

A CROSSECTIONAL STUDY OF LAPAROSCOPIC CHOLECYSTECTOMY AND ITS COMPLICATIONS WITH THEIR MANAGEMENT.

General Surgery

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ABSTRACT

Background: Gallstones constitute a major burden on global health systems and prevalence in Indian adult population ranges from 6-9%. Laparoscopic cholecystectomy has rapidly emerged as the gold standard treatment for patients with symptomatic gallstones. **Aims and objectives:** To assess safety and efficacy of laparoscopic cholecystectomy in terms of duration of surgery, post-operative recovery, conversion to open cholecystectomy and complications. **Methods:** Present study was cross-sectional and was conducted over a period of two years from November 2017 to October 2019 in department of Surgery, Medical college. The study was conducted in 50 patients of cholelithiasis who underwent laparoscopic cholecystectomy. **Results:** The mean age of patients undergoing laparoscopic cholecystectomy was observed to be 52.78(± 9.32) years. Majority 22 (44%) patients were in the age group of 51-60 yrs and 34(68%). were females. In 3(6%) patients laparoscopic cholecystectomy was converted to open cholecystectomy. The mean duration of laparoscopic cholecystectomy and open cholecystectomy was 57.09(± 11.45) and 84.33(± 8.62) minutes respectively. ($P < 0.001$) Intra-operative complications during laparoscopic cholecystectomy occurred in 5(10%) patients and post-operative complications were surgical site infection in 3(6%) patients and bile leaks through the drain in 2(4%) patients. The mean length of stay in hospital was 3.30 (± 1.73) days. **Conclusions:** Laparoscopic cholecystectomy is safe for management of cholelithiasis with minimal complications and no in hospital mortality.

KEYWORDS

Laparoscopic cholecystectomy, duration of surgery, complications, duration of hospital stay, safety.

INTRODUCTION

Gallstones constitute a significant health problem in developed societies, affecting 10% to 15% of the adult population thus constituting a major burden on health systems which has increased more than 20% over the last 3 decades.⁽¹⁾ In India, the prevalence of gallstones range from 6% - 9% in the adult population with much higher prevalence of up to 20% being reported by hospital based registries.^(2,3)

Most gallstones are clinically "silent," and often uncovered during abdominal ultrasound being performed for another reason⁽⁴⁾ as an incidental finding. Only 20% patients with gall stones will experience biliary pain or complications such as acute cholecystitis, cholangitis or pancreatitis.⁽⁵⁾

Expectant management is an appropriate choice in patients with asymptomatic/silent gall stone disease in the general population due to low incidence of conversion from asymptomatic to developing symptoms (1-2% /year)⁽⁶⁾ and complications (2-3% /year)⁽⁷⁾. Exceptions are patients who are at high risk for developing biliary complications who undergo surgical interventions.

Surgical interventions are laparoscopic cholecystectomy and open cholecystectomy. Open cholecystectomy was the standard treatment for symptomatic gallstones for more than a century and was among the most common major abdominal procedures performed.⁽⁸⁾ Open cholecystectomy is associated with increased morbidity and relatively long hospitalization and convalescence period.

The introduction of laparoscopic cholecystectomy which was first performed in Lyon, France in March 1987 by Phillipe Mouret⁽⁹⁾ led to dramatic changes in the management of gallstone disease. This technique has rapidly emerged as the gold standard treatment for patients with symptomatic gallstones.

Laparoscopic cholecystectomy (LC) is associated with less postoperative pain, improved cosmetic outcome, shorter hospital stay and convalescence period, rapid return to normal activities and work, lower mortality rate and is more cost-effective as compared to open cholecystectomy.^(10,11) Laparoscopic cholecystectomy is however, associated with a significant increase in bile duct injury compared with OC.⁽¹²⁾ Conversion from LC to OC is expected in about 5% of the cases

as a result of adhesions or acute inflammation, iatrogenic injuries, and unexpected operative findings.

There are relatively few in depth clinical studies profiling laparoscopic cholecystectomy for cholelithiasis from western India. Thus the present study was conducted to assess safety and efficacy of laparoscopic cholecystectomy in terms of duration of surgery, post-operative recovery, conversion to open cholecystectomy and complications.

OBJECTIVES:

1. To study the duration of surgery of Laparoscopic cholecystectomy.
2. To study the intra-operative and post operative complications and management required in laparoscopic cholecystectomy.
3. To study the conversion of Laparoscopic cholecystectomy to open cholecystectomy for associated conditions.

METHODS:

The study design of the present study was cross-sectional and it was conducted over a period of two years from November 2017 to October 2019 in department of Surgery, Medical college; Maharashtra. Approval from Institutional Ethical committee's was taken prior to commencement of the study. A total of 50 patients of cholelithiasis presenting with symptomatic gallstone disease, acute cholecystitis, chronic cholecystitis and mucocele, pyocele or gangrenous gall bladder admitted in surgery department or presenting in surgical OPD for elective as well as emergency cholecystectomy were included in the study. Patients with major bleeding disorder, cirrhosis with portal hypertension and generalised peritonitis were excluded from the study. Written informed consent was taken from all participants after informing them about the possible complications of undergoing surgery and possibility of conversion to open cholecystectomy. A structured pretested proforma was used to collect socio-demographic details of all patients followed by detailed history taking and physical examination; details of which were duly recorded. Relevant investigations were carried out on all patients which included Renal Function Test, liver function tests, USG abdomen pelvis, ECG, Chest X Ray, HBsAg, HIV and BT,CT,PTINR. CT abdomen with contrast and MRCP were done if indicated.

Laparoscopic cholecystectomy (LC) was performed using the

standard four port technique and pneumoperitoneum was created using Hasson or Veress needle technique. Hartmann's pouch was retracted with the left hand and anterior and posterior dissection was done with right hand in Calot's triangle and a wide window was created. Clipping of the cystic duct and cystic artery was achieved from 10 mm epigastric port. Gallbladder extraction was generally done from epigastric port.

Indications for surgery (elective/emergency), intra-operative findings (duration of operation, intra-operative bleeding and iatrogenic injuries), conversion from laparoscopic to open cholecystectomy and reason for conversion, postoperative complications, hospital stay and mortality was recorded for each patient.

Statistical Analysis:

Data was compiled in Microsoft excel and Statistical Package for the Social Sciences (SPSS) version 23.0 was used for analysis. Continuous parameters (quantitative data) were presented as Mean $\pm$ SD and categorical (qualitative data) variables were presented as percentage and proportions (%). Significance of difference between means of quantitative variables was analysed by paired student t test. A p value of 0.05 was taken as level of significance and p value <0.05 was considered statistically significant and <0.001 was considered highly significant.

RESULTS:

The mean age of patients undergoing laparoscopic cholecystectomy (n=50) was 52.78(± 9.32) years and ranged from 29- 68 years. Majority 22 (44%) patients belonged to age group of 51-60 yrs. The study group comprised of 16(32%) male patients and 34(68%) female patients and female: male ratio was 2.13:1. Age distribution of patients undergoing laparoscopic cholecystectomy is depicted in table 1.

Table 1: Age Distribution Of Patients Undergoing Laparoscopic Cholecystectomy

Age (yrs)	N	%
21-30 yrs	1	2
31-40 yrs	5	10
41-50 yrs	12	24
51-60 yrs	23	46
61-70 yrs	9	18
Total	50	100

Conversion to open cholecystectomy:

Among total patients of cholelithiasis (N=50) in 3(6%) patients laparoscopic cholecystectomy was converted to open cholecystectomy and the remaining 47(94%) patients underwent laparoscopic cholecystectomy.

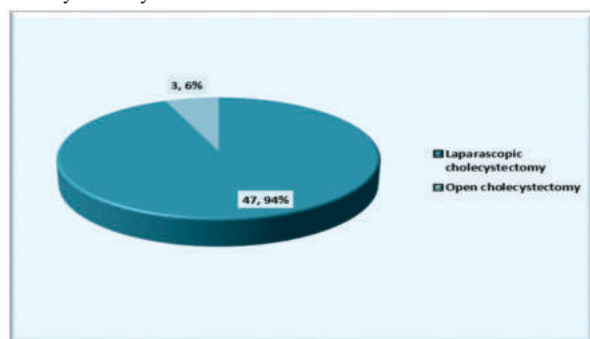


Fig 1: Type Of Surgery In Patients Of Cholelithiasis

Duration Of Surgery (Operating Time):

The mean duration of surgery in patients who underwent Laparoscopic cholecystectomy was 57.09(± 11.45) mins and mean duration of surgery was 84.33(± 8.62) minutes in patients who underwent open cholecystectomy. Mean duration of laparoscopic cholecystectomy was significantly lesser than open cholecystectomy. ($P<0.001$)

Intra-Operative Complications:

Intra-operative complications during laparoscopic cholecystectomy occurred in total 5(10%) patients and were iatrogenic perforation of gall bladder, spilled gallstones, difficult access to Calot's triangle, gallbladder empyema and bleeding from the abdominal wall (port) occurring in 1(2%) patient each.

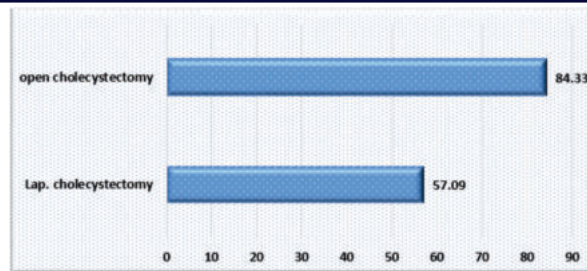


Fig 2: Duration of Surgery of Laparoscopic Cholecystectomy And Open Cholecystectomy

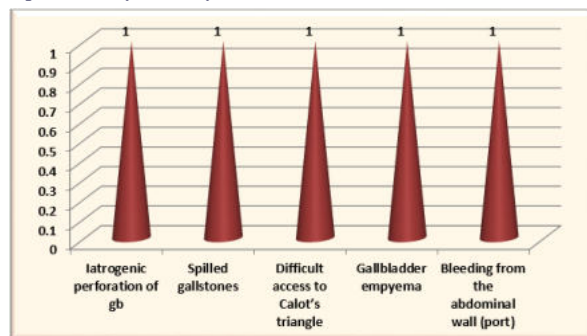


Fig 3: Intra-Operative Complications During Laparoscopic Cholecystectomy

Conversion To Open Cholecystectomy:

Conversion to open cholecystectomy was done in 3(6%) patients due to the following reasons in 1(2%) patient each: adhesions caused by severe tissue inflammation, difficult access to Calot's triangle and gallbladder empyema.

Post-Operative Complications:

Post-operative complications in patients undergoing laparoscopic cholecystectomy were surgical site infection in 3(6%) patients and bile leaks through the drain occurred in 2(4%) patients. In the remaining majority 42(89.63%) of patients no complications were observed. There was no in-hospital mortality observed in the present study.

Length Of Hospital Stay:

The mean length of stay in hospital was 3.30 (± 1.73) days. The length of stay in hospital was more in patients with post-operative complications and in conversions to open cholecystectomy.

DISCUSSION:

Age and gender:

Majority of patients in the present study were in the 51-60 years. 5th decade is the most common age group reported by similar studies as conducted by Zucker KA et al.⁽¹³⁾ where the mean age of 35 patients (20 men and 15 women) was 51.7 years range (17- 82 years). Advancing age and female gender are non modifiable risk factors for gallstone formation. Symptoms and complications are also observed to increase with age, leading to more frequent cholecystectomies.⁽¹⁴⁾

Mean Duration Of Surgery:

In the present study, the mean operating time was 57.09(± 11.45) minutes and 84.33(± 8.62) minutes in patients who underwent laparoscopic cholecystectomy and open cholecystectomy respectively. In the study by Zucker KA et al.⁽¹³⁾ the mean operative time was 183.7 min. In a similar study by Taki-Eldin A et al.⁽¹⁵⁾ mean operative time was 65.94 ± 11.52 min.

Conversion To Open Cholecystectomy:

In the present study, in 3(6%) patients laparoscopic cholecystectomy was converted to open cholecystectomy. Studies have reported higher conversion rates as compared to the present study probably due to inclusion of only acute cholecystitis cases as is evident in the following studies by:

- Miller RE et al.⁽¹⁶⁾ in (14%) patients there was conversion to open cholecystectomy
- Rattner DW et al.⁽¹⁷⁾ acute cholecystitis patients had higher conversion rate (35%) compared to (2.15%) in patients with chronic cholecystitis.

c) Zucker KA et al.⁽¹³⁾ the conversion rate to open laparotomy was (11.4%)

Some studies have reported lower conversion rates as in the studies by Taki-Eldin A et al.⁽¹⁵⁾ where 4.9% were converted to open surgery. In the study by Genc V et al.⁽¹⁸⁾ on 5164 consecutive laparoscopic cholecystectomies overall rate of conversion to open cholecystectomy was 3.16% (163 patients).

Advanced age, comorbidity, obesity, male gender, previous abdominal surgery, acute cholecystitis, dense adhesions and fibrosis in Callot triangle, anatomical variations, suspicion of common bile duct stones, jaundice, and decreased surgeon experience are among factors which predict conversion to open cholecystectomy.⁽¹⁹⁾

Complications:

In the present study, post-operative complications were surgical site infection in 3(6%) patients which was treated by drainage and antibiotics and bile leaks through the drain occurred in 2(4%) patients which resolved in 3-4 days. There were no major complications and no deaths.

In the study by Miller RE et al.⁽¹⁶⁾ one patient developed a prolonged postoperative paralytic ileus and two patients were noted to have postoperative common duct stones. There were no deaths. In the study by Zucker KA et al.⁽¹³⁾ postoperative morbidity rate was 2.9%. There were no major complications and no deaths.

In the study by Taki-Eldin A et al.⁽¹⁵⁾ twenty-one (4.3%) developed wound infection. Port site hernia was detected in nine (1.8%) patients. There was no mortality recorded in this series

Length of Stay in Hospital:

In the present study, mean length of stay in hospital was 3.30 (± 1.73) days. In the study by Taki-Eldin A et al.⁽⁷⁷⁾ mean hospital stay was 2.6 $\pm$ 1.5 days.

In the present study and above mentioned studies compared with the open operation, laparoscopic cholecystectomy was safe with less peroperative and postoperative morbidity, more cost-effective and associated with faster patient recovery as documented by less postoperative pain, earlier full mobilisation and discharge home.⁽²⁰⁾

CONCLUSIONS:

For laparoscopic cholecystectomy, the mean operating time was 57.09(± 11.45) minute, conversion rate to open cholecystectomy was 3(6%) and mean length of stay in hospital was 3.30 (± 1.73) days. There were no major complications and no in-hospital mortality. Laparoscopic cholecystectomy is safe for management of cholelithiasis with minimal complications.

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