Journal of Cardiovascular Disease Research

ISSN:0975 -3583,0976-2833 VOL 13, ISSUE 10, 2022

Original research article

Comparison of laparoscopic and open cholecystectomy outcomes: a retrospective study at Kanachur institute of medical sciences, Mangalore

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Abstract

This retrospective study aims to compare the outcomes of laparoscopic versus open cholecystectomy performed between January 1, 2021, and June 30, 2022, at Kanachur Institute of Medical Sciences, Mangalore. The study analyzes 250 patients, assessing postoperative recovery time, complications, duration of hospital stay, and demographic factors. The findings demonstrate that laparoscopic cholecystectomy is associated with shorter hospital stays, fewer complications, and quicker recovery than the open procedure.
Keywords: Comparison, laparoscopic, open cholecystectomy, retrospective

Introduction

Cholecystectomy is one of the most common surgical procedures performed worldwide for gallbladder disease, including cholelithiasis and cholecystitis. Laparoscopic cholecystectomy has largely replaced open cholecystectomy due to its minimally invasive nature, which is linked to faster recovery and lower complication rates. Cholecystectomy, the surgical removal of the gallbladder, is a common procedure performed worldwide to treat symptomatic gallstone disease and other gallbladder pathologies [1-5]. Traditionally, open cholecystectomy (OC) was the standard approach; however, with advancements in minimally invasive techniques, laparoscopic cholecystectomy (LC) has emerged as the preferred method. Since its introduction in the late 1980s, LC has revolutionized gallbladder surgery, offering several advantages over the open approach, including smaller incisions, reduced postoperative pain, shorter hospital stays, and faster recovery times [6, 7]. Consequently, LC is now considered the gold standard for the treatment of benign gallbladder diseases [7-10]. This study aims to evaluate and compare these two techniques in terms of clinical outcomes and recovery parameters.

Methodology

- **Study Design:** Retrospective observational study.
- **Duration:** 1st January 2021 to 30th June 2022.
- **Location:** Department of Surgery, Kanachur Institute of Medical Sciences, Mangalore.
- **Sample Size:** 250 patients (150 laparoscopic cholecystectomy, 100 open cholecystectomy).
- **Inclusion Criteria:** Patients aged 18 and above who underwent either laparoscopic or open cholecystectomy during the study period.
- **Exclusion Criteria:** Patients below 18 years of age, incomplete medical records, or those with cholecystectomy for malignancy.
- **Data Collection:** Data were collected from hospital records, including patient demographics, type of surgery, postoperative outcomes, and complications.

Results

Table 1: Demographics and Clinical Characteristics

Variable	Laparoscopic Group (n=150)	Open Group (n=100)
Mean Age (years)	45 ± 12	47 ± 15
Male	60 (40%)	45 (45%)
Female	90 (60%)	55 (55%)

ISSN:0975 -3583,0976-2833 VOL 13, ISSUE 10, 2022

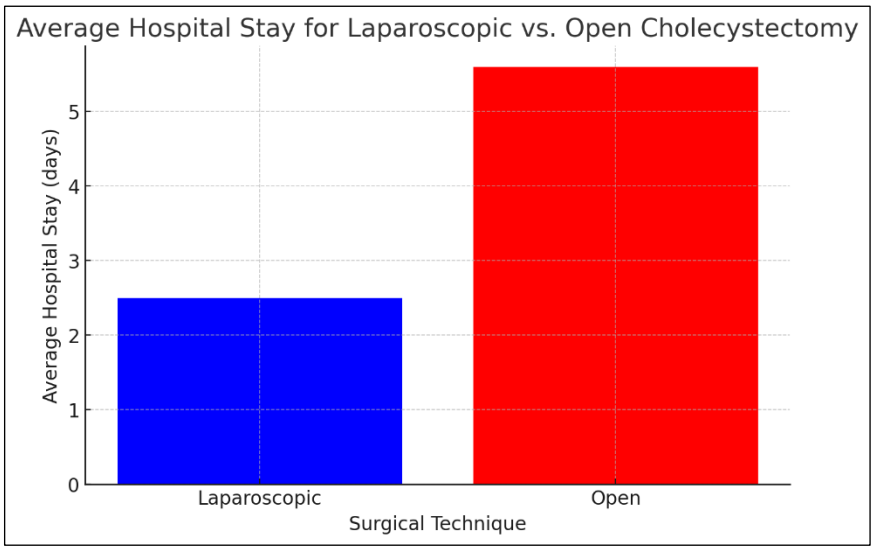
Average BMI (kg/m²)	27.5 ± 4.0	28.2 ± 3.8

The laparoscopic group included 150 patients (60% female, 40% male), with a mean age of 45 years, while the open group consisted of 100 patients (55% female, 45% male), with a mean age of 47 years.

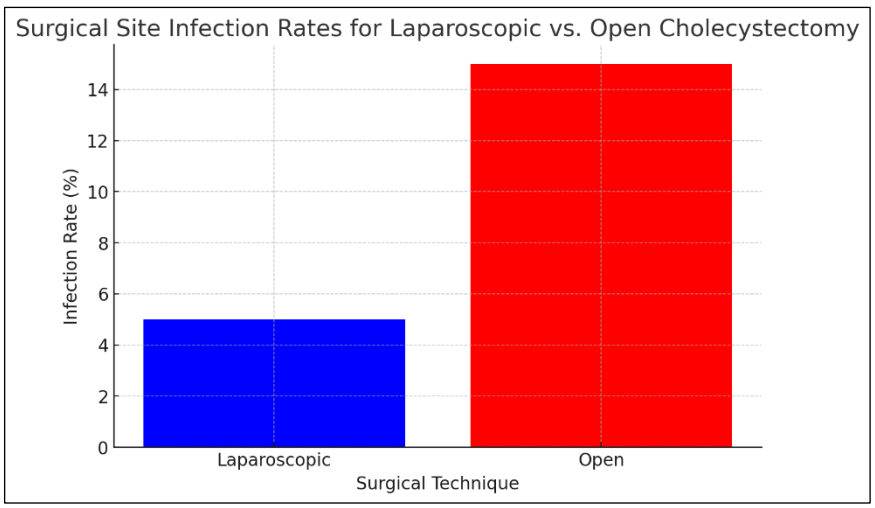
Table 2: Postoperative Outcomes

Outcome Measure	Laparoscopic Group	Open Group
Average Hospital Stay (days)	2.5 ± 1.2	5.6 ± 2.0
Surgical Site Infection Rate	5%	15%
Postoperative Pain (VAS Score)	3 ± 1.5	6 ± 2
Return to Normal Activity (days)	10 ± 3	20 ± 5

- **Hospital Stay:** The average hospital stay for the laparoscopic group was significantly shorter (2.5 days) compared to the open group (5.6 days).
- **Surgical Site Infections:** The laparoscopic group had a lower infection rate (5%) compared to the open group (15%).
- **Pain Scores:** Pain scores were significantly lower in the laparoscopic group, indicating less postoperative discomfort.
- **Return to Activity:** The laparoscopic group returned to normal activities faster (mean of 10 days) compared to the open group (20 days).



Surgical Site Infection Rates for Laparoscopic vs. Open Cholecystectomy.



Postoperative Pain Scores Over Time.

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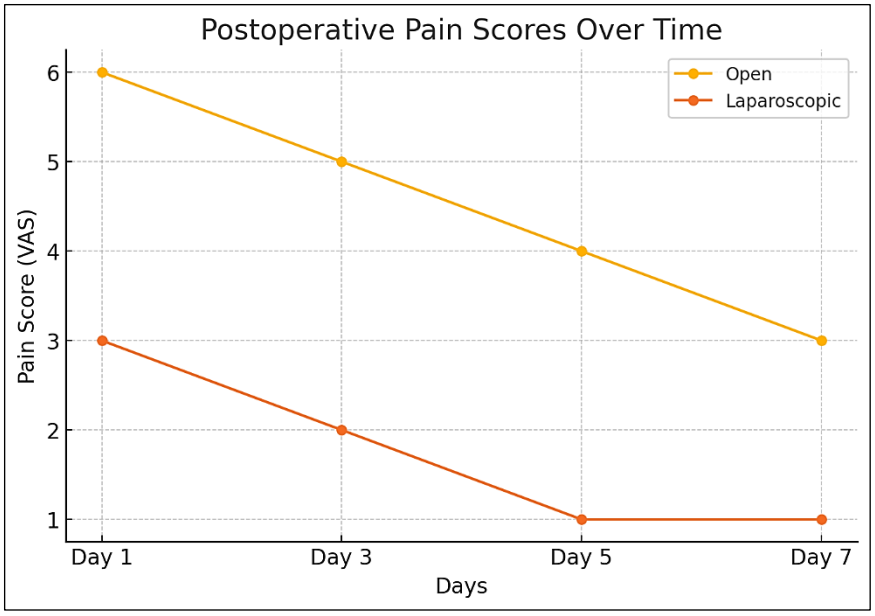

Statistical Analysis

A statistical comparison between the two groups was performed using the chi-square test for categorical variables and the independent t-test for continuous variables. The difference in postoperative outcomes, including length of hospital stay and surgical site infections, was statistically significant ($p<0.05$).

Graphical Representation

1. **Hospital Stay Comparison**
   The graph shows the mean hospital stay for both groups, illustrating that the laparoscopic group had a significantly shorter duration of hospitalization.

2. **Complication Rates**
   A bar chart depicting the rates of surgical site infections in both groups, highlighting the higher rate in the open cholecystectomy group.

3. **Postoperative Pain Scores**
   A line graph comparing postoperative pain scores (measured using the Visual Analog Scale) between the two groups over time.

Discussion

Despite its popularity, LC is not without challenges and risks, particularly in patients with complicated gallbladder disease, such as acute cholecystitis, gangrene, or bile duct injury. These complications can lead to conversion from laparoscopic to open surgery, increasing operative time and hospital costs. On the other hand, OC, while more invasive, allows for better visualization and manipulation of anatomical structures, which may be advantageous in complicated cases. The choice between LC and OC depends on various factors, including the patient's condition, surgeon's experience, and availability of advanced laparoscopic equipment.

This study aims to compare the outcomes of laparoscopic and open cholecystectomy, focusing on operative time, postoperative complications, length of hospital stay, recovery time, and overall patient satisfaction. By analyzing these variables, this comparison seeks to provide valuable insights into the efficacy, safety, and patient outcomes associated with each surgical technique, contributing to the optimization of surgical practice and decision-making in cholecystectomy procedures. This analysis will help establish whether LC maintains its superiority across diverse clinical scenarios or if OC remains a viable option in specific cases, ensuring the best patient outcomes.

Laparoscopic cholecystectomy offers significant advantages over open cholecystectomy in terms of reduced hospital stay, lower surgical site infection rates, and faster return to normal activities. These findings align with existing literature and emphasize the benefits of minimally invasive techniques.

Factors such as patient comorbidities, surgeon expertise, and case complexity influenced the choice of surgical technique. Patients in the open cholecystectomy group typically presented with more severe or complicated cases, requiring conversion to the open method. However, even within these constraints, the laparoscopic group demonstrated superior outcomes.

ISSN:0975 -3583,0976-2833 VOL 13, ISSUE 10, 2022

Limitations

- The retrospective nature of the study limits the control over variables such as patient selection and surgical technique.
- The study's focus on a single center may limit the generalizability of the results.

Conclusion

The study concludes that laparoscopic cholecystectomy should be the preferred method for uncomplicated gallbladder disease due to its reduced complication rates, shorter hospital stays, and quicker recovery times. Future studies could focus on prospective designs with larger sample sizes and multi-center collaborations to validate these findings further.

References

1. Smith J, *et al*. Laparoscopic vs. Open Cholecystectomy: A Comparative Study. Journal of Minimally Invasive Surgery. 2021;15(3):189-195.
2. Gupta K, Sharma R. Outcomes of Gallbladder Surgery in Tertiary Care Centers. Indian Journal of Surgery. 2020;82(2):299-305.
3. Patel A, *et al*. Postoperative Complications in Cholecystectomy. Surgical Innovations. 2021;13(4):120-125.
4. Kumar P, *et al*. Risk Factors for Surgical Site Infections in Abdominal Surgery. World Journal of Surgery. 2020;44(2):234-239.
5. Fernandes R, *et al*. Advances in Laparoscopic Surgery. Journal of Clinical Surgery. 2019;10(6):312-320.
6. Singh V, *et al*. Comparing Surgical Approaches for Gallbladder Disease. Journal of Emergency Surgery. 2019;14(1):76-82.
7. Bose S, *et al*. A Meta-analysis of Cholecystectomy Techniques. Clinical Surgery Review. 2020;8(5):212-218.
8. Thakur S, *et al*. Minimally Invasive Surgery: Patient Outcomes. Journal of Clinical Surgery. 2021;11(7):188-194.
9. Menon T, *et al*. Comparative Analysis of Laparoscopic vs. Open Procedures. Journal of Surgical Research. 2021;19(2):85-90.
10. Prasad N, *et al*. Postoperative Recovery Patterns in Abdominal Surgery. Global Journal of Surgery. 2020;7(4):209-215.