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Original Article

Comparative Analysis of Laparoscopic Cholecystectomy and Open Cholecystectomy in Elder Patients: A Retrospective Study

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***ABSTRACT*:**
Background: Surgery for cholelithiasis is more common in elderly patients as the incidence of gallstones increases with age longer life expectancies together with a higher incidence of gallbladder stones increasing in conjunction with increasing age has resulted in a greater number of elderly patients being operated on today for symptomatic gall-bladder stones. **Aim:** To compare laparoscopic cholecystectomy and open cholecystectomy in elder patients. **Materials and method:** We retrospectively viewed the medical records of patients aged 65 years or more with acute cholecystitis who underwent Laparoscopic cholecystectomy (LC) and were compared patients who underwent open cholecystectomy (OC). A total of 40 patients (20 each for LC and OC) were selected. The analysis of preoperative, intra-operative, and postoperative parameters was done and was compared. **Results:** The Male/Female ratio in LC and OC group was 12/8 and 9/11 respectively. The mean age of patients in LC group was 72.1±2.8 years and in OC group was 69.5±3.9 years. The mean body weight of LC and OC group was 63.8±9.3 Kg and 66.8±4.3 kg respectively. The history of previous surgery was present in 6 patients in LC group and 4 patients in OC group. The ASA physical status score 2 was seen in majority of patients in both the groups. The mean operative time period for LC was 91.3 minutes and for OC was 93.8 minutes. Blood looss more than 500 mL was seen in 3 patient for LC and 2 patients for OC. The nasogastric tube was employed in 4 patients in LC and 7 patients in OC. The mean postoperative stay after completion of procedure was 7.6 days for LC and 8.31 for OC. **Conclusion:** Laparoscopic cholecystectomy is safer procedure in comparison to open cholecystectomy. The postoperative stay at hospital was shorter with Laparoscopic cholecystectomy.
Keywords: Appendicitis, Cholecystectomy, Laparoscopy, Open surgery

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INTRODUCTION:

Laparoscopic cholecystectomy (LC) is the treatment of choice for symptomatic cholelithiasis and is also used to treat acute cholecystitis. Surgery for cholelithiasis is more common in elderly patients as the incidence of gallstones increases with age Longer life expectancies together with a higher incidence of gallbladder stones increasing in conjunction with increasing age has resulted in a greater number of elderly patients being operated on today for symptomatic gall-bladder stones.[1,2] Limited functional reserves and the presence of associated chronic comorbidities increase the operative morbidity and mortality of these patients. Although laparoscopic cholecystectomy has become the gold standard for the treatment of gallbladder stones, its safety in elderly patients is still questioned. Data from population-based studies suggest that 21% to 55% of geriatric patients in the United States are still subjected to open cholecystectomy.[3, 4] These figures largely derive from as-treated analyses; however they reflect a defensive operative position against this patient population, which commonly presents with acute or chronic recurrent cholecystitis, gallbladder empyema or hydrops. Although the role of laparoscopy in the treatment of a wide spectrum of gallbladder pathology has been well established,[5,6] this conservative surgical trend suggest that the outcomes of laparoscopic cholecystectomy in the geriatric patient population have been inadequately defined. Hence, the present study was planned to compare laparoscopic cholecystectomy and open cholecystectomy in elder patients.

MATERIALS AND METHOD:

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 viewed the medical records of patients aged 65 years or more with acute cholecystitis who underwent Laparoscopic cholecystectomy (LC) and were compared patients who underwent open cholecystectomy (OC). A total of 40 patients (20 each for LC and OC) were selected. 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 software for windows. The significance of the data was checked using Chi-square test and Student's t-test. A p-value<0.05 was predetermined to be statistical significant.

RESULTS:

A total of 40 elderly patients were included in the study. Out of 40 patients, 20 patients underwent Laparascopic cholecystectomy and 20 underwent open cholecystectomy. The surgical procedure for LC and OC were performed by experienced medical officers. **Table 1** shows the comparison of demographic data between LC group and OC group. The Male/Female ratio in LC and OC group was 12/8 and 9/11 respectively. The mean age of patients in LC group was 72.1±2.8 years and in OC group was 69.5±3.9 years. The mean body weight of LC and OC group was 63.8±9.3 Kg and 66.8±4.3 kg respectively. The history of previous surgery was present in 6 patients in LC group and 4 patients in OC group. The ASA physical status score 2 was seen in majority of patients in both the groups. The comparison of data between both groups showed non-significant difference for all variables (p>0.05). **Table 2** shows the comparison of postoperative parameters for both the groups. The mean operative time period for LC was 91.3 minutes and for OC was 93.8 minutes. Blood looss more than 500 mL was seen in 3 patient for LC and 2 patients for OC. The nasogastric tube was employed in 4 patients in LC and 7 patients in OC. The mean postoperative stay after completion of procedure was 7.6 days for LC and 8.31 for OC. The difference for nasogastric tube and mean postoperative stay was statistically significant with p-value less than 0.05 **[Fig 2]**.

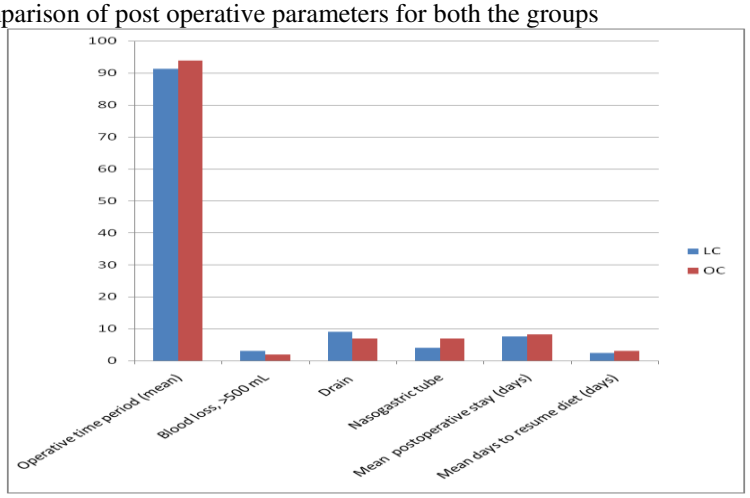
Table 1: Comparison of demographic variables for both groups

Variables	LC	OC	p-value
Sex (M/F)	12/8	9/11	0.42
Mean Age (years)	72.1±2.8	69.5±3.9	0.7
Mean Body weight (kg)	63.8±9.3	66.8±4.3	0.36
Previous surgery (n)	6	4	0.07
ASA physical status score			
1	4	1	0.06
2	10	12	0.71
3	4	6	0.32
4	2	1	0.8

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

Variables	LC	OC	p-value
Operative time period (mean)	91.3	93.8	0.31
Blood loss, >500 mL	3	2	0.23
Drain	9	7	0.41
Nasogastric tube	4	7	0.01*
Mean postoperative stay (days)	7.6	8.31	0.03*
Mean days to resume diet (days)	2.5	3.1	0.25

Figure 1: Showing comparison of post operative parameters for both the groups



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.[7]

In the current study, we compared laparoscopic cholecystectomy with open cholecystectomy in elderly patients. 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. Similar results were seen by other authors.

Chau CH et al studied the safety and efficacy of laparoscopic cholecystectomy for acute cholecystitis in elderly patients by comparing the results with open cholecystectomy. Patients aged 75 years or older undergoing laparoscopic cholecystectomy for acute cholecystitis between January 1994 and December 1999 were selected from the database. The comparison group comprised patients from the same age-group who underwent open cholecystectomy for acute cholecystitis during the same period. Thirty-one patients underwent laparoscopic surgery and 42 had open surgery. The demographic data and co-morbidities were comparable between the two groups. The postoperative hospital stay was significantly shorter for patients undergoing laparoscopy. The overall morbidity rate was significantly lower for patients undergoing laparoscopy. There was, however, no statistical significant difference in the mortality rate. There was no major bile duct injury for patients in either group. The authors concluded that laparoscopic cholecystectomy is a safe procedure for acute cholecystitis in elderly patients, resulting in fewer complications and shorter hospital stay than open cholecystectomy. Antoniou SA et al investigated the comparative effect of laparoscopic and open cholecystectomy in elderly patients. Laparoscopic cholecystectomy has induced a revolution in the treatment of gallbladder disease. Nevertheless, surgeons have been reluctant to implement the concepts of minimally invasive surgery in older patients. A systematic review of Medline was embarked on, up to June 2013. Studies which provided outcome data on patients aged 65 years or older, subjected to laparoscopic or open cholecystectomy were considered. Mortality, morbidity, cardiac and pulmonary complications were the outcome measures of treatment effect. The methodological quality of selected studies was appraised using valid assessment tools. The random-effects model was applied to synthesize outcome data. Out of a total of 337 records, thirteen articles (2 randomized and 11 observational studies) reporting on the outcome of 101559 patients (48195 in the laparoscopic and 53364 in the open treatment group, respectively) were identified. Odds ratios (OR) were constantly in favor of laparoscopic surgery, in terms of mortality, morbidity, cardiac and respiratory complications. Critical analysis of solid study data, demonstrated a trend towards improved outcomes for the laparoscopic concept, when adjusted for age and co-morbid diseases. Further high-quality evidence is necessary to draw definite conclusions, although best-available evidence supports the selective use of laparoscopy in this patient population.[8, 9]

Annamaneni RK et al evaluated the outcomes of laparoscopic cholecystectomy in elderly patients at a single institution. A retrospective chart review was conducted of all patients≥65 years of age who underwent laparoscopic cholecystectomy over a 5-year period (January 1995 to December 1999). Four-trocar site laparoscopic cholecystectomy using the open Hasson technique was performed in all patients. The demographic data (age, sex), associated comorbidities, American Society of Anesthesiologist's (ASA) score, postoperative morbidity, mortality, and length of stay were recorded for each patient. The patient cohort included 46 patients with a median age of 71 years (range, 65 to 87). Seventeen (37%) patients were ≤70 years of age, and twenty-nine (63%) patients were ≥70 years of age. Twenty-two (48%) patients had ASA scores of ≥3. Patient's ≥70 had significantly higher ASA scores. Eighteen patients ≥70 years had ASA ≥3 compared with 4 patients ≤70 with ASA≥3 ($P<0.05$). Twenty-two patients ≥70 and 8 patients ≤70 required urgent surgery $P<0.05$). Fifteen (33%) patients presented with acute cholecystitis, and 31 (67%) patients presented with a greater number of chronic symptoms. Four (9%) patients had pancreatitis on presentation, and 6 patients underwent preoperative endoscopic retrograde cholangiopancreatography (ERCP). Two of these 6 patients also underwent sphincterotomy. Urgent surgery was performed in 30 (65%) patients. The mean operative time was 103±37 (SD) minutes. One (2%) conversion to open cholecystectomy was required. The mean postoperative stay was 7 days (range, 1 to 46). Fourteen (30%) patients had only a 1-night postoperative stay. Patients ≥70 had significantly longer postoperative stays. Nine patients ≥70 and only 1 patient ≤70 stayed in the hospital for more than 7 days. Postoperative complications were noted in 6 (13%) patients, most of which were chest infections. Five patients ≥70 and only 1 patient ≤70 developed postoperative complications. No mortalities occurred. This was concluded that laparoscopic cholecystectomy is safe and feasible in elderly patients. Patients ≥70 years seem to have a longer postoperative stay and slightly more postoperative complications. Age alone should not be a contraindication to laparoscopic cholecystectomy in the elderly patient. Pessaux P et al determined the feasibility and the efficacy of laparoscopic cholecystectomy for acute cholecystitis in patients older than 75 years of age and to compare the results with those of open cholecystectomy. From January 1992 to December 1999, 139 patients older than 75 years of age underwent cholecystectomy for acute cholecystitis. The

two groups of patients with cholecystolithiasis included 50 patients who underwent laparoscopic cholecystectomy (group 1) and 89 patients who underwent open cholecystectomy (group 2). Group 1 consisted of 30 women and 20 men, with a mean age of 81.9 years (range, 75-98). Group 2 consisted of 51 women and 38 men, with a mean age of 81.9 years (range, 75-93). There was no difference in the American Society of Anesthesiologists classification in both groups. The length of the surgery (103.3 vs. 149.7 minutes), postoperative length of stay (7.7 vs. 12.7 days), and inpatient rehabilitation (15 vs. 42 patients) were significantly shorter in group 1 than in group 2. The postoperative morbidity rate was not different between the groups. There was no mortality in group 1, but four patients died in group 2 (P = 0.29). The conversion rate was 32% (n = 16) in group 1. In summary, laparoscopic cholecystectomy in elderly patients with acute cholecystitis is safe and effective. Laparoscopic cholecystectomy in elderly patients restores them to the best possible quality of life with the lowest cost to them physiologically.[10, 11]

CONCLUSION:

From the results of present study, we conclude that Laparoscopic cholecystectomy is safer procedure in comparison to open cholecystectomy. The postoperative stay at hospital was shorter with Laparoscopic cholecystectomy.

REFERENCES:

1. Feldman MG, Russell JC, Lynch JT, Mattie A. Comparison of mortality rates for open and closed cholecystectomy in the elderly: Connecticut statewide survey. J Laparoendosc Surg. 1994;4:165–172.
2. Lucier MR, Lee K. Trends in laparoscopic cholecystectomy in Indiana. Indiana Med. 1995;88:200–204.
3. Samkoff JS, Wu B. Laparoscopic and open cholecystectomy outcomes in Medicare beneficiaries in member states of the Large State PRO Consortium. Am J Med Qual. 1995;10:183–189.
4. Tucker JJ, Yanagawa F, Grim R, Bell T, Ahuja V. Laparoscopic cholecystectomy is safe but underused in the elderly. Am Surg. 2011;77:1014–1020.
5. Overby DW, Apelgren KN, Richardson W, Fanelli R. SAGES guidelines for the clinical application of laparoscopic biliary tract surgery. Surg Endosc. 2010;24:2368–2386.
6. Miura F, Takada T, Strasberg SM, Solomkin JS, Pitt HA, Gouma DJ, Garden OJ, Büchler MW, Yoshida M, Mayumi T, et al. TG13 flowchart for the management of acute cholangitis and cholecystitis. J Hepatobiliary Pancreat Sci. 2013;20:47–54.
7. Brunt LM, Quasebarth MA, Dunnegan DL, Soper NJ. Outcomes analysis of laparoscopic cholecystectomy in the extremely elderly. Surg Endosc 2001; 15: 700-705.
8. Chau CH, Tang CN, Siu WT, Ha JP, Li MK. Laparoscopic cholecystectomy versus open cholecystectomy in elderly patients with acute cholecystitis: retrospective study. Hong Kong Med J. 2002 Dec;8(6):394-9.
9. Antoniou SA, Antoniou GA, Koch OO, Pointner R, Granderath FA. Meta-analysis of laparoscopic vs open cholecystectomy in elderly patients. World Journal of Gastroenterology, 01 Dec 2014, 20(46):17626-17634.
10. Annamaneni RK, Moraitis D, Cayten CG. Laparoscopic Cholecystectomy in the Elderly. JSLS : Journal of the Society of Laparoendoscopic Surgeons. 2005;9(4):408-410.
11. Pessaux P, Regenet N, Tuech JJ, Rouge C, Bergamaschi R, Arnaud JP. Laparoscopic versus open cholecystectomy: a prospective comparative study in the elderly with acute cholecystitis. Surg Laparosc Endosc Percutan Tech. 2001 Aug;11(4):252-5.

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