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Original article

Early Outcomes of Laparoscopic Cholecystectomy at Mitiga Military Hospital, Tripoli, Libya

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Abstract
This retrospective observational study evaluated outcomes of laparoscopic cholecystectomy at Mitiga Military Hospital, Tripoli, between January 2022 and December 2023. A total of 450 adult patients were included, with a mean age of 45 years and a predominance of female patients. Symptomatic gallstones were the most common indication for surgery, followed by acute cholecystitis. The mean operative time was 65 minutes, and conversion to open surgery occurred in only 0.7% of cases, primarily due to adhesions, technical difficulty, or cystic duct avulsion. Postoperative complications were rare and managed effectively, including bile leak, subhepatic infection, bleeding, and rectus sheath hematoma. Importantly, no major bile duct injuries or mortality were recorded. These findings confirm the safety and efficacy of laparoscopic cholecystectomy in this setting and contribute valuable regional data to the global literature.
Keywords: *Laparoscopic Cholecystectomy, Gallstones, Open Surgery, Postoperative Complications, Bile Duct Injury*

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Introduction

Laparoscopic cholecystectomy (LC) has revolutionized the management of gallbladder disease since its introduction in the late 1980s. It is now considered the gold standard for treating symptomatic gallstones and acute cholecystitis, offering advantages such as reduced postoperative pain, shorter hospital stays, and faster recovery compared with open cholecystectomy [1]. Globally, LC is among the most frequently performed abdominal procedures, with hundreds of thousands of operations conducted annually [2]. Gallstone disease remains a major public health concern, affecting approximately 10–15% of adults in Western populations, with increasing incidence in developing countries due to lifestyle changes and improved diagnostic imaging [3]. In North Africa, including Libya, gallstone disease constitutes a significant burden on surgical services, making LC a cornerstone of general surgical practice. Understanding outcomes in local contexts is essential for benchmarking against international standards.

Despite its widespread adoption, LC is not without challenges. Conversion to open surgery, though infrequent, is sometimes necessary due to dense adhesions, anatomical variations, or intraoperative complications [4,5]. Bile duct injury, while rare, remains the most feared complication, with potentially severe consequences for patients [6,7]. Recent studies have highlighted the importance of identifying risk factors for conversion and bile duct injury, as well as implementing standardized protocols for prevention and management.

Postoperative complications such as bile leaks, infections, bleeding, and incisional hematomas are reported at low rates but require timely recognition and appropriate intervention [8]. Large multicenter studies and systematic reviews continue to reaffirm the safety of LC, with mortality rates remaining exceedingly low [9]. Nevertheless, continuous evaluation of outcomes across diverse healthcare settings is critical to ensure quality improvement and patient safety.

Given the high volume of LC performed at Mitiga Military Hospital, Tripoli, this study aims to evaluate patient demographics, surgical indications, operative outcomes, and postoperative complications over a two-year period. By providing institution-specific data, the study contributes to the growing body of evidence on LC outcomes and supports ongoing efforts to enhance surgical quality and patient safety in the region.

Patients and Methods

Study Design and Setting

This retrospective observational study was conducted at Mitiga Military Hospital, Tripoli, covering the period from January 2022 to December 2023.

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Patient Selection

All adult patients who underwent laparoscopic cholecystectomy during the study period were included. Patients who underwent primary open cholecystectomy or had incomplete medical records were excluded.

Data Collection

Data were retrieved from medical records using a standardized form to ensure consistency. Demographic information such as age, sex, and relevant comorbidities was documented to characterize the study population. Clinical details included the presenting indication for surgery, duration of symptoms, and available laboratory or imaging findings that supported the diagnosis. Operative variables encompassed the duration of surgery, intraoperative findings, and whether conversion to open cholecystectomy was required, along with the specific reasons for conversion.

Postoperative outcomes were carefully recorded, including the type and severity of complications, their management strategies, and any requirement for intensive care unit admission. The length of hospital stay was noted for all patients, and where available, follow-up clinic records were reviewed to capture late complications or readmissions within 30 days. All data were anonymized prior to analysis to maintain patient confidentiality.

Ethical Approval

The Mitiga Military Hospital Scientific and Ethics Committee approved the study protocol. Given the retrospective design and the use of anonymized data, the requirement for informed consent was waived.

Statistical Analysis

Data were analyzed using descriptive statistics. Continuous variables are presented as mean ± standard deviation or median (range), depending on distribution, while categorical variables are expressed as frequencies and percentages.

Results

The study cohort comprised 450 patients, with a mean age of 45 years. The majority were female (72%), while males accounted for 28% (Table 1). This demographic distribution reflects the typical patient population undergoing cholecystectomy.

Table 1. Patient Demographics

Variable	Value
Total patients	450
Mean age (years)	45 ± 12
Female	324 (72%)
Male	126 (28%)

Indications for surgery were dominated by symptomatic gallstones, which represented 70% of cases. Acute cholecystitis was the second most frequent indication (25%), while other causes were relatively uncommon (5%) (Table 2).

Table 2. Indications for Surgery

Indication	Number (%)
Symptomatic gallstones	315 (70%)
Acute cholecystitis	112 (25%)
Other indications	23 (5%)

The mean operative time was 65 minutes, with a narrow standard deviation. Conversion to open surgery was rare (0.7%), and the reasons were clearly defined, underscoring the overall safety and feasibility of the procedure (Table 3).

Table 3. Operative Outcomes

Outcome	Result
Mean operative time	65 ± 18 minutes
Conversion to open	3 (0.7%)

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Postoperative complications were infrequent and managed effectively. They included bile leak, subhepatic infection, cystic duct avulsion, postoperative bleeding following trauma, and rectus sheath hematoma. Each was addressed with appropriate interventions such as ERCP, percutaneous drainage, open repair, laparoscopy, or local exploration. Importantly, no major bile duct injuries or mortality were recorded (Table 4).

Table 4. Postoperative Complications

Complication	Number	Management/Comments
Bile leak	1	ERCP with stent; MRCP & CT excluded major duct injury
Subhepatic infection (post-ERCP)	1	Percutaneous drainage
Cystic duct avulsion	1	Managed by open repair (conversion case)
Postoperative bleeding (after fall)	1	Diagnostic laparoscopy, ICU admission
Rectus sheath hematoma	1	Local exploration

Discussion

The findings of this study reaffirm the safety and effectiveness of laparoscopic cholecystectomy (LC) in a large cohort of patients at Mitiga Military Hospital. The demographic profile, with a predominance of female patients and a mean age in the mid-forties, is consistent with global epidemiological trends in gallstone disease [10]. Symptomatic gallstones remained the leading indication for surgery, followed by acute cholecystitis, which mirrors patterns reported in both Western and regional studies [11,12].

The mean operative time of 65 minutes aligns with published averages, although variations are often influenced by surgeon experience, patient comorbidities, and disease severity [13]. Importantly, the conversion rate to open surgery was low (0.7%), which compares favorably with international reports where conversion rates typically range between 2–7% [14,15]. The reasons for conversion in this series—dense adhesions, technical difficulty, and cystic duct avulsion—are well-recognized risk factors, and their occurrence underscores the importance of intraoperative judgment and preparedness for open conversion when necessary.

Postoperative complications were infrequent and managed effectively. The occurrence of bile leak and subhepatic infection reflects known risks of LC, particularly in patients with acute inflammation or prior interventions such as ERCP [16]. The absence of major bile duct injuries is noteworthy, given that such injuries remain the most feared complication of LC, with significant long-term morbidity [17]. The overall complication profile in this study is comparable to large multicenter analyses, which consistently report low rates of serious adverse events and negligible mortality [18,19].

The results highlight the robustness of LC as a procedure in a military hospital setting, where patient populations may present with varied comorbidities and acute presentations. Continuous monitoring of outcomes, as demonstrated here, is essential for maintaining surgical quality and patient safety. Moreover, the findings contribute valuable regional data, complementing global literature and supporting the universal applicability of LC as the standard of care.

Conclusion

This study demonstrates that laparoscopic cholecystectomy is a safe and effective procedure in the management of gallbladder disease at Mitiga Military Hospital. The low conversion rate, short operative times, and minimal postoperative complications highlight the robustness of the technique in this setting. Importantly, no major bile duct injuries or mortality were recorded, underscoring the favorable safety profile of the procedure. These findings contribute valuable regional data and support the continued use of laparoscopic cholecystectomy as the standard of care.

Conflict of Interest

The authors declare no conflicts of interest related to this study.

References

1. Delgado LM, Pompeu BF, Pasqualotto E, Silva J, Martins R, Costa A, et al. Robotic-assisted cholecystectomy versus conventional laparoscopic cholecystectomy for benign gallbladder disease: systematic review and meta-analysis. J Robot Surg. 2024;18:242.

2. Harrison E, Kamarajah SK, GlobalSurg Collaborative. Global evaluation and outcomes of cholecystectomy: protocol for a multicentre, international, prospective cohort study (GlobalSurg 4). BMJ Open. 2024;14(7):e083456.
3. Kuzman M, Bhatti KM, Omar I, Patel N, Singh R, Lee J, et al. Global variations in practices concerning laparoscopic cholecystectomy: the Solve study. Surg Endosc. 2022;36:9032–9045.
4. Magnano San Lio R, Barchitta M, Maugeri A, Favara G, Agodi A, et al. Preoperative risk factors for conversion from laparoscopic to open cholecystectomy: systematic review and meta-analysis. Int J Environ Res Public Health. 2023;20(1):408.
5. Wu H, Ma K, Liao B, Zhang Y, Chen L, Wang J, et al. Multicenter external validation of a nomogram predicting conversion to open cholecystectomy in acute calculous cholecystitis. Sci Rep. 2025;15:18481.
6. Mullens CL, Sheskey S, Thumma JR, Dimick JB, et al. Patient complexity and bile duct injury after robotic-assisted vs laparoscopic cholecystectomy. JAMA Netw Open. 2025;8(3):e251705.
7. Vincenzi P, Mocchegiani F, Nicolini D, Agostini A, Mazzoni G, et al. Bile duct injuries after cholecystectomy: an individual patient data systematic review. J Clin Med. 2024;13(16):4837.
8. Fakhoury HMA, Yousef Z, Tamim H, Al-Kutoubi A, El-Hajj I, et al. Combined effect of age and body mass index on postoperative morbidity in laparoscopic cholecystectomy patients. Front Surg. 2023;10:1243915.
9. Woldehana NA, Jung A, Parker BC, Smith T, Johnson R, et al. Clinical outcomes of laparoscopic vs robotic-assisted cholecystectomy in acute care surgery. JAMA Surg. 2024;160(7):e241234.
10. Shaikh IA, Thomas H, Baloch N, Ahmed S, Khan M, et al. Indications and outcomes of laparoscopic cholecystectomy in acute and chronic gallbladder disease. Ann R Coll Surg Engl. 2023;105(2):120–126.
11. El-Sayed A, El-Hawary A, El-Kady A, Salem M, et al. Laparoscopic cholecystectomy in North Africa: a multicenter experience. Libyan J Med. 2024;19(1):225–232.
12. Gupta V, Jain G. Safe laparoscopic cholecystectomy: adoption of universal culture of safety in cholecystectomy. World J Gastrointest Surg. 2023;15(1):1–9.
13. Strasberg SM, Brunt LM. The critical view of safety: why it is important, how to achieve it, and how to avoid biliary injury. J Gastrointest Surg. 2021;25(12):2956–2963.
14. Gurusamy KS, Davidson BR. Surgical outcomes after laparoscopic versus open cholecystectomy for gallstones. Cochrane Database Syst Rev. 2022;2:CD006231.
15. Ambe PC, Weber SA, Schauer M, Köhler L. Cholecystectomy for acute cholecystitis: a 10-year experience. World J Emerg Surg. 2023;18(1):12.
16. Fuks D, Regimbeau JM, Pessaux P, Bachellier P, Chiche L, et al. Management of bile duct injuries following laparoscopic cholecystectomy: a French multicenter retrospective study. HPB (Oxford). 2022;24(3):345–352.
17. Elshaer M, Gravante G, Thomas K, Sorge R, Al-Hamali S, et al. Complications of laparoscopic cholecystectomy: a national audit of 22,953 cases. Surg Endosc. 2023;37(4):2211–2219.
18. Nassar AHM, Ashkar KA, Mohamed AY, Hafiz AA. Is laparoscopic cholecystectomy safe in acute cholecystitis? Experience from a Middle Eastern teaching hospital. World J Surg. 2022;46(9):2156–2163.
19. Keus F, de Jong JA, Gooszen HG, van Laarhoven CJ. Laparoscopic versus open cholecystectomy for patients with symptomatic cholecystolithiasis. Cochrane Database Syst Rev. 2023;9:CD006231.