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Frequency of Complications after Laparoscopic Cholecystectomy

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[1]Syed Ashij Ali Shah, [2]Basharat Nazir, [3]Muiz Elahi

Sughra Shafi Medical Complex

ABSTRACT:

Background: Laparoscopic cholecystectomy is the mode of operation used in the treatment of symptomatic gallstones because it is minimal in nature, reduces hospital stay, and recovery time. It, however, does not come without complications like all surgical procedures. It is clear that knowing which, and how often, postoperative complications occur is necessary to enhance patient outcomes and surgical safety.

Aim: This study aims at establishing the frequency and type of complications after laparoscopic cholecystectomy cases evaluated at Sughra Shafi Medical Complex Narowal.

Methods: This is a descriptive observational study that was carried out at Sughra Shafi Medical Complex Narowal, between March 2025 and August 2025. Ninety Eight patients that had true-laparoscopic cholecystectomy were taken. The inclusion criteria were patients with cholelithiasis or with chronic cholecystitis, and who were called laparoscopic surgery candidates. The exclusion criteria encompassed patients undergoing emergency operations, conversions to open cholecystectomy, pre-existing comorbid complication that may affect outcome. The data were gathered on the postoperative complications such as bile leakage, hemorrhage, surgical site infection, and surrounding organs injury. The 30 days post operative follow up was done on all patients. Descriptive statistics was used to analyze data.

Findings: Eighty out of 98 patients had no postoperative issues (78.6 percent). Of the 18 patients (21.4%) who experienced complications, 15 (18%) had INF related complications. Three patients experienced surgical site infection (3.6%) as the most frequent complication, along with bile leakages (6.0%). There were hemorrhage in 3 cases (3.6%) and damage to neighboring structures that include the common bile duct in 3 cases (3.6%). No death was recorded in the course of research.

Conclusion: Much lower complication rate was observed in reduction laparoscopic cholecystectomy, which confirms that it is safer

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and effective. The most prevalent complications entailed surgical site infection and bile leakage. The most important part in reducing adverse outcomes is good surgery and selection of patients, and close monitoring under surgery.

Keywords: Laparoscopic cholecystectomy, postoperative complications, bile leakage, surgical site infection, minimally invasive surgery.

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INTRODUCTION:

By the beginning of the 21st century laparoscopic cholecystectomy had become the gold standard in the management of symptomatic gallstone disease and other gallbladder pathologies. This minor procedure surgery had already to a great extent superseded open cholecystectomy as it has many benefits like fewer pains after the operation, less demanding than the hospital stay, rapid recovery, and the overall cosmetic effect. The process had become quite common in both the developed and developing nations and had been indicated to be generally safe and effective [1]. Nevertheless, being a surgical procedure, laparoscopic cholecystectomy did not come without its hazards, and post-surgery complications, albeit fairly rare, did take place.

A plethora of complications regarding laparoscopic cholecystectomy had been claimed by several studies carried out in past decades. These were bile duct damage, hemorrhage, WC infection, bile drip, intraabdominal abscess, and, in exceptional situations, an open surgery [2]. These complications have occurred frequently and severely and a number of factors that have influenced the occurrence of these complications included the experience of the surgeon who is to perform the procedure, the comorbidities of the patient, severity of the inflammation of the gallbladder, anatomical variations as well as intraoperative problems. Although the high rate of complications had not been too high, the clinical relevance underlined the importance of a thorough insight into the frequency of these events and its determinants.

Early detection and subsequent treatment of early postoperative complications had been significant to help to reduce morbidity and enhance the outcomes of patients in most clinical settings [3]. The health organizations had become more concerned about the enhancement of surgical training, preoperative evaluation, and standardization of the perioperative protocols to reduce risks. However, it had been noted that hospital-to-hospital, geographic, and population variation on complication rates exist and there was need to conduct local researches to determine the truth about the burden and the pattern of complications in local settings [4].

Laparoscopic cholecystectomy had become very acceptable in the Pakistani health system especially at the tertiary level hospitals such as Sughra Shafi Medical Complex Narowal. Although it was used on a regular basis, limited, comprehensive, local evidence was available regarding the forms and the rates of complications that were faced after this surgery [5]. Much of the available evidence was regarding international data that might not have reflected a good representation of the population affected by the patient, surgical practices, and healthcare infrastructure that is present in the

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area. Thus, a local study manifested itself as imperative to determine the actual incidence of complications in the regional setting, to acquire patterns of risks, and to help advance the local surgical care [6].

The objective of the present study was to determine the incidence of complications during laparoscopic cholecystectomy with six months of study in Sughra Shafi Medical Complex Narowal. And through critical over-analysis of results of 98 patients to whom the surgery was administered, this study had aimed at adding informational worth to safety profile of laparoscopic cholecystectomy in the regional context [7]. It had also aimed to show areas of concern that need improvements with regard to clinical reasons on issues such as the surgical technique, perioperative and patient selection.

To wrap it up, although laparoscopic cholecystectomy has been known to be a groundbreaking innovation in the field of general surgery, the recurring cases of complications albeit rare have necessitated monitoring and further investigations. As a result of the study, an effort to gain a better knowledge on the frequency and type of such complications was sought to facilitate evidence-based surgery and the ultimate in improving patient outcomes at the local health care environment [8].

MATERIALS AND METHODS:

Article is a descriptive-type cross-sectional study conducted at the Department of Surgery, Sughra Shafi Medical Complex Narowal, during a span of six months i. e. between March 2025 to August 2025. The major goal of the research was to establish the rate of incidences after laparoscopic cholecystectomy. The number of participants who took part in the study was 98 patients that had undergone the elective laparoscopy cholecystectomy due to symptomatic disease caused by gallstones.

A non probability aimed at consecutive sampling was used to select all the patients voted in conducting the study. The patients whose age ranged between 18 years and 60 years both men and women, diagnosed with the condition of cholelithiasis and without underlying prior upper abdominal surgery all fell under this criteria. The study excluded patients with acute cholecystitis, malignancy of the gallbladder, stones of the common bile duct, and those who needed emergency surgery and open cholecystectomy. Participants gave written informed consent before their enrollment. The Institutional Review Board of SugraShafi Medical Complex Narowalgave ethical approval. Explicit histories were taken and basic demographical information like age, gender, body-mass index (BMI), comorbidities (i.e., diabetes mellitus and high blood pressure), and the ASA (American Society of Anesthesiologists) score were recorded.

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All of the surgeries were in the presence of general anaesthesia and their operations were done by qualified surgeons using the conventional four-port laparoscopic approach. The details of the intraoperative procedure were painstakingly recorded and they included an element of intraoperative complication, an element of intraoperative conversion to open surgery, and an element of the operative time. Factors like adhesions, inflammation, or anatomical variations of the gallbladder that were found by the operative were also noted.

Immediate follow up was done in the ward. To capture immediate complications, the direct complications that were noted in the patients include bleeding, bile leakage, injury on common bile duct, and Port-site infections. The follow-up was provided during the stay of the patient in the hospital and up to 30 days after the surgery via outpatient visits and telephoning. Late complications which were registered during this period include; port-site hernia, wound infection and subhepatic collection.

A predesigned proforma was used in the collection of data and keyed into SPSS 26 version to prepare the statistical analysis. To summarise the data, descriptive statistics were employed. Types of complications and rates of complications were calculated as categorical variables which presented frequencies and percentages. The following were calculated on a continuous variable; mean and standard deviation of the following; age, BMI, and operative time. Chi-square test and independence t-test where necessary were performed in the analysis of the association between complications and the different demographic and clinical factors and p-value of less than 0.05 taken as statistically significant.

The research guaranteed protection of patient information and observed ethics in the course of the research. All attempts to normalize the pathway of surgical technique and post-operative care were made in order to reduce any divergence and bias.

In short, the study has used systematic and structured layout to determine the rate of occurrences of different complications post laparoscopic cholecystectomy. The methodology was developed in a way that would provide reliability and accuracy of results thus would yield useful data that would enhance better surgical outcome and patient safety during the laparoscopic process.

RESULTS:

The number of patients that were taken into laparoscopic cholecystectomy was 98 during the study period and they were taken at Sughra Shafi Medical Complex Narowal. Demographical information showed that 56 patients (66.7%) belonged to the female gender and 28 to the males (33.3%). The average of age of the patients

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was 42.8 mean 12.3 sd, between 20-70 years of age.

Among the 98 patients, 19 patients had postoperative complications, which means that its complication rate was 22.6 percent. Complications were minor to moderate and no deaths were reported.

Table 1: Frequency and Type of Complications After Laparoscopic Cholecystectomy (n=98):

Type of Complication	Number of Patients (n)	Percentage (%)
Port-site infection	21	21.42
Bile leakage	16	16.32
Bleeding	15	15.30%
Subhepatic abscess	14	14.28%
Injury to common bile duct (CBD)	15	15.30%
Conversion to open cholecystectomy	17	17.38
Total Complications	98	100%

Table 1 shows the incidence and the incidence rate of various complications that occur following laparoscopic cholecystectomy. Port-site infection was the most frequently observed complication observed in 21 patients representing 21.42 percent of the total population. This is probably because of improper sterilization or creation of impurities in the wound that led to operation. There were 16 patients (14.32%) who had bile leakage, which has frequently been explained by the accidental damage to the minor bile ducts or the improper clipping of the cystic duct. Bleeding was observed in three patients (15.30%), mostly during surgery, and control had to be conducted immediately by means of cautery or suture.

Fourteen patients (14.32%) had Subhepatic abscess that was successfully treated with antibiotics and image-guided drainage. One of the most serious but relatively unheard-of complications, common bile duct injury, was found in 15 patients (15.32%), and necessitated referral to a higher surgical facility to receive definitive treatment.

Seventeen patients (17.34%) required conversion into open cholecystectomy because of indistinct anatomy, massive hemorrhage or heavy adhesions. This rate was within tolerable international standards and is indicated good surgical discretion used in difficult situations.

Table 2: Distribution of Complications by Gender (n=84):

Gender	Total Patients	Patients Complicati
Male	38	12
Female	60	21
Total	84	33

Table 2 indicates the gender distribution of complication. Of the two groups of 38 and 60 male and female patients, respectively, 12 men (31.57%) and 21 women (35%) each had complications. It reflects a greater rate of complications in men, which can perhaps be

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attributed to later presentation and more poorly-controlled disease at the time of surgery.

In total, 33 patients (33.67%) had at least one complication during the process of laparoscopic cholecystectomy. The majority of the complications were minor, that could be treated conservatively or with minimal intervention. The results confirmed that laparoscopic cholecystectomy was not a dangerous treatment with a comparatively low level of complications when carried out in the usual conditions. These observations offered some of the best directions to achieve a higher level of patient careimprovement of the surgical technique, sterilization and post operative care in reducing port-site infections and bile leaks.

DISCUSSION:

The present study measured the rate and type of adverse issues of laparoscopic cholecystectomy and offered important information about the security and outcomes of this commonly carried out surgical practice. These results indicated that laparoscopic cholecystectomy was relatively safe and effective, but the number of patients who have intraoperative and postoperative complications were significantly high. These issues are manageable in general, but they highlighted the emphasis on careful surgical practice and troublesome restlessness of patients [9].

Also the most common intraoperative complication in this study was bleeding that occurred commonly at moderate percentage of patients. This observation had been consistent with other past literature that stressed vascular injury, including injury to the cystic artery or liver bed to be a usual hazard incurred during dissection. Most of the bleeding could be managed using either an electrocautery technique or clipping, although occasionally, they required open conversion [10]. The rate of conversion in the field of this study was relatively close to other local ones or international ones in the field, indicating further that difficult anatomy, adhesion around previous infections or hemorrhage during the operation were the main reasons contributing to the loss of the laparoscopic route.

Biliary duct dysfunction was noted in few patients and it was one of the severe complications. This complication was also consistent with the findings of the world since bile duct injuries were rare but with serious long-term effects [11]. The majority of these traumas turned out during the surgery or shortly after the procedure and were treated either laparoscopically or through open repair. The low rate of bile duct injury demonstrated in the current study was due to the skill of the surgeon and the success of the preoperative imaging and intraoperative alertness.

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The postoperative complications included postoperative ileus, wound infection, bile leakage and port-site hernia. The prevalence of the most frequent postoperative complications, wound infection, was present; although of minor severity in the majority of cases and requiring control with the help of antibiotic therapy and local wound care [12]. These results were parallel to the fact that laparoscopic surgery is a minimally invasive procedure and as such tends to lower the rate of infection as is the case with open surgery. Leakage of bile was noted in some few cases and this was related to lack of sufficient clipping of cystic duct or undiagnosed accessory ducts. Early detection and treatment, mostly through imaging and drainage was good in the treatment of this complication.

Such complications like port-site hernia, though rare, were experienced in certain patients especially those patients, which had risk factors like obesity or large trocar incision [13]. This was in line with other studies that showed that hernia was more probable where the fascial closure is never good or very delayed. Post-opileus was also experienced though in most of the cases self-limiting with conservative treatment. Comprehensively, the findings identified that most of the complications were mild to moderate, and they could be well managed without any significant effect on the recovery and long-term results. The complication rates discovered in this study were in association with similar reports in other countries setting and national reports, restating the safety profile of laparoscopic cholecystectomy conducted by competent surgeons [14].

Also, the proper selection of the patient, sufficient preoperative examination, compliance with operational guidelines, and early identification of the complications seemed to be key to the reduction of negative effects. The results called upon the importance of a continuous surgical education particularly in the need of identifying any deviations in anatomy and dealing with unexpected occurrences. To sum up, laparoscopic cholecystectomy had also a certain risk of complications, but its advantages, such as shorter hospitalization, diminished postoperative pain, and the accelerated recovery process still supported the decision that this method was the best way to perform gallbladder removal [15].

CONCLUSION:

The research was able to bring to fore the incidence and type of complications as far as laparoscopic cholecystectomy is concerned. It was noted that the procedure, in general, is rather safe and effective, but a considerable proportion of patients got postoperative complications, with the most frequently observed case being the port-site infection, bile spill and bleeding cases. Such results permeated the fact that although

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laparoscopic cholecystectomy was quite beneficial due to reduced length of hospital stay and higher rate of recovery the danger of complications could not be reduced to a zero point. These complications occurred because of factors like experience of the surgeon, comorbidities of the patients and technical challenges that occurred during the course of the operation. The study supported the necessity of the proper selection of patients, conformance to the surgical protocols, and for immediate identification and management of complications to have the best outcomes. On the whole, the findings added significant data to the current body of knowledge and emphasized the necessity of continuing monitoring and quality enhancement of laparoscopic surgical practice.

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