

A clinical practice Audit of Laparoscopic Cholecystectomy at our Institute

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Abstract

Background: Laparoscopic cholecystectomy has replaced open surgery in the treatment of symptomatic cholelithiasis.

Objective: To evaluate the clinical practices and outcome of laparoscopic cholecystectomy at our institute.

Methodology: This was a cross sectional study, conducted at Surgical Unit II, Sheikh Zayed Hospital, Rahim yar khan, from November 2018 to October 2019. Sample size: 100 patients undergoing standard laparoscopic cholecystectomy selected by non probability sampling. All the patients of laparoscopic cholecystectomy during the study period having a clinical diagnosis of acute and chronic cholecystitis were included, whereas patients who had previously undergone midline abdominal operations, ventral hernias, with evidence of common bile duct pathology, having bleeding disorders and hepatitis were excluded. Study variables were operating time, duration of hospital stay, frequency of operative and post-operative complications.

Results: There were 85 females and 15 males. Mean age was 40 ± 1.2 years. In this study, 68% patients were having chronic cholecystitis due to cholelithiasis whereas 32% were having acute cholecystitis. Abdominal ultrasound showed multiple stones in 82% and single stone in 18% patients. Adhesions in 30%, Mucocele in 1% and empyema in 2% patients was reported. Gall bladder was perforated in 12% patients and 8% patients converted to open procedure. The mean operative time for laparoscopic cholecystectomy was 71.2 ± 2.6 minute. The post operative complications were; wound infection in 4%, shoulder pain 1% and surgical emphysema 1%. The mean hospital stay was 1.38 days.

Conclusion: Laparoscopic Cholecystectomy proved a safe procedure in term of operative and post operative complications in our setup.

Key words: Laparoscopic Cholecystectomy, Operative complications, Audit, Postoperative complications

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Introduction

Laparoscopic surgery represented a revolution in surgery of the biliary tract. Phillip Mouret performed the first video-assisted laparoscopic cholecystectomy in Lyon, France.¹ Laparoscopic cholecystectomy has now replaced conventional open cholecystectomy and is the gold standard treatment for symptomatic gall stone disease due to better results, reduced morbidity and hospital stay.² In our tertiary care hospital laparoscopic cholecystectomy was started in 2008. We were lacking the equipment required for laparoscopic cholecystectomy and the procedure was performed infrequently. Now from last two years we are routinely performing the laparoscopic cholecystectomy but having no clinical audit of our surgical practice. Quality management is a prerequisite of modern health care and in surgery it clarifies whether a specific procedure is justified in the treatment of a surgical disorder, (i.e. it is an

efficient & safe procedure).³⁻⁶ Several studies have shown the efficacy and safety of the laparoscopic cholecystectomy as well as the advantages such as reduced hospital stay, earlier recovery, less intra-abdominal adhesions and a better cosmetic outcome.⁷⁻⁹ The second aspect of quality management is whether this procedure is used in the right hands (i.e. well trained & qualified surgeons).¹⁰ The purpose of this study was to evaluate the results of our laparoscopic cholecystectomy in symptomatic gall stone patients, in term of length of hospital stay, complications, morbidity and mortality in our surgical department.

Methodology

This was a cross sectional study, which included data of series of patients admitted in study duration and non probability purposive sampling technique was used. All patients who underwent laparoscopic cholecystectomy for symptomatic cholelithiasis in

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the surgical Unit II, Sheikh Zayed Hospital, Rahim yar khan, over one year period, from November 2018 to October 2019, were included. All the patients included in the study were operated through standard laparoscopic technique using four ports. Informed consent was not required as all the data was collected retrospective and identity of the patients and surgeons was not disclosed. Demographics details of cases, mode of presentation, conversion to open operation, operative and post operative complications of surgery within one month and length of hospital stay were reviewed from clinical notes and departmental register and noted on a designed performa. All the patients of laparoscopic cholecystectomy having a clinical diagnosis of acute and chronic cholecystitis who underwent a detailed pre operative workup and pre anesthetic evaluation were included. The patients of acute cholecystitis who presented three days after symptoms, were not included in the study. Patients who having previous midline incisions, ventral hernias, ASA grade III or IV, immunosuppressed, were excluded from the study. Patients with evidence of common bile duct pathology on clinical, biochemical or ultrasonological basis, chronic liver disease, bleeding disorders and hepatitis, were also excluded.

Preoperative variable in study were age, gender, mode of admission, diagnosis and ultrasound findings with emphasis on the number of calculi. Operative variables under study were operating time, status of gall bladder, presence of adhesions, perforation of gall bladder with spillage of stones, common bile duct injury, conversion to open cholecystectomy and reason. Time from introduction of first trocar to repair of last trocar incision was considered as operative time. Adhesions of gall bladder with omentum or bowel loops requiring dissection and division of adhesive bands, were included in the study. The patients who were converted to open procedure due to technical difficulty, were considered as conversion. Postoperative variables that included were death of patients, surgical site infection, post operative shoulder pain, surgical emphysema, length of hospital stay and the need for re intervention. Purulent discharge from incision sites requiring antibiotics and daily dressing was considered as surgical site infection. Number of nights spent in the hospital after surgery was

considered as length of hospital stay. The patient who died thirty days after cholecystectomy due to complication of surgery, were included in mortality. The returning the patient to operation theatre for any complication of laparoscopic cholecystectomy was considered as re intervention. All the data was analyzed using the MS Excel 2007 software package. For categorical variables, frequencies were calculated while for continuous variables, mean were calculated. Ethical approval was sought from Institutional Review Board.

Results

The mean age of the patients included for laparoscopic cholecystectomy was 40 ± 1.2 years in our study. The minimum age of the patient was 20 years and the maximum age was 68 years. The 85% patients were female and 15% were male. The 32% patients were admitted through emergency and were diagnosed having acute cholecystitis and 68% were admitted through out patient department. The patients admitted through out patient department were having chronic cholecystitis. The 82% patients presented with multiple stones and only 18 % presented with single stones. The gall bladder was normal in 49 (49%) patients, moderately distended in 16 (16%), severely distended in 28 (28%) and shrunken in 7 (7%) patients. One patients was having mucocele 1 (1%) and 2 (2%) patients were having empyema. (Table I)

Table I: Intra operative Findings in Laparoscopic Cholecystectomy

Condition of gall bladder	Number	Percentage
Normal	49	49%
Moderately distended	16	16%
Severely distended	28	28%
Shrunken	7	7%
Mucocele	1	1%
Empyema	2	2%

Adhesions were present in thirty patients (30%) and more adhesions were present in the patients of chronic cholecystitis. During cholecystectomy, in 12 patients gall bladder was perforated and stone spilled and it prolonged the operative time. The conversion cases to open procedure were eight (8%). The main problem with conversion cases was difficult

anatomy and in two cases stone was stuck at the lower end of cystic duct. The other problem was adhesion in converted cases. (Table II) The six patients converted to open procedure were having chronic cholecystitis. There was no common bile duct injury in our patients during study period. The average operative time for laparoscopic cholecystectomy was 71.2 ± 2.6 minutes in our study, with minimum 30 minutes and maximum 130 minutes. The post operative complications were wound infection in 4 patients (4%), shoulder pain in one patients (1%) and surgical emphysema in one patient (1%) and both these settled without any intervention. No patient presented with missed stones 0 (0%). No need of any re intervention in any case. Mortality was not reported in thirty days after laparoscopic cholecystectomy. (Table II) The length of hospital stay was average 1.38 days in this study and minimum one day and maximum 7 days in this study.

Table II: Post operative complications in Laparoscopic Cholecystectomy

Variable	Number	Percentage
Wound infection	4	4%
Shoulder pain	1	1%
Surgical emphysema	1	1%
Missed stones	0	0%
Re-intervention	0	0%
Mortality	0	0%

Discussion

The mean age of the patients operated for laparoscopic cholecystectomy was 40 years in our study. The minimum age of the patient was 20 years and the maximum age was 68 years. Mean age of patients was 47 years (range 15-80 years) in the study conducted in Hamdard University in 2010.¹¹ Mean age of the patients was 42.71 years in the study conducted by Makesh kumar.¹² The mean age of the patients was 41 years in another study.¹³

The 85% patients were female and 15% were male in our study. Cholelithiasis is more common in female patients and this fact is documented in many studies.¹⁴⁻¹⁸ In this study, 32% patients were admitted through emergency and were diagnosed having acute cholecystitis and 68% were admitted

through out patient department in our study. The patients admitted through out patient department, were having chronic cholecystitis. Most of the patients of laparoscopic cholecystectomy in BIRDEM were due to chronic cholecystitis 76.1% and 17% were due to acute cholecystitis and these results show that we are operating more patients of acute cholecystitis.¹⁵ The 82% patients presented with multiple stones and only 18% presented with single stones in my study. In other studies almost 70% patients presented with multiple gall stones.^{10,11} It is evident from these studies that most of the patients present with multiple gall stones. The gall bladder was normal in 49 (49%) patients, moderately distended in 16 (16%), severely distended in 28 (28%) and shrunken in 7 (7%) patients. One patient was having mucocele (1%) and two patients were having empyema (2%) in my study. In another study, 0.7% patients presented with mucocele.¹⁹ Adhesions were present in thirty patients (30%) in our study and more adhesions were present in the patients of chronic cholecystitis. Sreeramulu P N and Rehman S also documented the increased adhesions in cases of chronic cholecystitis in their studies.^{13,16} During cholecystectomy in 12 patients gall bladder perforated and stone spilled and it prolonged the operative time. In other study conducted by Muhammad Ummair and colleagues, 5 (0.94%) patients had gall bladder perforation and it prolonged the operative time in other studies.¹⁹

Laparoscopic cholecystectomy has less morbidity and mortality and early hospital discharge as documented in the literature.^{8,9} We in our setup also experienced the less procedure associated complications. The perforation of the gall bladder is the most common intra-operative complication in our study. The most common complication noted was iatrogenic perforations of the gallbladder (5.27%) in another study.²⁰ The conversion cases to open procedure were eight (8%) and in these six patients were having chronic cholecystitis. Conversion rate was highest in chronic cholecystitis patients as shown in several other studies.^{21,22} The incidence of conversion to Open Cholecystectomy after Laparoscopic procedure in all hospitals in England from 2005 to 2006 was examined using Hospital Episode Statistics and it was 4.6% for elective procedures and 9.4% for emergency procedures.²³ The main problem with conversion cases was difficult anatomy and in two cases stones were stuck at the lower end of cystic duct. The other most common cause for conversion was adhesions in our study like documented in the literature.¹⁹ We did not encounter any common bile duct injury in our current study. Swiss 1995–2005 hospital database analysis showing the

incidence rate of bile duct injury after Laparoscopic injury was 0.3%.²³ The similar results were also reported in other studies.^{11,15} The usual cause was difficult anatomy at the Calot's triangle which can be avoided by adequate case selection, surgeon experience and careful dissection. In a retrospective study, common bile duct (CBD) injury during cholecystectomy was associated with a significant higher risk of death over a 9.2-year follow-up period.²¹ The average operative time for laparoscopic cholecystectomy was 71.2 minute in our study with minimum 30 minutes and maximum 130 minutes. Our operative time is prolonged as compare to other studies.^{10,11,15} The basic reasons behind prolong operative time were more adhesion in our patients, (30%) perforation of gall bladder with spillage of stones (12%) and more patients of acute cholecystitis (32%). The post operative complications were wound infection in 4 patients (4%), Shoulder pain in one patient (1%) and surgical emphysema in 01 patient in our study. The most common complication in our study was port site infection (4%) and it was superficial infection in all cases and settled by daily dressing and antibiotics. The literature reports the port site infection ranges from 2.7 to 3.7%.¹⁰⁻¹³ Mehraj A reported the port site infection rate of 1.4% in his study.¹⁵ The increased port sites infection was due to more perforation of gall bladder and contamination of port sites while extracting the gall bladder in our study. Proper mechanical cleaning, sound selection of sterilization method, strict compliance to the sterilization steps are the keys to avert the unsought complications like port site infections in this novel laparoscopy technique.¹⁴ No patient presented with missed stones. Re exploration was not needed to deal any complication in any case. Mortality was not reported in thirty days after laparoscopic cholecystectomy in our study. The length of hospital stay was average 1.38 days in our study and minimum one day and maximum 7 days in our study. Hizbullah Jan in his study reported the mean hospital stay of 3.37 ± 2.27 days and maximum 6 days.¹¹ The mean hospital stay in the study conducted by Shafqat Rehman was 1.3 ± 1 in chronic cases and 1.314 ± 0.5 days in acute cases and these results are comparable to my study.¹⁶

Conclusion

Laparoscopic cholecystectomy, which is a common minimal invasive procedure in general surgery and has replaced the invasive procedure of open cholecystectomy. Good training, careful selection of cases, meticulous techniques are of paramount importance for providing good results and our audit of Laparoscopic Cholecystectomy

proved a safe procedure in term of operative and post operative complications in our setup although we are having long operative time but our duration of hospital stay is comparable with international studies.

Authors Contribution: **NK:** Conception of work and Design of Work. **MTG:** Drafting and Revising. **MNI:** Acquisition & analysis **MT:** Analysis of data and drafting.

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