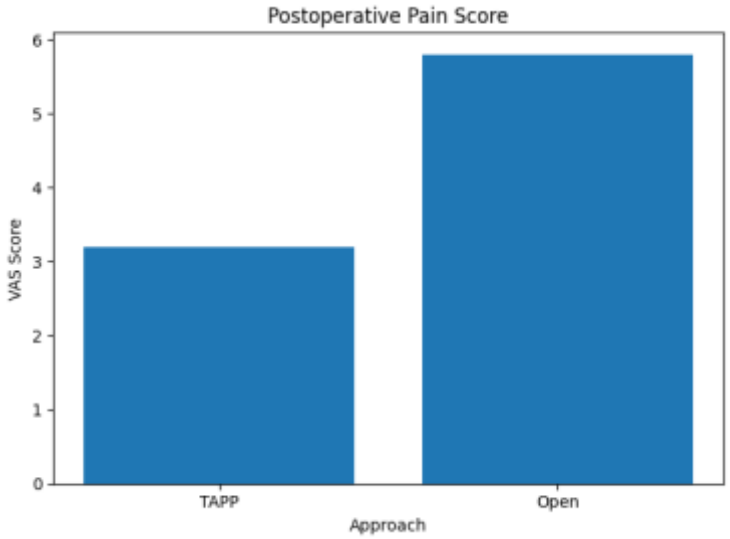


Figure 1: Postoperative pain score

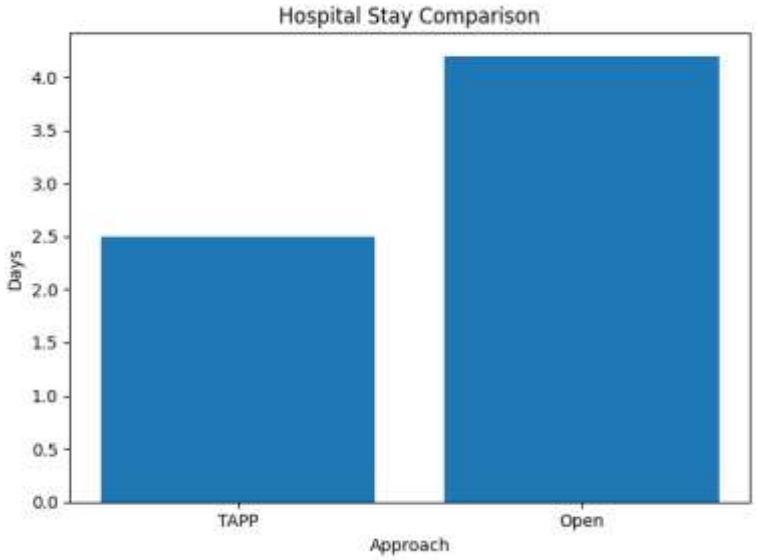


Figure 2: Hospital stay comparison

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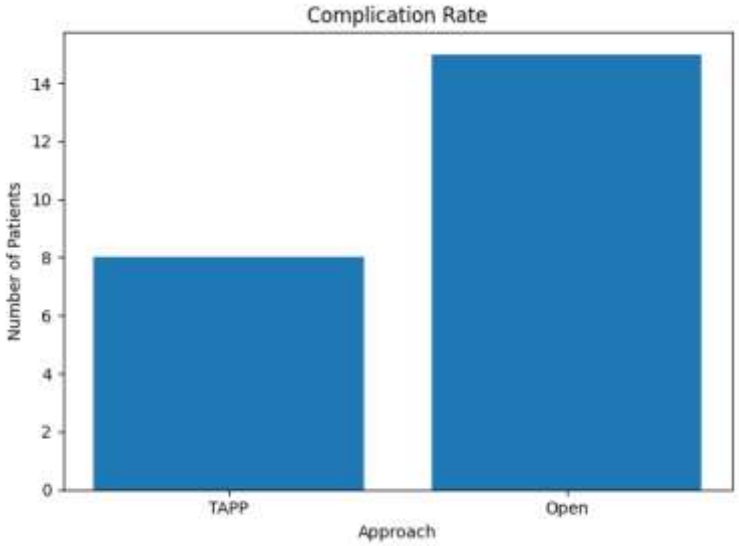


Figure 3: Complication rate

Discussion

This study illustrates that laparoscopic transabdominal preperitoneal (TAPP) repair yields superior postoperative results compared to traditional open hernia repair. Patients undergoing TAPP had markedly less postoperative discomfort, attributable to little tissue manipulation, reduced muscular dissection, and a lower likelihood of nerve damage. (4) Laparoscopy's enhanced visualisation facilitates accurate dissection and mesh positioning, hence diminishing postoperative discomfort. (5).

The TAPP group had a considerably shorter hospital stay, indicating expedited recovery, quicker ambulation, and less postoperative morbidity. This aligns with the minimally invasive characteristics of laparoscopic surgery, facilitating a swifter return to everyday activities and enhanced patient satisfaction. The research additionally observed a diminished incidence of postoperative complications in the tapp cohort. (6). This may result from smaller incisions, less wound exposure, and enhanced visualisation during surgery, resulting in fewer wound-related problems such as infection, seroma, and hematoma. These findings align with the current literature endorsing laparoscopic procedures as a safer and more efficient alternative to open repair in specific patients. (7).

Nevertheless, despite these benefits, specific restrictions must be recognised. The study's follow-up time was relatively brief, constraining the evaluation of long-term outcomes, including recurrence rates and chronic pain. Moreover, elements such as surgeon proficiency and financial implications were not assessed. The findings endorse laparoscopic TAPP repair as an efficacious and patient-centric method, yielding superior postoperative results relative to open hernia repair. (8).

Generalizability

The findings of this study can be generalized to similar tertiary care settings with adequate laparoscopic facilities and trained surgeons. However, results may vary in resource-limited settings.

Conclusion

Laparoscopic transabdominal preperitoneal (TAPP) repair has become a secure and efficient substitute for traditional open hernia treatment. It has numerous benefits, such as markedly less postoperative pain resulting from little tissue damage and enhanced nerve preservation. Patients experience reduced hospitalisations, expedited recuperation, and prompt resumption of daily activities. The reduced occurrence of sequelae, including wound infection and hematoma, further endorses its application. Tapp guarantees successful repair outcomes through enhanced visualisation and surgical precision. Consequently, at facilities possessing sufficient competence and resources, tapp should be regarded as the optimal method for inguinal hernia repair.

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Limitations
The study had certain limitations, including a relatively small sample size and a short follow-up period, which limited the assessment of long-term outcomes such as recurrence and chronic pain.

Recommendation
Further large-scale, multicentric studies with longer follow-up are recommended to validate these findings.

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List of abbreviations
- Tapp – transabdominal preperitoneal
- VAS – visual analogue scale

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No funding was received for this study.

Conflict of interest
The authors declare no conflict of interest.

Author contribution
Kritika Jha: Data collection and manuscript drafting
Piyush Kumar Sinha: Study design and supervision
Pankaj Kumar Mishra: Data analysis
Binoy Kumar: Final review and approval

Author biography
Dr. Kritika Jha is a senior resident in general surgery at PMCH, Patna, with an interest in laparoscopic surgery.

Data availability
Data supporting the findings of this study are available from the corresponding author upon reasonable request.

References
1. Anand vrajlal popat, jigneshkumar kantibhai ramani, minesh sindhal tr. Comparison of outcomes between laparoscopic tapp mesh repair and open hernia repair. Nternational j life sci biotechnol pharma res. 2024;13(7):645-8.
2. Jaiswal RK, Pandey NK, Tola, tolat a, Kalwaniya DS, Gupta AK. A prospective comparative study of laparoscopic totally extraperitoneal (TEP) and laparoscopic transabdominal preperitoneal (TAPP) inguinal hernial repair. Cureus. 2023;15(7):6-13. https://doi.org/10.7759/cureus.42209
3. Mohanty sk, dandpat bp, neti sk. Comparing the outcome of laparoscopic (tapp mesh repair) and open hernia repair. Int J Curr Pharm Rev Res. 2025;17(10):1058-62.
4. Ergenç M, Gül T. Laparoscopic inguinal hernia repair : A comparison of transabdominal preperitoneal and total extraperitoneal techniques - results of initial experiences. Int J Abdom Wall Hernia Surg. 2023;6:166-70. https://doi.org/10.4103/ijawhs.IJAWHS_27_23
5. Lakshmana mgm, Yadav K, Narayana RS. Comparative study of Lichtenstein mesh repair vs laparoscopic hernia repair. Int J Med Pharm Res. 2025;6(5):703-8.
6. Salama mm. A comparative study between laparoscopic inguinal hernia repair and open Lichtenstein mesh repair. Med J Cairo Univ. 2019;87(7):4441-7. https://doi.org/10.21608/mjcu.2019.78263
7. Naveenraj r, patel b, kavthiya j, samdani s. Comparative study of mesh fixation versus non-mesh fixation in laparoscopic inguinal hernia repair by the TAPP approach. Int Surg J. 2024;11(5):744-7. https://doi.org/10.18203/2349-2902.isj20241136
8. Duwal s, S., Manandhar, K. Comparison of postoperative outcomes of laparoscopic and open inguinal hernia mesh repair. Int Surg J. 2024;11(7):1081-5. https://doi.org/10.18203/2349-2902.isj20241734

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