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Original Research Article

A retrospective study among patients undergoing laparoscopic cholecystectomy: intraoperative and postoperative complications

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ABSTRACT

Background: Laparoscopic cholecystectomy is a popular method to treat gallbladder diseases. But adopting laparoscopic cholecystectomy in a treatment of gallbladder diseases like symptomatic cholelithiasis or cholecystitis introduced a new spectrum of associated intraoperative and postoperative complications. The aim of this study was to assess the intraoperative and postoperative complications of patients undergoing laparoscopic cholecystectomy.
Methods: This retrospective study was conducted in department of surgery of Lab Aid Hospital, Dhanmondi Central Hospital, and Ad Din Barrister Rafiqul Hospital, Dhaka, Bangladesh, during the period from December 2019 to December 2021 among 100 patients undergoing laparoscopic cholecystectomy. The intraoperative and postoperative complications were collected from the record book of the patients for this study with consent from the patients and guardians. This study was approved by the Institutional Review Board of Lab Aid Hospital and Ad Din Barrister Rafiqul Hospital, Dhaka.
Results: Majority of the study people (30%) were in the age group of 52-60 years. Mean age of the study people was 50.6 years (SD±8.1 years). Majority of the study people (59%) ware female. Mean BMI of the study people was 23.33±2.26 kg/m^2. Among the study people, 21% study people had smoking habit, 19% had diabetes, and 11% had hypertension. Mean operation time was 50.25±4.75 minutes. For the indications for laparoscopic cholecystectomy, most of the study people (56%) had symptomatic gallstones. The commonest intraoperative complication was trocar site bleeding (8%). The commonest postoperative complication was surgical site infection (5%).
Conclusions: Although there were few intraoperative and postoperative complications, laparoscopic cholecystectomy has a low rate of mortality and morbidity making this operation a safe procedure with favourable results.

Keywords: Intraoperative and postoperative complications, Laparoscopic cholecystectomy

INTRODUCTION

The benign gallbladder illnesses with the most widespread clinical recognition are cholelithiasis and cholecystitis.[1] The most crucial kind of therapy is surgery.[2] Laparoscopic surgery has grown in importance as a method of surgery thanks to the development of minimally invasive concepts and technology.[3] The first laparoscopic cholecystectomy in humans is widely

ascribed to Mouret in 1987, who drew on his background in gynecological procedures and appendicectomy.[4]

For the treatment of symptomatic cholelithiasis, laparoscopy has replaced surgery as the preferred method, and more operations are being performed for acute cholecystitis (AC).[5-9] Injuries to the bile duct, which were uncommon with open cholecystectomy, were documented in as many as 5% of patients as laparoscopic cholecystectomy became more widely accepted.[10] In 2007, almost 750,000 laparoscopic cholecystectomies were carried out in the United States (representing about 90% of all cholecystectomies), but despite growing familiarity with the surgery, the significant complication rate is still higher than with open cholecystectomy.[11,12] Due to the general decline in expertise with open surgery and the fact that this method is now only used for the most difficult and demanding cases, the open cholecystectomy complication rate has also increased.[13] Laparoscopic cholecystectomy is associated with serious problems, such as bile duct damage, bile leaks, hemorrhage, and intestinal injury. These difficulties can be partly attributed to patient selection, surgical inexperience, and the technological limitations of the minimally invasive procedure.[12,14-18]

Diathermy burns, which typically impact the right or common hepatic ducts and might first go unrecognized, are a significant cause of ductal damage. These elements, together with the natural consequences of biliary system conditions including inflammation and scarring, have given rise to the idea of "stop rules" for surgeons doing this procedure. In summary, early conversion to an open method should be readily recognized as the right path if a safe dissection cannot be achieved laparoscopically.[19,20] It is impossible to ignore the intraoperative and fresh postoperative complications.

The range of problems in gallbladder surgery has evolved as a result of the broad acceptance of this procedure.[21] Due to the surgeons' greater experience, the procedure's growing popularity, and the development of new equipment, intraoperative problems such bowel and vascular damage (trocar site), biliary leak, and bile duct injuries are on the decline.[22]

The total morbidity and mortality have been estimated at 2-6% and 0.1-0.5%, respectively, in several significant prospective studies.[23-25] There have been very few studies about the intraoperative and postoperative complications of patients undergoing laparoscopic cholecystectomy. Thus, this current study was conducted to assess the intraoperative and postoperative complications of patients undergoing laparoscopic cholecystectomy.

Objectives

To assess the intraoperative and postoperative complications of patients undergoing laparoscopic cholecystectomy.

METHODS

This retrospective study was conducted in department of surgery of Lab Aid Hospital, Dhanmondi Central Hospital, and Ad Din Barrister Rafiqul Hospital, Dhaka, Bangladesh, during the period from December 2019 to December 2021. Total 100 patients undergoing laparoscopic cholecystectomy were included in this study. The intraoperative and postoperative complications were collected from the record book of the patients for this study. Consent of the patients and guardians were taken before collecting data. After collection of data, all data were checked and cleaned. After cleaning, the data were entered into computer and statistical analysis of the results being obtained by using windows-based computer software devised with Statistical Packages for Social Sciences version 22. After compilation, data were presented in the form of tables, figures and charts, as necessary. Numerical variables were expressed as mean and standard deviation, whereas categorical variables were count with percentage.

Inclusion criteria

All age groups, patients undergoing laparoscopic cholecystectomy.

Exclusion criteria

Patients undergoing open cholecystectomy, patients transferred to another hospital.

Ethical Consideration

This retrospective study was approved by the Institutional Review Board of Lab Aid Hospital and Ad Din Barrister Rafiqul Hospital, Dhaka, Bangladesh.

RESULTS

Total 100 patients undergoing laparoscopic cholecystectomy were included in this study.

Majority of the study people (59%) ware female. Mean BMI of the study people was 23.33±2.26 kg/m^2. Among the study people, 21% study people had smoking habit, 19% had diabetes, and 11% had hypertension. Mean operation time was 50.25±4.75 minutes.

Table 2 demonstrates the indications for laparoscopic cholecystectomy. Most of the study people (56%) had symptomatic gallstones. Table 3 shows the intraoperative complications of the study people. Among the study people, 8% had trocar site bleeding, 7% had liver bed injury, 5% had bile leakage from GB, 2% had bleeding from calots, 2% had bile duct injury.

Table 4 demonstrates the postoperative complications of the study people. Among the study people, 5% had surgical site infection, 4% had jaundice, 3% had biliary

peritonitis, 2% had intra-abdominal collections, 1% had bile leakage, 1% had fecal peritonitis and no death record.

Table 1: Baseline data of the study people (n=100).

Characteristics		n	%
Age (years)	≤30	3	3
	31-40	9	9
	41-50	21	21
	51-60	30	30
	61-70	12	12
	>70	10	10
	Mean±SD	50.6±8.1	
Gender	Male	41	41
	Female	59	59
BMI (kg/m^2)	Mean±SD	23.33±2.26	
Smoking habit	Yes	21	21
	No	78	78
Diabetes	Yes	19	19
	No	80	80
Hypertension	Yes	11	11
	No	88	88
Operation time (minutes)	Mean±SD	50.25±4.75	

Table 2: Indications for laparoscopic cholecystectomy.

Indications	n	%
Symptomatic gallstones	56	56
Acute cholecystitis	14	14
Suspected common bile duct stones	12	12
Biliary pancreatitis	8	8
Chronic scleroatrophic cholecystitis	4	4
Others	6	6

Table 3: Intraoperative complications of the study people.

Intraoperative complications	n	%
Trocar site bleeding	8	8
Liver bed injury	7	7
Bile leakage from GB	5	5
Bleeding from calots	2	2
Bile duct injury	2	2

Table 4: Postoperative complications of the study people.

Postoperative complications	n	%
Surgical site infection	5	5
Jaundice	4	4
Biliary peritonitis	3	3
Intra-abdominal collections	2	2
Bile leakage	1	1
Fecal peritonitis	1	1
Death	0	0

DISCUSSION

This current study was conducted to assess the intraoperative and postoperative complications of patients undergoing laparoscopic cholecystectomy. Total 100 patients undergoing laparoscopic cholecystectomy were included in this study. Majority of the study people (30%) were in the age group of 52-60 years. Mean age of the study people was 50.6±8.1 years. Majority of the study people (59%) ware female. Which indicates that women are more prone to gallbladder diseases. In the study of Giger et al, among 22,953 patients mean±SD age was 54.5±16.1 years and most of the study people were female (68.6%) which is similar to our study.[26] Mean BMI of the study people was 23.33±2.26 kg/m^2 in our study. In the study of Yang et al, among 144 study people, mean±SD BMI was 22.83±2.15 kg/m^2 in research group and 22.36±2.23 kg/m^2 in control group.[27] In this study, 21% study people had smoking habit, 19% had diabetes, and 11% had hypertension. In the study of Yang et al, in research group 47.37% had smoking habit, 17.11% had diabetes, and 27.63% had hypertension.[27] In control group, 36.76% had smoking habit, 16.18% had diabetes, and 23.53% had hypertension.

In this study, mean operation time was 50.25±4.75 minutes. In the study of Yang et al mean ±SD operation time in research group was 48.32±3.84 minutes and mean ±SD operation time in control group was 49.07±3.42 minutes.[27] The commonest indication of laparoscopic cholecystectomy was symptomatic gallstones (56%) in our study. In the study of Z'graggen et al, symptomatic gallstones was also the commonest (87.9%) indication of laparoscopic cholecystectomy.[28] In this study, the commonest intraoperative complications was trocar site bleeding (8%), followed by 7% had liver bed injury, 5% had bile leakage from GB, 2% had bleeding from calots, 2% had bile duct injury.

Familiar results were found in the study of Agarwal et al where the most frequent intraoperative complication was trocar site bleeding and liver bed injury, 7%, followed by bile leakage from gallbladder 6%, bleeding from calots triangle in 4% and spilled gallstones in 2% cases.[29] In this study, the commonest postoperative complications was surgical site infection (5%), followed by 4% had jaundice, 3% had biliary peritonitis, 2% had intra-abdominal collections, 1% had bile leakage, and 1% had fecal peritonitis and no death record. Amreek et al found similar results where most common postoperative complication was surgical site infection (2.7%), followed by 0.9% had jaundice, 0.8% had biliary peritonitis, 0.6% had intra-abdominal collections, 0.4% had bile leakage, 0.3% had fecal peritonitis and 0.1% had retained CBD stones.[30]

In our study, there was small sample size and absence of control for comparison. Study population was selected from one center in Tangail, so may not represent wider population. The study was conducted at a short period of

time. The sampling was retrospective and there was no random allocation, so there was risk of selection bias.

CONCLUSION

Although there were few intraoperative and postoperative complications, laparoscopic cholecystectomy has a low rate of mortality and morbidity making this operation a safe procedure with favorable results. Further study with large sample size is required to have better understanding.

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Ethical approval: The study was approved by the Institutional Ethics Committee of Lab Aid Hospital and Ad Din Barrister Rafiqul Hospital, Dhaka, Bangladesh

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