

Original Research

Analysis of incidence of Complications of Laparoscopic Cholecystectomy: An observational study

¹Anuj Kumar Kundalia, ²Mradul Kumar Sharma

¹Associate Professor, Department of General Surgery, Muzaffarnagar Medical College, Muzaffarnagar, Uttar Pradesh, India;

²Assistant Professor, Department of General Surgery, Major S D Singh Medical College & Hospital, Farrukhabad, Uttar Pradesh, India

ABSTRACT:

Background: The present study was conducted for assessing incidence of Complications of Laparoscopic Cholecystectomy. **Materials & methods:** A cohort of 100 patients scheduled for laparoscopic cholecystectomy (LC) was recruited for the study. Comprehensive demographic and clinical information were collected for each participant. The inclusion criteria specified that patients must be 20 years of age or older and were to undergo laparoscopic cholecystectomy due to cholelithiasis or other non-malignant gallbladder conditions. The procedure was performed in a controlled anesthetic setting. All patients received a preoperative prophylactic dose of Ceftriaxone, administered intravenously at 1 gram. A standard four-port technique was utilized, although a few cases necessitated the use of an additional port. The majority of patients were discharged within 48 hours post-surgery. Continuous monitoring for complications was conducted for all participants until discharge, with follow-up assessments on the seventh day after discharge and again on the thirtieth postoperative day.

Results: A total of 100 patients were assessed in this study. The average age of the participants was 45.6 years, with 39% identified as male. Additionally, 62% of the patients resided in rural areas. The mean duration of the surgical procedure was recorded at 71.9 minutes. Complications occurred in 15% of the patients, which included various issues: Trocar site bleeding (4%), vascular injury (2%), gallbladder perforation (2%), spilled gallstones (3%), intraoperative bile leak (2%), bile duct injury (1%), and port site infection (1%). **Conclusion:** Laparoscopic cholecystectomy represents a reliable and efficient method for addressing cholelithiasis and is associated with fewer complications.

Key words: Laparoscopic cholecystectomy, complications

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Corresponding author: Mradul Kumar Sharma, Assistant Professor, Department of General Surgery, Major S D Singh Medical College & Hospital, Farrukhabad, Uttar Pradesh, India

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INTRODUCTION

Minimal access surgical techniques have gained widespread acceptance among surgeons globally, leading to the successful replication or attempted execution of most intraabdominal procedures via laparoscopy. A persistent objective within the surgical community is to continually reduce the invasiveness required for these operations. Laparoscopy has emerged as a transformative technology in the field of surgery, comparable in significance to historical advancements such as the introduction of anesthesia and the implementation of sterile techniques. The advent of laparoscopy has spurred further innovation, resulting in the creation of a variety of surgical instruments, technological advancements, and new

surgical platforms.^{1, 2} These innovations have originated not only from academic institutions and medical device companies but also from individual surgeons who possess a creative and entrepreneurial spirit. Nevertheless, despite the overarching aim of minimizing the size and number of surgical incisions to reduce invasiveness, substantial progress has been limited over the past two decades. A notable trend in recent years has been the introduction of natural orifice transluminal endoscopic surgery. This innovative approach aims to access the peritoneal cavity through natural orifices, such as the mouth or vagina, thereby avoiding any disruption to the abdominal wall. Theoretically, this method could facilitate surgical procedures that are both painless

and devoid of visible scars.³⁻⁵Hence; the present study was conducted for assessing operative and postoperative complications among patients undergoing laparoscopic cholecystectomy.

MATERIALS & METHODS

A cohort of 100 patients scheduled for laparoscopic cholecystectomy (LC) was recruited for the study. Comprehensive demographic and clinical information were collected for each participant. The inclusion criteria specified that patients must be 20 years of age or older and were to undergo laparoscopic cholecystectomy due to cholelithiasis or other non-malignant gallbladder conditions. The procedure was performed in a controlled anesthetic setting. All patients received a preoperative prophylactic dose of Ceftriaxone, administered intravenously at 1 gram. A standard four-port technique was utilized, although a few cases necessitated the use of an additional port. The majority of patients were discharged within 48

hours post-surgery. Continuous monitoring for complications was conducted for all participants until discharge, with follow-up assessments on the seventh day after discharge and again on the thirtieth postoperative day. All the results were recorded in Microsoft excel sheet followed by statistical analysis using SPSS software.

RESULTS

A total of 100 patients were assessed in this study. The average age of the participants was 45.6 years, with 39% identified as male. Additionally, 62% of the patients resided in rural areas. The mean duration of the surgical procedure was recorded at 71.9 minutes. Complications occurred in 15% of the patients, which included various issues: Trocar site bleeding (4%), vascular injury (2%), gallbladder perforation (2%), spilled gallstones (3%), intraoperative bile leak (2%), bile duct injury (1%), and port site infection (1%).

Graph 1: Demographic data

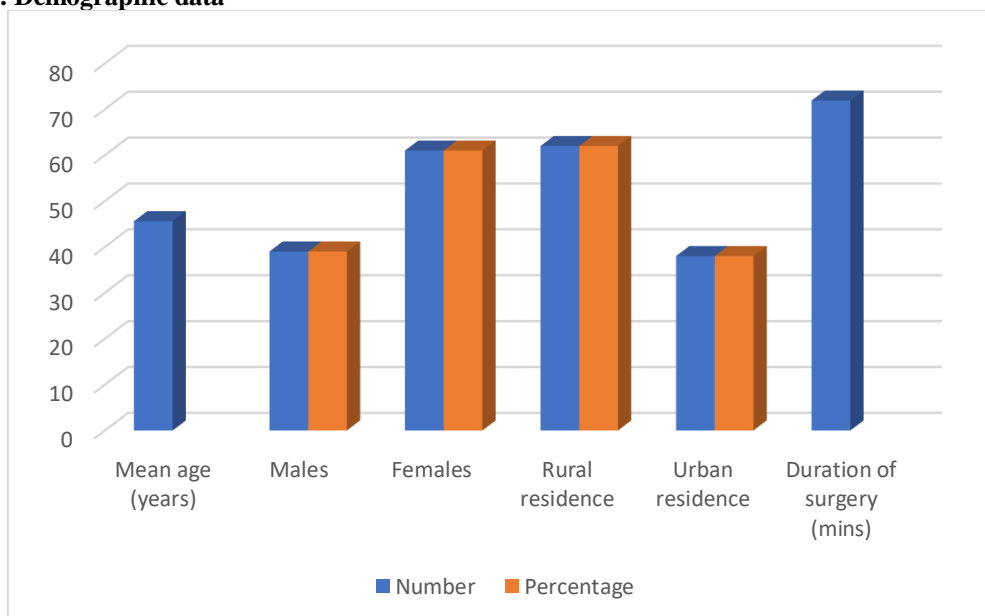


Table 1: Incidence of complications

Complications	Number	Percentage
Present	15	15
Absent	85	85
Total	100	100

Table 2: Complications

Complications	Number	Percentage
Trocar site bleeding	4	4
Vascular injury	2	2
Gall bladder perforation	2	2
Spilled gallstones	2	2
Intraoperative bile leak	2	2
Bile duct injury	1	1
Port site infection	1	1

DISCUSSION

Laparoscopic cholecystectomy was introduced in 1985 and rapidly became the method of choice for surgical removal of the gallbladder although the evidence of superiority over small-incision cholecystectomy was absent. This rising popularity was based on many arguments, including assumed lower morbidity and complication proportions, and a quicker postoperative recovery compared to open cholecystectomy and despite an increase in bile duct lesions. Laparoscopic cholecystectomy seemed superior to small-incision cholecystectomy. Differences in primary outcomes like mortality and complication proportions (particularly bile duct injuries) are important reasons to choose one of the operative techniques. When these primary outcomes show no significant difference, then secondary outcomes like non-severe complications, pulmonary outcomes, differences in health status related quality-of-life, hospital stay, and differences in cost-effectiveness analysis should help decide which technique is superior.⁶⁻⁹

A total of 100 patients were assessed in this study. The average age of the participants was 45.6 years, with 39% identified as male. Additionally, 62% of the patients resided in rural areas. The mean duration of the surgical procedure was recorded at 71.9 minutes. Complications occurred in 15% of the patients, which included various issues: Trocar site bleeding (4%), vascular injury (2%), gallbladder perforation (2%), spilled gallstones (3%), intraoperative bile leak (2%), bile duct injury (1%), and port site infection (1%). Ingraham AM et al compared the risk factors, indications, and 30-day outcomes, as well as variations in hospital performance associated with laparoscopic (LC) versus open cholecystectomy (OC) at 221 hospitals during a 4-year period. Using the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database (2005-2008), patients were identified who underwent cholecystectomy and related procedures (cholangiogram and/or common bile duct exploration). Four outcomes were studied, ie, 30-day overall morbidity, serious morbidity, surgical site infections, and mortality. Forward stepwise logistic regressions yielded patient-level predicted probabilities, and hospital-level observed-to-expected ratios were determined. Of 65,511 patients, 58,659 (89.5%) underwent LC; 6,852 (10.5%) underwent OC. OC patients were considerably older with a higher comorbidity burden. LC patients were less likely to experience any morbidity (3.1% versus 17.8%; $p < 0.0001$), a serious morbidity (1.4% versus 11.1%; $p < 0.0001$), or a surgical site infection (1.3% versus 8.4%; $p < 0.0001$), and less likely to die (0.3% versus 2.8%; $p < 0.0001$). Observed-to-expected ratios for overall morbidity ranged from 0 to 3.55; for serious morbidity, 0 to 3.23; for surgical site infection, 0 to 7.02; for mortality, 0 to 13.05. Although overall incidence of adverse events is low after LC,

substantial morbidity and mortality are associated with OC. Additionally, controlling for patient- and operation-related factors, considerable variations exist in hospital performance when evaluating 30-day outcomes after cholecystectomy.⁹ Agabiti N et al evaluated short-term complications after laparoscopic (LC) or open cholecystectomy (OC) in patients with gallstones by using linked hospital discharge data. All patients admitted to hospitals of Lazio with symptomatic gallstones (International Classification of disease, 9th Revision, Clinical Modification (ICD-9-CM)=574) who underwent LC (ICD-9-CM 51.23) or OC (ICD-9-CM 51.22). '30-day surgical-related complications' defined as any complication of the biliary tract (including postoperative infection, haemorrhage or haematoma or seroma complicating a procedure, persistent postoperative fistula, perforation of bile duct and disruption of wound). (2) '30-day systemic complications' defined as any complications of other organs (including sepsis, infections from other organs, major cardiovascular events and selected adverse events). 13 651 patients were included; 86.1% had LC, 13.9% OC. 2.0% experienced surgical-related complications (SRC), 2.1% systemic complications (SC). The OR of complications after LC versus OC was 0.60 ($p < 0.001$) for SRC and 0.52 ($p < 0.001$) for SC. In relation to SRC, the advantage of LC was consistent across age categories, severity of gallstones and previous upper abdominal surgery, whereas there was no advantage among people with emergency admission (OR=0.94, $p=0.764$). For SC, no significant advantage of LC was seen among very old people (OR=0.99, $p=0.975$) and among those with previous upper abdominal surgery (OR=0.86, $p=0.905$). Their large observational study confirms that LC is more effective than OC with respect to 30-day complications. Population-based linkage of administrative datasets can enlarge evidence of treatment benefits in clinical practice.¹⁰

CONCLUSION

Laparoscopic cholecystectomy represents a reliable and efficient method for addressing cholelithiasis and is associated with fewer complications.

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