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Efficacy of laparoscopy for acute Cholecystitis: A comparative study

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Abstract

Background: Laparoscopic cholecystectomy (LC) represents a significant change in the management of gallbladder disease and it is the most commonly performed operation of the digestive tract. It is considered as the gold standard treatment for Cholelithiasis. For acute Cholecystitis, however, the use of laparoscopic cholecystectomy has been controversial up until recently, because of the high open conversion rate and the high incidence of postoperative complications.

Aim of the study: To study efficacy of laparoscopy for acute Cholecystitis.

Materials and methods: For the study, we retrospectively reviewed the medical records of patients aged 30-65 years with acute Cholecystitis who underwent Laparoscopic cholecystectomy (LC) and were compared patients who underwent open cholecystectomy (OC). A total of 120 patients (70 for LC and 50 for OC) were reviewed.

Results: Our study group comprised of 120 total patients. 70 had undergone LC and 50 had undergone OC. On comparing the demographics of the patients, the results were found to be statistically non-significant for all the parameters. We observed that mean operative time for LC was 49.69 min and for OC was 62.36 min.

Conclusion: Within the limitations of the present study, it can be concluded that laparoscopic cholecystectomy has equal efficacy for acute Cholecystitis patients as compared to open cholecystectomy.

Keywords: Cholecystitis, Cholecystectomy, laparoscopy, complications

Introduction

Laparoscopic cholecystectomy (LC) represents a significant change in the management of gallbladder disease and it is the most commonly performed operation of the digestive tract ^[1]. It is considered as the gold standard treatment for Cholelithiasis. It replaced open cholecystectomy as the first choice of treatment for gallstones and inflammation of the gallbladder ^[2]. For acute Cholecystitis, however, the use of laparoscopic cholecystectomy has been controversial up until recently, because of the high open conversion rate and the high incidence of postoperative complications ^[3-5]. Nevertheless, the 2006 Tokyo Guidelines recommended laparoscopic cholecystectomy as the first option for the treatment of acute Cholecystitis ^[6]. Hence, the present study was conducted to study efficacy of laparoscopy for acute Cholecystitis.

Materials and methods

The present study was conducted in the Department of General Surgery of the medical institute. The ethical clearance for the protocol of study was obtained from the ethical committee of the institute. For the study, we retrospectively reviewed the medical records of patients aged 30-65 years with acute Cholecystitis who underwent Laparoscopic cholecystectomy (LC) and were compared patients who underwent open cholecystectomy (OC). A total of 120 patients (70 for LC and 50 for OC) were reviewed. The analysis of preoperative, intra-operative, and postoperative parameters was done and was compared. The selected patients had history of abdominal pain and tenderness at right upper quadrant showing clinical picture of acute Cholecystitis and were admitted in emergency. The confirmation of the diagnosis of acute Cholecystitis was done by ultrasound in which signs of thickened gall bladder wall and pericholecystic fluid were seen. Standard four-port technique was used to perform laparoscopic cholecystectomy.

The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student's t-test were used for checking the significance of the data. A p-value of 0.05 and

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lesser was defined to be statistically significant.

Results

Table 1 shows demographic data. Our study group comprised of 120 total patients. 70 had undergone LC and 50 had undergone OC. On comparing the demographics of the patients, the results were found to be statistically non-significant for all the parameters. [Fig 1] Table 2 shows the comparison of post-operative parameters for both the groups. We observed that mean operative time for LC was 49.69 min and for OC was

62.36 min. similarly, all the post-operative parameters were compared and were found to be statistically non-significant [Fig 2].

Table 1: Demographic data

Variables	LC	OC	p-value
Number of male patients	39	30	0.74
Number of female patients	31	20	0.69
Mean Age (years)	40.69	39.69	0.12
Mean Body weight (kg)	71.26	68.69	0.15

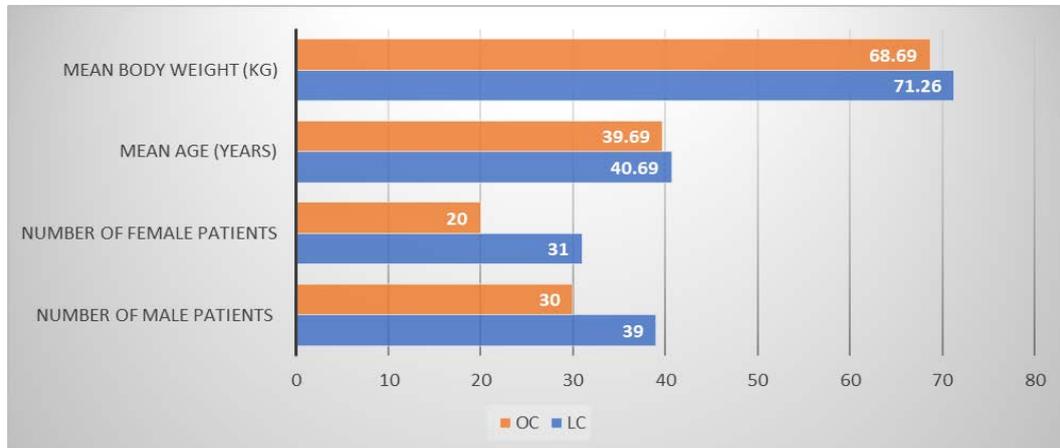


Fig 1: Demographic data

Table 2: Comparison of post-operative parameters for both the groups

Variables	LC	OC	p-value
Operative time period (mean) (minutes)	49.69	62.36	0.48
Incidence of blood loss, >500 mL	4	7	0.23
Drain	2	1	0.25
Nasogastric tube	6	8	0.08
Mean postoperative stay (days)	7.02	8.65	0.12
Mean days to resume diet (days)	2.58	3.29	0.16

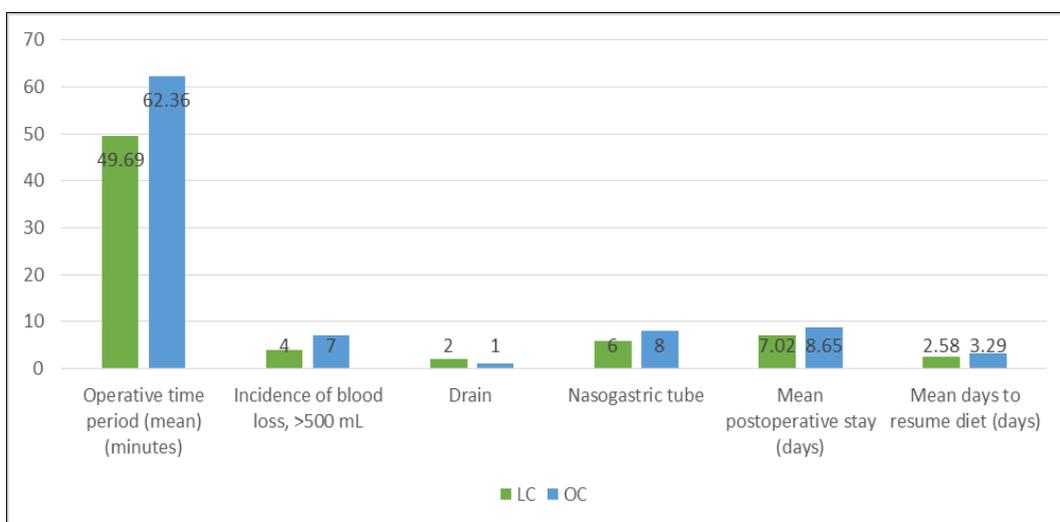


Fig 2: Post-operative parameters

Discussion

The prevalence of Cholelithiasis and the incidence of complications would be expected to increase with age, therefore biliary surgery is performed more frequently for elderly patients. There is no doubt that LC is the treatment of choice for elderly patients with symptomatic Cholelithiasis since the outcomes are better than those of OC in terms of lower morbidity rate and

shorter hospital stay. In the current study, we compared laparoscopic cholecystectomy with open cholecystectomy in patients with acute Cholecystitis. We observed that the mean operative time in OC is more as compared to LC. Similarly, the complication of blood loss was seen more in OC as compared to LC. The postoperative stay in hospital was more in OC as compared to LC. However, the results were seen to be

statistically non-significant. Similar results were seen by other authors. Roslyn JJ *et al.* evaluated, in a large, heterogeneous population, the outcome of open cholecystectomy as it is currently practiced. A population-based study was performed examining all open cholecystectomies performed by surgeons in an eastern and western state during a recent 12-month period. Data compiled consisted of a computerized analysis of Uniformed Billing (UB-82) discharge analysis information from all non-Veterans Administration (VA), acute care hospitals in California (Office of Statewide Planning and Development [OSHPD]) and in Maryland (Health Services Cost Review Commission [HSCRC]) between January 1 1989, and December 31, 1989. This data base was supplemented with a 5% random sample of Medicare UB-82 data from patients who were discharged between October 1, 1988, and September 30, 1989. Patients undergoing cholecystectomy were identified based on diagnosis-related groups (DRG-197 and DRG-198), and then classified by Principal Diagnosis and divided into three clinically homogeneous subgroups: acute Cholecystitis, chronic Cholecystitis, and complicated Cholecystitis. A total of 42,474 patients were analyzed, which represents approximately 8% of all patients undergoing cholecystectomy in the United States in any recent 12-month period. The overall mortality rate was 0.17% and the incidence rate of bile duct injuries was approximately 0.2%. The mortality rate was 0.03% in patients younger than 65 years of age and 0.5% in those older than 65 years of age. Mortality rate, length of hospital stay, and charges were all significantly correlated with age, admission status (elective, urgent, or emergent), and disease status. These data indicate that open cholecystectomy currently is a very safe, effective treatment for Cholelithiasis and is being performed with near zero mortality. The ultimate role of laparoscopic cholecystectomy needs to be defined in the context of current and contemporary data regarding open cholecystectomy. Sinha R *et al.* determined whether laparoscopic cholecystectomy (LC) should be the procedure of choice in treating acute Cholecystitis. A prospective study was conducted over a 4 1/2-year period. There were 187 patients with acute Cholecystitis out of 1020 patients with gallbladder disease who required cholecystectomy. These patients were divided into three groups based on the time interval between the onset of pain and the time patients sought medical attention: Group 1, < 3 days; Group 2, 3 to 7 days; Group 3, > 7 days. All the patients underwent LC after a comprehensive preoperative workup. The parameters analyzed included operating time, hospital stay, and conversion rate. The comparison was made among the various groups and with those who had elective LC. One hundred twenty patients (64.17%) presented for treatment within 3 to 7 days of the onset of an attack. Empyema of the gallbladder was seen in 106 (56.68%) patients and phlegm on of the gallbladder in 42 (22.46%) patients. Group 3 patients had an operative time of 56.2 min as opposed to 18.5 min in Group 1 and 17.5 min in the elective LC group. The conversion rate in Group 3 was 19.5% versus 3.8% in Group 1 and 3.48% in the elective LC group. The complication rate was 7.3% in Group 3, 3.8% in Group 1, and 3.7% in the elective LC group. They concluded that acute Cholecystitis is better managed by laparoscopic cholecystectomy, except in the patients presenting with a gallbladder phlegm on later than 7 days after the onset of the attack.^{7, 8}

Gourgiotis S *et al.* evaluated the safety, effectiveness, and complications of LC in all cases of acute Cholecystitis. A retrospective study involved the patients who underwent LC for acute Cholecystitis within 72 hours of admission. The

preoperative diagnosis was based on clinical, laboratory, and echo graphic examinations, while the final diagnosis was confirmed by histopathological examination of the excised gallbladder. They identified 184 patients with acute Cholecystitis. Intraoperative cholangiography (IOC) was not performed. Preoperative endoscopic retrograde Cholangiopancreatography (ERCP) was performed in 62 patients (33.7%), and postoperative ERCP in 13 patients (7.1%). Conversion to open cholecystectomy was necessary in 19 patients (10.3%); 16 patients for severe inflammation and adhesions and 3 patients because of uncontrolled bleeding. The mean operative time was 68 minutes. No deaths occurred. The overall complication rate was 6% with 3 postoperative bile leakages and 2 no biliious sub hepatic collections. The mean postoperative hospital stay was 2.8 days. They concluded that LC is a safe, effective procedure for the early management of patients with acute Cholecystitis. LC can be safely performed without routine IOC when ERCP is performed preoperatively on the basis of specific indications. Meticulous dissection and good exposure of CA lot's triangle may prevent bile duct injuries. Terho PM *et al.* identified risk factors for conversion of laparoscopic cholecystectomy and risk factors for postoperative complications in acute calculus Cholecystitis. A total of 499 consecutive patients, who had undergone emergent cholecystectomy with diagnosis of Cholecystitis in Meilahti Hospital in 2013–2014, were identified from the hospital database of the identified patients, 400 had acute calculus Cholecystitis of which 27 patients with surgery initiated as open cholecystectomy were excluded, resulting in 373 patients for the final analysis. The Clavien-Dindo classification of surgical complications was used. Laparoscopic cholecystectomy was initiated in 373 patients of which 84 (22.5%) were converted to open surgery. Multivariate logistic regression identified C-reactive protein (CRP) over 150 mg/l, age over 65 years, diabetes, gangrene of the gallbladder and an abscess as risk factors for conversion. Complications were experienced by 67 (18.0%) patients. Multivariate logistic regression identified age over 65 years, male gender, impaired renal function and conversion as risk factors for complications. They concluded that advanced Cholecystitis with high CRP, gangrene or an abscess increase the risk of conversion. The risk of postoperative complications is higher after conversion. Early identification and treatment of acute calculus Cholecystitis might reduce the number of patients with advanced Cholecystitis and thus improve outcomes^{9, 10}.

Conclusion

Within the limitations of the present study, it can be concluded that laparoscopic cholecystectomy has equal efficacy for acute Cholecystitis patients as compared to open cholecystectomy.

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