

Retrospective Analysis of Complications Associated with Laparoscopic Cholecystectomy for Symptomatic Gallstones

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Abstract:

Background: Laparoscopic cholecystectomy has become the gold standard for treating symptomatic gallstones due to its minimal invasiveness and shorter recovery times. Despite its benefits, complications can arise, necessitating thorough retrospective analysis to improve patient outcomes and surgical techniques. This study aims to analyze the complications associated with laparoscopic cholecystectomy at Netaji Subhash Medical College, Bihta, Patna, over a seven month period.

Materials and Methods: A retrospective study was conducted from September 2023 to April 2024, involving 55 patients aged between 50 and 65 years who underwent laparoscopic cholecystectomy for symptomatic gallstones. Patient records were reviewed to identify complications, including bile duct injury, bleeding, infection, and postoperative pain. Data were analyzed using descriptive statistics to determine the frequency and types of complications.

Results: Out of 55 patients, 10 (18.2%) experienced complications. The most common complication was postoperative pain, reported in 6 patients (10.9%). Bile duct injuries occurred in 2 patients (3.6%), and bleeding complications were observed in 1 patient (1.8%). Infection was noted in 1 patient (1.8%). The majority of complications were managed conservatively, with no mortality reported during the study period.

Conclusion: Laparoscopic cholecystectomy for symptomatic gallstones at Netaji Subhash Medical College demonstrates a low complication rate, with postoperative pain being the most frequent issue. Early identification and management of complications are crucial for favorable outcomes. Continuous monitoring and adherence to surgical protocols can further minimize risks.

Keywords: Laparoscopic cholecystectomy, symptomatic gallstones, complications, retrospective study, bile duct injury, postoperative pain, Netaji Subhash Medical College.

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Introduction

Laparoscopic cholecystectomy has become the preferred surgical treatment for symptomatic gallstones, offering advantages such as reduced postoperative pain, shorter hospital stay, and quicker return to daily activities compared to open cholecystectomy [1,2]. Despite these benefits, the procedure is not without risks, and complications can still occur, which may impact patient outcomes and healthcare costs [3].

Common complications associated with laparoscopic cholecystectomy include bile duct injury, bleeding, infection, and postoperative pain [4]. Bile duct injuries, though rare, can lead to significant morbidity and may require complex surgical interventions (5).

Bleeding, both intraoperative and postoperative, can necessitate transfusion or reoperation [6].

Surgical site infections and persistent postoperative pain are other potential issues that can prolong recovery and affect the quality of life [7]. Previous studies have highlighted the importance of identifying risk factors and implementing strategies to minimize complications in laparoscopic cholecystectomy [8,9].

However, the incidence and nature of these complications can vary based on patient demographics, surgical expertise, and institutional practices [10]. Therefore, continuous evaluation and improvement of surgical protocols are essential to enhance patient safety and outcomes.

This retrospective study aims to analyze the complications associated with laparoscopic cholecystectomy for symptomatic gallstones at Netaji Subhash Medical College, Bihta, Patna. By

reviewing cases over a nine-month period, this study seeks to identify the frequency, types, and management of complications, contributing to the optimization of surgical practices in this setting.

Materials and Methods

Study Design:

This retrospective study was conducted at Netaji Subhash Medical College, Bihta, Patna, to analyze the complications associated with laparoscopic cholecystectomy for symptomatic gallstones. The study period spanned from September 2023 to April 2024.

Study Population: The study included patients aged 50 to 65 years who underwent laparoscopic cholecystectomy for symptomatic gallstones during the specified period. A total of 55 patients were selected based on the inclusion and exclusion criteria outlined below.

Inclusion Criteria

1. Patients aged between 50 and 65 years.
2. Patients who underwent laparoscopic cholecystectomy for symptomatic gallstones.
3. Patients with complete medical records and follow-up data.

Exclusion Criteria

1. Patients with incomplete medical records.
2. Patients with previous abdominal surgeries affecting the gallbladder or biliary tract.
3. Patients with contraindications to laparoscopic surgery.

Data Collection

Data were collected retrospectively from patient medical records, including demographic

information, clinical presentation, operative details, and postoperative outcomes. The following variables were recorded:

- Age and gender of patients
- Duration of surgery
- Intraoperative findings
- Postoperative complications (e.g., bile duct injury, bleeding, infection, postoperative pain)
- Length of hospital stay
- Management of complications

Outcome Measures:

The primary outcome measures were the incidence and types of complications associated with laparoscopic cholecystectomy.

Secondary outcomes included the duration of surgery, length of hospital stay, and management strategies for any complications.

Statistical Analysis:

Descriptive statistics were used to summarize patient demographics, clinical characteristics, and outcomes.

The frequency and percentage of each complication were calculated. Continuous variables were expressed as mean \pm standard deviation (SD), and categorical variables were presented as frequencies and percentages.

Results

Patient Demographics:

A total of 55 patients underwent laparoscopic cholecystectomy for symptomatic gallstones between September 2023 and April 2024. The demographic characteristics of the study population are summarized in Table 1.

Table 1:

Characteristic	Value
Mean Age (years)	58.4 \pm 4.2
Gender (Male/Female)	22/33

Intraoperative Details: The intraoperative findings and details are presented in Table 2.

Table 2:

Variable	Value
Mean Duration of Surgery (minutes)	75.3 \pm 15.6
Conversion to Open Surgery	2 (3.6%)
Intraoperative Complications	3 (5.5%)
- Bile Duct Injury	2 (3.6%)
- Bleeding	1 (1.8%)

Postoperative Complications: The frequency and types of postoperative complications are detailed in Table 3.

Table 3:

Complication	Number of Patients (%)
Postoperative Pain	6 (10.9%)

Infection	1 (1.8%)
Bile Duct Injury	2 (3.6%)
Bleeding	1 (1.8%)

Management of Complications: The management strategies for complications are shown in Table 4.

Table 4:

Complication	Management	Number of Patients (%)
Postoperative Pain	Analgesics	6 (10.9%)
Infection	Antibiotics	1 (1.8%)
Bile Duct Injury	Endoscopic Repair	1 (1.8%)
	Surgical Repair	1 (1.8%)
Bleeding	Conservative Management	1 (1.8%)

Length of Hospital Stay: The length of hospital stay for the study population is presented in Table 5.

Table 5:

Variable	Value
Mean Length of Hospital Stay (days)	3.4 ± 1.2
Extended Stay (>5 days)	3 (5.5%)

Out of the 55 patients, 10 (18.2%) experienced complications. The most common complication was postoperative pain, occurring in 6 patients (10.9%). Bile duct injuries were noted in 2 patients (3.6%), both of whom required repair procedures. Bleeding and infection were each observed in 1 patient (1.8%). The majority of complications were managed conservatively or with minimally invasive procedures, and there were no mortalities during the study period.

Discussion

The present study provides a comprehensive analysis of the complications associated with laparoscopic cholecystectomy for symptomatic gallstones in a cohort of patients treated at Netaji Subhash Medical College, Bihta, Patna, from September 2023 to April 2024. Our findings indicate a complication rate of 18.2%, which aligns with the complication rates reported in other studies [1,2].

Postoperative Pain

Postoperative pain was the most frequently reported complication, affecting 10.9% of patients. This is consistent with previous literature, which identifies pain as a common postoperative issue in laparoscopic cholecystectomy due to factors such as CO₂ insufflation and surgical manipulation [3]. Effective pain management protocols, including the use of multimodal analgesia, are essential to improve patient outcomes and satisfaction [4].

Bile Duct Injury

Bile duct injuries occurred in 3.6% of patients, a rate slightly higher than the generally reported incidence of 0.1% to 0.5% in laparoscopic

cholecystectomy [5]. Bile duct injuries are serious complications that can lead to significant morbidity and require complex surgical or endoscopic interventions [6]. The higher incidence in our study could be attributed to variations in surgical expertise and patient anatomy. It underscores the importance of meticulous surgical technique and intraoperative vigilance [7].

Bleeding and Infection

Bleeding and infections were observed in 1.8% of patients each, which are within the expected range for laparoscopic cholecystectomy [8]. Intraoperative bleeding can usually be controlled with careful hemostasis, but significant bleeding may necessitate conversion to open surgery [9]. Surgical site infections, though less common in laparoscopic procedures compared to open surgeries, still pose a risk and highlight the need for stringent aseptic protocols [10].

Length of Hospital Stay

The mean length of hospital stay was 3.4 days, with an extended stay (>5 days) in 5.5% of patients. This duration is comparable to other studies, which report hospital stays ranging from 2 to 4 days for uncomplicated cases [11]. Extended hospital stays were primarily associated with complications such as bile duct injuries and infections, which required additional interventions and prolonged recovery [12].

Strengths and Limitations

One of the strengths of this study is its focused analysis on a specific age group (50-65 years), providing insights into the outcomes of laparoscopic cholecystectomy in older adults.

However, the retrospective nature of the study and the relatively small sample size are limitations that may affect the generalizability of the findings. Future studies with larger sample sizes and prospective designs are warranted to validate these results and explore strategies to minimize complications.

Conclusion

Laparoscopic cholecystectomy for symptomatic gallstones at Netaji Subhash Medical College demonstrates a relatively low complication rate, with postoperative pain being the most common issue.

The findings emphasize the importance of continuous surgical training and adherence to established protocols to mitigate risks. Further research is needed to refine techniques and improve patient outcomes in laparoscopic cholecystectomy.

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