

# Evaluation of Laparoscopic Cholecystectomy in the Elderly: An Experience in Tertiary Care Teaching Hospital

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## ABSTRACT

**Background:** Laparoscopic cholecystectomy is recognized as the gold standard for the surgical management of gallstone diseases.

**Materials and Methods:** Elderly ( $\geq 60$  years,  $n = 35$ ) and young ( $< 60$  years,  $n = 45$ ). Patients' demographics and operative details were analyzed. All patients were evaluated with abdominal ultrasonography and baseline investigations required for surgery.

**Results:** We observed 8.6% conversion to open surgery in elderly patients and 6.7% in young patients ( $P = 0.64$ ). Most common cause for conversion was failure to adequately visualize biliary tract anatomy & Calot's triangle due to intense fibrosis followed by uncontrolled intraoperative bleeding.

**Conclusion:** The laparoscopic cholecystectomy in elderly patients is comparable with young patients.

**Keywords:** Laparoscopic Cholecystectomy, Laparoscopy, Surgery.

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## INTRODUCTION

Gallstone disease is one of the most common surgical encounters. According to world literature, it occurs among 3-20% of the world population.<sup>1</sup> A gallstones survey suggested that the incidence of gallbladder (GB) stones is 7 times more common in Northern Indian than in Southern Indian population. Laparoscopic cholecystectomy is recognized as the gold standard for the surgical management of gallstone diseases. Surgery for cholelithiasis is more common in elderly patients as the incidence of gallstones increases with age (13–50%).<sup>2</sup> Age is one of the critical factors affecting the mortality and morbidity rates after cholecystectomy.<sup>3</sup> The use of a laparoscopic procedure in elderly patients may cause problems because comorbid conditions are very common with advanced age and may increase the postoperative complications and the frequency of conversion to open surgery.<sup>4</sup> It has been reported that laparoscopic cholecystectomy in the elderly has comparable safety and efficacy to those in younger populations.<sup>5</sup> However, no studies have been reported in developing countries on the elderly yet. The aim of this study is to evaluate the outcome of LC in the elderly as compared to young populations in tertiary care teaching hospital.

## MATERIALS AND METHODS

This present study was carried out in the Department of Surgery, Narayan medical college & Hospital, Jamuhar, Sasaram, Bihar

during the period from August 2018 to November 2019. Patients were divided into two groups based on age: elderly ( $\geq 60$  years,  $n = 35$ ) and young ( $< 60$  years,  $n = 45$ ). Patients' demographics and operative details were analyzed. All patients were evaluated with abdominal ultrasonography and baseline investigations required for surgery. Magnetic resonance cholangiopancreatography was performed only in selected patients with suspected choledocholithiasis or with dilated biliary duct in ultrasonography. Preoperative endoscopic retrograde cholangiopancreatography (ERCP) was utilized in patients with common bile duct stones. The timing of laparoscopic cholecystectomy in patients presenting with acute phase was after the resolution of symptoms. Most of these patients were treated conservatively, discharged, and readmitted for elective surgery. Perioperative antibiotic prophylaxis with second-generation cephalosporin was given to all patients. Laparoscopic cholecystectomy was performed by the standard four-port technique. We used the open technique to introduce a subumbilical cannula. We had monopolar electrocautery to dissect the gallbladder from the liver bed. We regularly put titanium clips for cystic duct and cystic artery ligations. Routine intraoperative cholangiography was not performed. A closed suction drain was put in selected cases according to need. Perioperative data including conversion rate, duration of surgery, postoperative complications, resumption of normal diet, and length of hospital

stay were recorded. Bilious drain with elevated bilirubin in the drain was defined as biliary leakage. Surgical site infection was defined according to surgical site infection (SSI) guidelines. Intra-abdominal abscess (IAA) was defined as culture positive purulent collection. The length of hospital stay was considered as the period from the first postoperative day until discharge from the hospital.

All continuous variables were expressed as median or mean and standard deviation which compared with independent *t*-test or Mann-Whitney test as feasible, according to the type of distribution. Chi-square test or Fisher's exact test was used for categorical values as appropriate. Statistical software SPSS version 20 was used for statistical analysis. A *P* value < 0.05 was considered statistically significant.

**RESULTS**

This present study was conducted in the Department of Surgery, Narayan medical college & Hospital, Jamuhar. A total of 80 patients undergoing laparoscopic cholecystectomy during the study period comprised 35 elderly patients and 45 young patients. All patients had symptoms of gallstone disease like fatty meal intolerance, belching and bloating, biliary colic, epigastric pain, and right upper quadrant pain with radiation to the infrascapular region. Patients' preoperative data are shown in Table 1. There were no significant differences in different preoperative variables except comorbidity (*P* < 0.05), when we compared these variables in elderly and young patients. We did not find significant differences in indications for laparoscopic cholecystectomy

between the groups, with the most frequent diagnosis of biliary colic for both groups as shown in Fig.-1.

We observed 8.6% conversion to open surgery in elderly patients and 6.7% in young patients (*P* = 0.64) as shown in Table 2. The most common cause for conversion was failure to adequately visualize the biliary tract anatomy and Calot's triangle due to intense fibrosis followed by uncontrolled intraoperative bleeding. The mean operative time was not different between groups, with an average of 51 (range: 32–92 min) minutes for the elderly and 51 (range: 41–98 min) minutes for the young group (*P* = 0.32) as shown in Table 2. No significant difference in complication rate for elderly and young patients (17.1 and 24.4%, *P* = 0.18) was observed. The most common complications were lower respiratory tract infection in the elderly and superficial thrombophlebitis in the young group (Table 2). Although there was no bile duct injury observed in our study, 1 patient in the elderly group and 1 patient in the young group had minor bile leak which was managed conservatively with ultrasonographic guidance tube drainage. No case of primary hemorrhage occurred in the elderly group and 1 occurred in the young group which was due to slippage of cystic artery ligature and was managed with reoperation and ligation of the bleeding cystic artery. There was no mortality in either of the groups. The median time to resumption of normal diet was not different between the groups, with an average of 1 day (1-2 days) for both groups (*P* = 0.27). The median length of hospital stay was also similar between the groups, with an average of 5 days (1–16 days) for the elderly and 5 days (1–16 days) for the young group (*P* = 0.24) as shown in Table 2.

**Table 1: Comparison of Preoperative data.**

Variable	Elderly (≥60 yrs, n = 35)	Young (<60 yrs, n = 45)
Age in years	64 (60–80)	43 (21–59)
Sex	Male	13(37.14)
	Female	22(62.85)
ASA	I	26(74.3)
	II	7(20.0)
	III	2(5.7)
	IV	0(0.0)
Comorbidity, %	12(34.3)	8(17.8)
Cardiovascular disease	2(5.7)	1(2.2)
Diabetes mellitus	4(11.4)	3(6.7)
Respiratory diseases	2(5.7)	1(2.2)
Renal disease	1(2.2)	1(2.2)
Hypertension	3(8.6)	2(4.4)
Neurological problems	1(2.2)	0(0.0)

**Table 2: Intraoperative and postoperative data.**

Variable	Elderly (n = 35)	Young (n = 45)
Operative time (min)	51 (32–92)	51 (41–98)
Operative time (>60 min)	16(45.7)	19(42.2)
Conversion to open cholecystectomy	3(8.6)	3(6.7)
Complications, %	LRTI	4(8.9)
	UTI	1(2.9)
	6(17.1);11(24.4)	0(0.0)
	Superficial thrombophlebitis	2(4.4)
	Intra-abdominal abscess	1(2.2)
	Hemorrhage	1(2.2)
	Bile leak	1(2.2)
	SSI	1(2.2)
Time to resumption of normal diet (days)	1(1-2)	1(1-2)
Length of hospital stay (days)	5(1-16)	5(1-16)

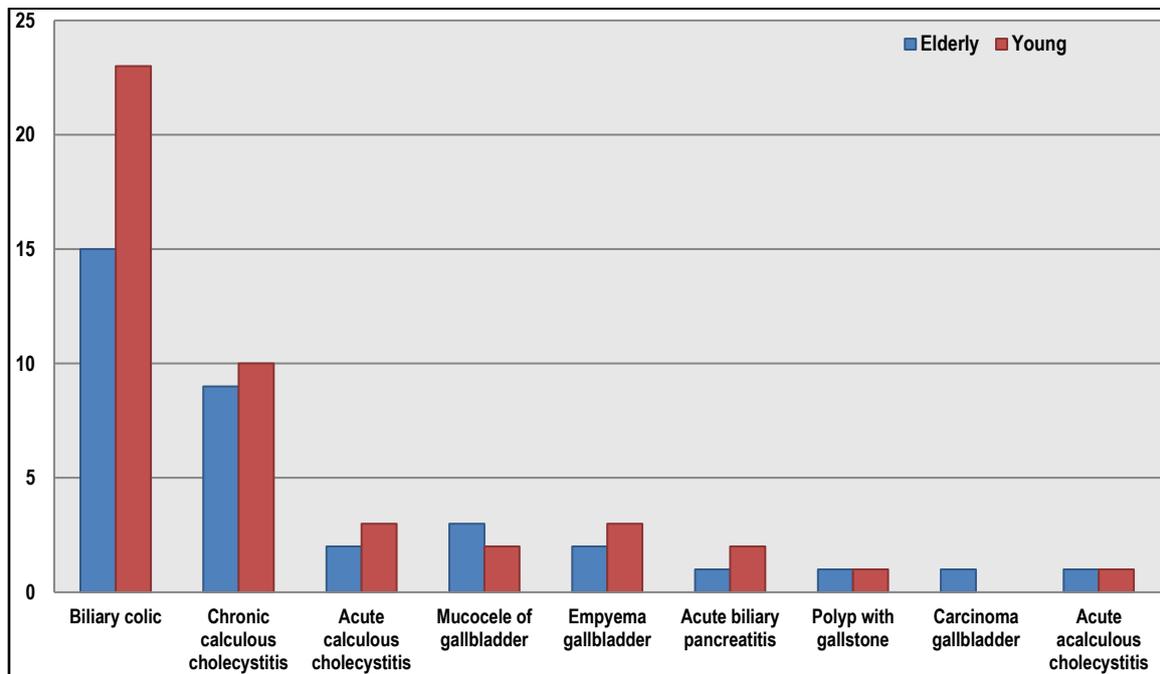


Fig. 1: Shows the Indications for laparoscopic cholecystectomy.

## DISCUSSION

Laparoscopic cholecystectomy (LC) causes less pain after surgery, shorter hospital stay, faster return to work activities and a lower metabolic-endocrine-immune response to trauma (REMIT).<sup>6</sup> This procedure has been the gold standard for elective cholecystectomy for the general population in the last two decades.<sup>7</sup> Elderly patients with biliary tract disease have higher rates of complications, which explains their higher mortality. LC could increase morbidity and mortality in the elderly, many of which have limited cardiopulmonary reserve. Although Behrman et al.<sup>8</sup> have not shown a higher incidence of hypotension and hypercarbia during the procedure in their series, they still recommend that LC be performed with caution in the elderly population, with a low threshold for conversion and considering open cholecystectomy (OC) as the initial indication. However, LC has demonstrated results superior to OC in elderly patients with symptomatic cholelithiasis in terms of morbidity and hospital stay.<sup>9</sup> There is variability in global practices for the treatment of this disease in the elderly, and social, physiological and pathological characteristics of the elderly population also differ greatly between regions. In Brazil, there are few studies on the subject.<sup>10</sup> When one considers the population we studied (patients from SUS - National Health System) and procedures performed in the public system teaching hospitals, researches are even scarcer. Shortage of skilled staff and training opportunities, repeated use of disposable operative instruments, and inadequacy of means to maintain equipment are common challenging tasks in limited resource settings. In addition to that, people frequently have poor access to health services because of poverty, poor transport facilities, and long distances in rural situations. Generally, our elderly patients doubt the safety and efficacy of the laparoscopic technique and cannot remark the exact benefit because of the lack of education, poor health knowledge, and social beliefs. Despite all, we believe that this is the first study in the developing world suggesting that laparoscopic cholecystectomy is safe in the elderly patients. Our results of laparoscopic cholecystectomy in elderly (aged 60 or above) patients are comparable with those

previously reported studies. The limitations of our study were the small elderly study population and the retrospective and single centered design. We could not include some data like patients' BMI, which was not mentioned in hospital records. We also acknowledge our limitation of not being able to compare outcomes of laparoscopic cholecystectomy with open cholecystectomy in the elderly patients. Hence, in order to validate our findings, further appropriately designed prospective studies are recommended especially in developing countries with limited resources. We emphasize that possible biases related to the retrospective study and the small number of patients involved must be taken into account when interpreting the results.

## CONCLUSION

These findings suggest that the laparoscopic cholecystectomy in elderly patients are comparable with young patients. Therefore, LC should be advised for elderly patients as an elective procedure safely as the intraoperative morbidity is similar to OC, whereas post-operative morbidity is much less in LC compared to the OC. Various advantages of LC as compared to OC even in the elderly can be cited after the study as less post-operative pain, less analgesics requirement, less derangement of pulmonary functions and thus fewer chest complications, less duration of hospital stay and better patient compliance.

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