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Research Article

A Comparative Study of Laparoscopic Vs. Open Hernia Repair: Outcomes and Patient Satisfaction

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Abstract

Background: Hernia repair is one of the most common surgical procedures worldwide, with various techniques employed to optimize patient outcomes and satisfaction. This study aims to compare the outcomes and patient satisfaction between laparoscopic and open hernia repair techniques.

Methods: This retrospective cohort study involved 120 patients who underwent hernia repair at a single tertiary care center, with 60 patients undergoing laparoscopic repair and 60 undergoing open repair. Outcomes measured included postoperative recovery time, recurrence rates, complications, and patient satisfaction regarding cosmetic results and overall treatment experience. Statistical analysis was conducted using Chi-square tests and t-tests where appropriate.

Results: The laparoscopic group demonstrated a significantly lower recurrence rate (3.3% vs. 13.3%, $p=0.045$) and shorter postoperative recovery times in terms of resuming daily activities (3.2 vs. 6.4 days, $p<0.001$) and returning to work (5.6 vs. 9.2 days, $p<0.001$). Patients in the laparoscopic group also experienced fewer complications (5% vs. 20%, $p=0.008$) and reported higher satisfaction with cosmetic outcomes (8.7 vs. 7.2, $p<0.001$) and overall treatment (8.5 vs. 6.9, $p<0.001$). The likelihood of recommending the surgery was also higher among the laparoscopic patients (95% vs. 75%, $p=0.013$).

Conclusion: Laparoscopic hernia repair is associated with better clinical outcomes, fewer complications, and higher patient satisfaction compared to open hernia repair. These findings support the adoption of laparoscopic techniques as a preferred option for hernia repair, subject to individual patient conditions and surgical expertise.

Keywords: Laparoscopic Hernia Repair, Open Hernia Repair, Patient Satisfaction.

INTRODUCTION

Hernia repair is a common surgical intervention aimed at correcting hernias of various types, most commonly inguinal hernias. With advancements in surgical techniques, laparoscopic hernia repair has emerged as a minimally invasive alternative to traditional open hernia repair, promising shorter recovery times, reduced postoperative pain, and potentially better aesthetic outcomes. However, the debate continues over the relative effectiveness and patient satisfaction associated with these two techniques. This comparative study delves into these aspects by examining a range of outcomes associated with laparoscopic and open hernia repair methods.

The efficacy of laparoscopic versus open hernia repair has been a subject of extensive research. Studies have shown that laparoscopic repair often results in less postoperative pain and quicker return to daily activities [1],[2]. However, the technique requires specialized skills and equipment,

which can influence its availability and cost-effectiveness. On the other hand, open hernia repair, being a more traditional approach, is widely practiced and understood, with established outcomes over decades of clinical application [3][4].

Patient satisfaction in hernia surgery is influenced by various factors including pain, recovery time, recurrence rates, and cosmetic results. Both laparoscopic and open hernia repairs have their pros and cons in these areas. While laparoscopic surgery offers less visible scars, the open approach may sometimes result in more reliable closure of the hernia, potentially reducing recurrence rates [5][6].

Aim

To compare the outcomes and patient satisfaction between laparoscopic and open hernia repair techniques.

Objectives

1. To evaluate the postoperative recovery times between laparoscopic and open hernia repair.
2. To compare the postoperative pain and complication rates associated with both surgical techniques.
3. To assess patient satisfaction related to cosmetic outcomes and overall treatment experience in both groups.

MATERIAL AND METHODOLOGY

Source of Data

The data were collected retrospectively from patient medical records who underwent either laparoscopic or open hernia repair at our institution.

Study Design

This was a retrospective cohort study that compared laparoscopic and open hernia repair.

Study Location

The study was conducted at the General Surgery Department of Surgery, a tertiary care center.

Study Duration

Data were collected from January 2023 to December 2024.

Sample Size

A total of 120 patients were included in the study, with 60 undergoing laparoscopic hernia repair and 60 undergoing open hernia repair.

Inclusion Criteria

Included were adult patients (age ≥ 18 years) who underwent primary hernia repair for inguinal hernia.

Exclusion Criteria

Excluded were patients with recurrent hernias, emergency hernia repairs, and those with significant comorbid conditions affecting surgical outcomes (e.g., severe cardiac, pulmonary, or renal diseases).

Procedure and Methodology

Patients in the laparoscopic group underwent either a transabdominal preperitoneal (TAPP) or totally extraperitoneal (TEP) repair, depending on the surgeon's discretion and patient-specific factors. Those in the open repair group underwent the Lichtenstein tension-free mesh repair technique. All surgical procedures were performed under general anesthesia.

Sample Processing

Not applicable as this study focused on clinical outcomes and patient satisfaction surveys without biological sample analysis.

Statistical Methods

Data were analyzed using SPSS Version 25. Descriptive statistics were used to summarize patient demographics and surgical details. Comparative analysis between the two groups was performed using the Chi-square test for categorical variables and the t-test for continuous variables. A p-value of less than 0.05 was considered statistically significant.

Data Collection

Data on patient demographics, type of hernia, details of the surgical procedure, postoperative recovery (including time to return to normal activities and work), complications, recurrence rates, and patient satisfaction (using a standardized questionnaire) were collected through medical record reviews and telephonic follow-ups.

OBSERVATION AND RESULTS

Table 1: Comparison of Outcomes and Patient Satisfaction Between Laparoscopic and Open Hernia Repair Techniques

Variable	Laparoscopic (n=60)	Open (n=60)	p-value	95% CI of Difference
Mean Age (years, SD)	46.8 (13.1)	48.3 (14.4)	0.45	(-4.1, 1.8)
Gender (Male, %)	53 (88.3)	50 (83.3)	0.41	(0.65, 0.95)
Recurrence Rate (%, %)	2 (3.3)	8 (13.3)	0.045	(0.1, 0.26)

Overall Satisfaction (%)	54 (90.0)	48 (80.0)	0.13	(0.70, 0.98)

Table 1 reveals no significant differences in mean age or gender distribution between the two groups, indicating a well-matched sample. However, there is a notable difference in recurrence rates, with laparoscopic repair showing a significantly lower recurrence rate (3.3%) compared to open repair (13.3%), suggesting better long-term efficacy of the laparoscopic approach. Patient satisfaction also trends higher in the laparoscopic group (90%) compared to the open group (80%), although this difference did not reach statistical significance.

Table 2: Evaluation of Postoperative Recovery Times Between Laparoscopic and Open Hernia Repair

Variable	Laparoscopic (Mean days, SD)	Open (Mean days, SD)	p-value	95% CI of Difference
Time to Resume Daily Activities	3.2 (1.1)	6.4 (2.0)	<0.001	(-3.7, -2.6)
Time to Return to Work	5.6 (2.2)	9.2 (3.1)	<0.001	(-4.1, -3.1)
Hospital Stay (days)	1.2 (0.3)	2.4 (0.9)	<0.001	(-1.5, -0.9)

Table 2 emphasizes the advantages of laparoscopic surgery in terms of faster recovery. Patients undergoing laparoscopic repair resumed daily activities in significantly fewer days (3.2 days) compared to those undergoing open repair (6.4 days). Similar trends are observed with the time to return to work and hospital stay duration, both significantly shorter in the laparoscopic group, highlighting the minimally invasive nature of the technique and its benefits in reducing overall recovery time.

Table 3: Comparison of Postoperative Pain and Complication Rates Between Surgical Techniques

Variable	Laparoscopic (n, %)	Open (n, %)	p-value	95% CI of Difference
Postoperative Pain	Mild (44, 73.3)	Mild (34, 56.7)	0.034	(0.56, 0.86)
Moderate Pain	Moderate (14, 23.3)	Moderate (22, 36.7)	0.045	(0.21, 0.48)
Severe Pain	Severe (2, 3.3)	Severe (4, 6.7)	0.65	(-0.1, 0.21)
Complication Rates	3 (5.0)	12 (20.0)	0.008	(0.07, 0.28)

Table 3 focuses on the postoperative pain and complication rates. Patients who had laparoscopic hernia repair reported significantly lower levels of moderate pain and overall complication rates compared to the open repair group. The majority of laparoscopic patients experienced only mild pain, whereas the open repair group had a higher percentage of moderate and severe pain. These differences underline the less invasive impact of laparoscopic surgery, which contributes to lesser pain post-surgery and fewer complications.

Table 4: Assessment of Patient Satisfaction Related to Cosmetic Outcomes and Overall Treatment Experience

Variable	Laparoscopic (Mean score, SD)	Open (Mean score, SD)	p-value	95% CI of Difference
Cosmetic Satisfaction	8.7 (1.4)	7.2 (1.8)	<0.001	(1.2, 2.0)
Overall Treatment Satisfaction	8.5 (1.5)	6.9 (2.1)	<0.001	(1.3, 2.0)
Would Recommend Surgery	Yes (57, 95.0)	Yes (45, 75.0)	0.013	(0.80, 0.98)

Table 4 deals with patient satisfaction regarding cosmetic outcomes and overall treatment experience. The laparoscopic group reported significantly higher satisfaction scores both in terms of cosmetic results and the overall treatment experience, reflecting the minimal scarring and faster recovery associated with this technique. Additionally, a higher percentage of patients in the laparoscopic group would recommend the surgery compared to the open repair group, which could influence patient decision-making and preferences in surgical options.
Describe following tables in paragraph:

DISCUSSION

Table 1 details demographic similarities and differences in outcomes such as recurrence rates and overall satisfaction. The recurrence rate for laparoscopic repair is significantly lower at 3.3% compared to 13.3% for open repair. This is consistent with the findings of Tadaki C et al.(2016)[7], who reported higher recurrence rates with open repairs in their multicenter study. Despite the non-significant difference in overall satisfaction, 90% of laparoscopic patients reported satisfaction compared to 80% in the open repair group, which mirrors trends in patient preferences for minimally invasive procedures as noted by Rogmark P.(2018)[8].

Table 2 presents data on postoperative recovery, with laparoscopic patients experiencing quicker returns to daily activities and work, and shorter hospital stays. These findings are aligned with the systematic review by Patel LY et al.(2017)[9], which highlighted the reduced recovery time associated with laparoscopic procedures due to smaller incisions and less postoperative pain. The significant reduction in hospital stay also supports broader healthcare trends towards cost-efficiency in minimally invasive surgeries Gitelis ME et al.(2016)[10].

Table 3 contrasts the postoperative pain and complications between the two techniques. Laparoscopic patients reported significantly lower rates of moderate pain and complications, aligning with the meta-analysis by Berkowitz R et al.(2021)[11], which concluded that laparoscopic hernia repair offers an advantage in terms of fewer complications and reduced pain compared to open methods. The comparable rates of severe pain between the two groups indicate that while laparoscopic surgery is generally less painful, individual variations and surgical complications may still result in high pain levels for a small number of patients.

Table 4 explores patient satisfaction concerning cosmetic outcomes and overall treatment experience, revealing higher satisfaction scores in the laparoscopic group. This finding supports the work by Petersen LF et al.(2014)[12], who noted that cosmetic results are often superior in laparoscopic repairs due to smaller and less noticeable scars. The willingness to recommend the surgery was also significantly higher among laparoscopic patients, indicative of better perceived outcomes and satisfaction, which is supported by findings from Forester B et al.(2021)[13].

CONCLUSION

This comparative study of laparoscopic versus open hernia repair has illuminated significant differences between the two approaches with respect to clinical outcomes and patient satisfaction. The findings strongly favor laparoscopic hernia repair in several key areas, including reduced recurrence rates, faster postoperative recovery, lower pain levels, fewer complications, and higher patient satisfaction in terms of both cosmetic outcomes and overall treatment experience.

Specifically, the recurrence rate for laparoscopic hernia repair was substantially lower than that for open repair, which aligns with current literature suggesting that the minimally invasive approach provides more durable results. Additionally, patients undergoing laparoscopic surgery reported significantly quicker recovery times, which included earlier resumption of daily activities and return to work, as well as shorter hospital stays. These aspects not only enhance patient comfort but also contribute to economic savings in terms of healthcare costs and lost workdays.

Furthermore, the laparoscopic technique demonstrated a clear advantage in terms of postoperative pain and complications. Patients in this group experienced less moderate pain and reported lower complication rates, which are critical factors in the postoperative recovery phase. The superior cosmetic outcomes associated with smaller incisions and less scarring in laparoscopic surgery also contributed to higher overall treatment satisfaction.

Patient satisfaction levels were notably higher in the laparoscopic group, with a greater willingness to recommend the surgery to

others, underscoring the perceived benefits of the minimally invasive approach. This study, therefore, supports the broader adoption of laparoscopic techniques in hernia repair, given their clear benefits in terms of patient outcomes and healthcare efficiencies.

In conclusion, laparoscopic hernia repair not only enhances clinical outcomes but also aligns with patient-centered care by improving the overall surgical experience. These findings should guide clinicians in their surgical decision-making processes, encouraging the adoption of laparoscopic techniques to optimize patient outcomes and satisfaction. Future research should continue to track long-term outcomes and explore innovations in surgical techniques to further enhance these benefits.

Limitations of Study

1. **Retrospective Design**: The study's retrospective nature limits the ability to control for all potential confounding variables that could influence outcomes. Prospective randomized controlled trials would provide a higher level of evidence by minimizing bias and allowing for better control over variables.
2. **Sample Size**: Although a total of 120 patients were analyzed, this sample size may still be too small to detect subtle differences in certain outcomes, especially less common complications. Larger studies could provide more robust data and a better understanding of the risks and benefits associated with each surgical method.
3. **Single-Center Study**: The findings are based on data from a single institution, which may limit the generalizability of the results. Multi-center studies could help verify the conclusions across different settings and patient populations.
4. **Subjectivity in Satisfaction Measures**: Patient satisfaction was assessed using self-reported measures, which can be subject to bias. Although efforts were made to standardize the collection of this data, subjective interpretations of satisfaction and pain can vary widely among individuals.
5. **Follow-Up Duration**: The follow-up period may not have been long enough to fully assess long-term outcomes such as recurrence rates and chronic pain, which can manifest months or years after surgery. Longer follow-up would be necessary to fully evaluate the durability of surgical benefits.
6. **Variability in Surgical Skill**: Outcomes in laparoscopic surgery can be significantly influenced by the surgeon's expertise and experience. This study did not control for variations in surgical skill, which could affect both the incidence of complications and overall outcomes.
7. **Selection Bias**: There may be inherent selection bias in which patients were chosen for each type of surgery based on factors such as the complexity of the hernia, patient preference, or underlying health conditions. This could influence outcomes and limit the applicability of the results to all hernia patients.
8. **Exclusion Criteria**: By excluding patients with certain comorbid conditions and those undergoing emergency hernia repairs, the study population may not fully represent the broader demographic of hernia patients. This selection could skew the results toward a healthier population.

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