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ORIGINAL ARTICLE

An Audit of Laparoscopic Cholecystectomy; at a Tertiary Care Hospital in Islamabad

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ABSTRACT

Background: Laparoscopic Cholecystectomy is a commonly performed surgery and is a gold standard for the treatment of cholelithiasis as it has fewer side effects. This study was conducted to determine indications and complications of this surgery at a tertiary care hospital in Islamabad.

Methodology: This retrospective study was conducted in the department of Surgery, Maroof International Hospital from March 2017 to March 2019. A total of 250 patients who underwent laparoscopic cholecystectomy were included through consecutive sampling technique. The data regarding age, gender, mode of presentation, types of presentation, per operative findings, operative complications and duration of hospital stay was collected from patients' medical record. Statistical Package for Social Sciences SPSS version 23 was used to analyze data.

Results: Mean age of the participants was 46.24 ± 14.13 years. Female to male ratio was 2.73:1. Almost 38.4% patients had chronic cholecystitis, 35.2% had symptomatic gallstone disease, 24.8% had acute cholecystitis and 1.6% had gallbladder polyps. No major vascular or common bile duct injury were noted. 27.2% patients had per operative gallbladder perforation. Stone spillage occurred in 8.8% patients with retrieval in all of them. 75.2% patients were discharged on day 1. Per operatively, 98.4% patients had cholelithiasis, 59.6% had adhesions, 9.6% had mucocele, 1.6% had empyema and 0.8% patients had collections.

Conclusion: Laparoscopic cholecystectomy is a safe procedure in all types of gallstone disease presentations with low complication rate.

Key words: Cholelithiasis, Gallstones, Laparoscopic Cholecystectomy, Per-operative complications

Authors' Contribution:
[1]Conception; Literature research; manuscript design; [2,3] Critical analysis and manuscript review; [4]Data collection; [5,]Manuscript Editing;[6]Data analysis.

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Introduction

Laparoscopic surgery is also known as keyhole surgery since it utilizes very small incisions (0.5cm to 1cm) through which laparoscope and working instruments are introduced.[1] Due to small keyhole incisions, it is associated with less pain and earlier return to normal activity.[2] It is a well-established procedure with rapidly evolving indications.[3] Currently, laparoscopic cholecystectomy is the gold

standard procedure for treatment of cholelithiasis and also the most commonly performed laparoscopic surgery.[4,5] The main aim of laparoscopic cholecystectomy is to minimize the trauma to the patients without compromising the efficacy of the treatment. It is performed as a day case surgery in general anesthesia with lesser duration of hospital stay as compared to traditional surgery.[6] Overall ,less surgical morbidity and mortality is reported with this procedure.[7,8] Early laparoscopic cholecystectomy is still performed by minority of surgeons for acute cholecystitis.[9] This preference was based on high risk of complications owing to local inflammation and difficulty in calot's triangle dissection in acute setting.[10] Previous attacks of cholecystitis or episodes of biliary pancreatitis are associated with adhesions formation thus making cholecystectomy more difficult. The common complications of laparoscopic cholecystectomy include vascular injuries resulting in bleeding or visceral injuries mostly related to common bile duct.[11]Complications also include nausea, vomiting and postoperative parietal, visceral, incisional and referred pain.[12] Factors involved in the development of this pain include phrenic nerve irritation resulting from the insufflation of carbon-dioxide into the peritoneal cavity, abdominal distension, port site incisions and trauma associated with removal of the gallbladder.[13] With recent advances and expertise in laparoscopic surgery, the paradigm has shifted to minimally invasive surgery. Nevertheless, no surgery is without risks of morbidity and mortality. The main aim of this study was to determine common indications and per operative complications of laparoscopic cholecystectomy at our tertiary care setup and compare them with local and international studies. This will help audit outcomes, flaws and weaknesses based on evidence that will eventually lead to improvement of surgical practice.

Methodology

This retrospective study was conducted in the department of Surgery, Maroof International Hospital from March 2017 to March 2019. A total of 250 patients who underwent laparoscopic cholecystectomy were included through consecutive sampling technique. Sample size was calculated in context to another local study.[14] Patients were evaluated clinically, biochemically and radiologically before proceeding for surgery. Those having symptomatic gallstone disease, acute calculous cholecystitis, chronic cholecystitis and gallbladder polyps were included in the study. Those with previous abdominal malignancy, pre-operative diagnosis of choledocholithiasis, dilated common bile duct, cholangitis, acalculous cholecystitis or those who elected open cholecystectomy were excluded from the study. Two cases were converted to open surgeries which were excluded from study sample. All surgeries were performed by chief of surgery assisted by his surgical team. Prophylactic antibiotic was given to all patients intravenously. Standard four port laparoscopic cholecystectomy was performed. Pneumoperitoneum was established using open method in all cases. High definition camera by Karl Storz was used. Per operative complications were assessed by reviewing recorded videos of surgery. The data was collected from medical records of the patients and it included age, gender, mode of presentation (outpatient department or emergency), types of presentation (acute cholecystitis, chronic cholecystitis, symptomatic gallstones and gallbladder polyps), per operative findings, operative complications and duration of hospital stay. Per operative findings included gallstones, acute cholecystitis, adhesions, mucocele, empyema, abscess or collection around gallbladder, vascular bed anomaly or biliary tree anomaly, accessory cystic duct and others. Operative complications included bleeding that was recorded in milliliters categorized into less than 50ml (that required no intervention), 51 to 150ml

(that required use of gauze for cleaning) and more than 150ml (that required suctioning), bile duct injury, gallbladder perforation, clip slippage, gallstone spillage, intestinal injury and others. Drains were placed in few cases in which there was gallbladder perforation, spillage of stones, empyema, bleeding or risk of cystic duct blowout. Statistical Package for Social Sciences (SPSS) version 23 was used to analyze data. Quantitative data was entered as mean ± SD. Qualitative data was expressed as number and percentages.

Results

Mean age of the participants was 46.24 ± 14.13 years. It ranged from 18 to 83 years. 73.2% (183) patients were females and 26.8% (67) males. Female to male ratio was 2.7:1. Patients admitted via OPD were 88% (220) whereas 12% (30) patients were admitted via emergency. Most common presentation was chronic cholecystitis (35.2%) and symptomatic gallstone disease (24.8%) as shown in Table 1. Most common per operative findings are documented in Table 2. Most common per-operative complication was gallbladder perforation that occurred in 27.2% (68) patients while stone spillage was seen in 8.8% (22) patients. Suction irrigation of cavity and retrieval of stones was done in all these patients. No common bile duct injury was documented or seen in videos. Drains were placed in 14.4% (36) patients. 75.2% (188) patients were discharged within 24 hours as shown in Table 3. Comorbid conditions included hypertension in 19.2% (48) patients, diabetes mellitus in 12% (30), hepatitis C in 3.6% (9), ischemic heart disease in 2.4% (6), tuberculosis in 1.2% (3), asthma/chronic obstructive lung disease in 0.8% (2) and hepatitis B in 0.4% (1) patients.

Table I : Mode of Presentation (n=250)	
Chronic Cholecystitis	38.4% (n=96)
Symptomatic Gallstones	35.2% (n=88)
Acute Cholecystitis	24.8% (n=62)
Gallbladder Polyp	1.6% (n=4)

Table II : Per Operative findings (n=250)		
Blood loss	Less than 50ml	72% (180)
	51 to 150ml	22% (55)
	More than 150ml	6% (15)
Accessory Duct	0.8% (n=2)	
Cholelithiasis	98.4% (n=246)	
Adhesions	59.6% (n=149)	
Mucocele	9.6% (n=24)	
Empyema	1.6% (n=4)	
Pus Collection	0.8% (n=2)	

Table III: Duration of Hospital Stay	
One day	75.2% (188)
Two days	17.2% (43)
More than Two Days	7.6% (19)

Discussion

Laparoscopic cholecystectomy is the treatment of choice and gold standard due to less pain, minimum surgical trauma, short postoperative hospital stay and early return to home. In our study, female to male ratio was 2.7:1 (73.2% vs 26.8%) which shows less female predominance as compared to another study conducted in Pakistan.[15] This may represent a changing trend of cholelithiasis, becoming more common in males in our region owing to dietary changes over recent times. However, the female predominance itself is consistent with international data.[16] Mean age in our study was 46 years which is consistent with regional and international studies.[15,16] In terms of presentation or indication for surgery, 38.4% patients had chronic cholecystitis, 35.2 % had symptomatic gallstone disease, 24.8% had acute cholecystitis and 1.6% had gallbladder

polyps. This is consistent with the study done in Pakistan.[15] Mostly bleeding in laparoscopic cholecystectomy occurs from trocar site insertion, liver bed (especially in cases of acute cholecystitis and empyema gallbladder) and vascular injury (usually cystic duct or its branches or anomalous vessel). In rare cases, massive bleed can occur due to injury to abdominal aorta, vena cava, iliac vessels, hepatic artery or portal vein.[17] In our study, 72% patients had less than 50ml blood loss, 22% patients had 51 to 150 ml blood loss and 6% patients had more than 150ml blood loss. There was no major vascular injury in our study. 27.2% patients had per operative gallbladder perforation resulting in bile spillage. It is less as compared to an international study that reported gallbladder perforation in 36.1% patients.[18] It is variably common in 10 to 30% of laparoscopic cholecystectomies, but it is usually not associated with any dreadful outcome, surgical site infection or post-operative collection.[19] Suction irrigation of the contaminated area is sufficient to address it. Stone spillage occurred in 8.8% patients in our study. Spilled stones can be culprits for abdominal collection, abscess formation, pain ileus etc. To avoid these, stone retrieval was performed in all of such cases followed by lavage. Additionally, clips were applied from where the spillage started, to prevent further contamination and spillage. Acutely inflamed and over distended gall bladders were main factors for this intraoperative event. No common bile duct injury was noted. This is consistent with studies done in Karachi and Peshawar.[20,21] The incidence of common bile duct injury is strongly related to exposure of Calot's triangle, experience, knowledge and proper training of a laparoscopic surgeon. It is one of the most dreadful complications while performing laparoscopic cholecystectomy.[15] High morbidity, mortality, and prolonged hospitalization is associated with common bile duct injury.[22] Accessory cystic duct was noted in two cases. This is a unique finding and requires active per operative vigilance to recognize it which otherwise will present as bile leakage and related complications. There are few cases of accessory cystic duct reported internationally.[23,24] 75.2% patients were discharged on day 1 which is a routine worldwide in good laparoscopic centers. Patients requiring two or more days were mostly cases of acute cholecystitis, biliary pancreatitis or those who needed time for decision or second opinions with family and doctors regarding surgery in acute cholecystitis, empyema gallbladder etc. Comorbidities included hypertension 19.2%, diabetes mellitus 12%, hepatitis C 3.6%, ischemic heart disease 2.4%, tuberculosis 1.2%, asthma/chronic obstructive lung disease 0.8% and hepatitis B 0.4%They were optimized with proper specialist consultations accordingly prior to surgery.

This was a single-center study and retrospective in nature as all the data was collected from the past records that limits its quality. Multi-centered study with a larger sample size would have increased generalizability. Same surgeon performing all the operations adds to benefit on one side but also adds the bias to the study. It is pertinent to see the outcomes when another specialist performs the surgery with the same team. This study has provided evidence for improving surgical practices and demonstrated that proper training and experience decreases the risk of intraoperative complications and high end laparoscopic setup and vigilance improves the outcomes.

Conclusion

Laparoscopic cholecystectomy is a safe procedure in all types of gallstone disease presentations with a low complication rate.

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