

**ORIGINAL RESEARCH**

# Analysis of Laparoscopic Cholecystectomy in the Elderly Population: Study Conducted at a Tertiary Care Hospital of South India

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### ABSTRACT

**Background:** Laparoscopic cholecystectomy represents a highly effective and safe surgical approach for numerous patients suffering from symptomatic gallbladder stone diseases, establishing itself as the preferred treatment modality for cholelithiasis. Elderly individuals who have not undergone cholecystectomy following their initial presentation with symptomatic gallstones face the possibility of reappearing in emergency situations due to complications associated with gallstones. Hence, the present for evaluation of the outcomes of laparoscopic cholecystectomy in the elderly population. **Materials & Methods:** A total of 100 patients undergoing laparoscopic cholecystectomy (LC) were divided into two age groups: 65-75 years (Group A) and  $\geq 75$  years (Group B). Traditional four-port technique was used, with open conversion for complications. Preoperative assessment included blood tests, electrocardiography, and medical history review. Results were analyzed using SPSS software. **Results:** Mean age of patients of group A and group B was 71.9 years respectively. Majority proportion of patients of both the study groups were females. Mean surgical time among patients of group A and group B was 71.3 minutes and 75.1 minutes respectively. Mean blood loss among patients of group A and group B was 60.6 ml and 65.1 ml respectively. There was similar incidence of common bile duct injury, postoperative bleeding and postoperative ileus among both the study groups. **Conclusion:** Elderly patients with higher age were associated with conversion rate and higher incidence of surgical complications.

**Keywords:** Laparoscopic Cholecystectomy; Elderly; Gallbladder Stone.

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### INTRODUCTION

Laparoscopic cholecystectomy represents a highly effective and safe surgical approach for numerous patients suffering from symptomatic gallbladder stone diseases, establishing itself as the preferred treatment modality for cholelithiasis.<sup>1,2</sup> This minimally invasive technique has emerged as the standard surgical intervention for symptomatic cholelithiasis, characterized by reduced postoperative pain and expedited recovery due to its limited trauma during access, while still providing adequate exposure of the operative field. In fact, it offers enhanced visualization and access. However, there are instances where laparoscopic cholecystectomy may become challenging, leading to prolonged surgical times, particularly in cases involving bile leakage or stone spillage.<sup>3,4</sup>

Elderly individuals who have not undergone cholecystectomy following their initial presentation

with symptomatic gallstones face the possibility of reappearing in emergency situations due to complications associated with gallstones. Advances in preoperative, postoperative, and intensive care practices have contributed to enhanced safety outcomes for this demographic.<sup>5</sup> Consequently, the consideration of more intricate and aggressive surgical interventions has gained significance. Given the rising incidence of gallstone disease alongside the accelerating aging of the global population, the overall prevalence of gallstone disease is on the rise, leading to an anticipated increase in the demand for gallbladder surgeries in the foreseeable future.<sup>6,7</sup> Although often overlooked, the gallbladder can be influenced by a range of pathological conditions that exhibit distinct clinical implications. Changes resulting from cholecystitis may present similarly to dysplasia.<sup>8,9</sup> Hence; the present for evaluation of the

outcomes of laparoscopic cholecystectomy in the elderly.

### MATERIALS & METHODS

The present for evaluation of the outcomes of laparoscopic cholecystectomy in the elderly. A total of 100 patients who underwent LC were enrolled and were divided into two groups based on their age: group A (50 patients, 65 to 75 years) and group B (50 patients more than 75 years). All surgical procedures were conducted utilizing the traditional four-port laparoscopic cholecystectomy technique. Open conversion was necessitated in instances of significant adhesions, uncontrollable hemorrhage, and similar complications. Prior to surgery, each patient underwent a comprehensive preoperative assessment, which included blood chemistry analysis, electrocardiography, and a standard chest X-ray. Additionally, a thorough review of the patient's medical history was performed. The presence of diabetes and hypertension were specifically examined

as potential contributors to postoperative complications. Intraoperative bleeding was characterized as hemorrhage that could not be managed through laparoscopic techniques. All the results were recorded and analyzed using SPSS software. Chi-square test and student t test were used for evaluation of level of significance.

### RESULTS

Mean age of patients of group A and group B was 71.9 years respectively. Majority proportion of patients of both the study groups were females. Mean surgical time among patients of group A and group B was 71.3 minutes and 75.1 minutes respectively. Mean blood loss among patients of group A and group B was 60.6 ml and 65.1 ml respectively. There was similar incidence of common bile duct injury, postoperative bleeding and postoperative ileus among both the study groups. However, elderly patients with higher age were associated with conversion rate and higher incidence of surgical complications.

**Table 1: Preoperative variables**

Variable	Group A	Group B	p-value
Mean age (years)	71.9	79.2	0.010*
Males/Females	19/31	15/35	0.828
Mean total bilirubin (mg/dL)	1.86	1.53	0.337
Mean AST (U/L)	95.7	99.1	0.131
Mean ALT (U/L)	80.9	77.1	0.692

\*: Significant, AST: Aspartate aminotransferase; ALT: Alanine aminotransferase

**Table 2: Surgical time**

Surgical time (mins)	Group A	Group B
Mean	71.3	75.1
SD	5.9	6.7
p-value	0.120	

**Table 3: Blood loss**

Blood loss (ml)	Group A	Group B
Mean	60.6	65.1
SD	10.8	12.4
p-value	0.120	

**Table 4: Surgical complications**

Surgical complications	Group A	Group B	p-value
Conversion rate (%)	4	12	0.001*
Surgical complications (%)	6	14	0.001*
Common bile duct injury (%)	2	2	1
Postoperative bleeding (%)	0	2	0.96
Postoperative ileus (%)	2	0	0.96

\*: Significant

### DISCUSSION

Gallstones represent a prevalent condition frequently addressed by gastroenterologists in both small and large healthcare facilities. Acute cholecystitis (AC) is often observed in these settings, with laparoscopic cholecystectomy (LC) emerging as the preferred therapeutic approach. The benefits of LC compared to

open cholecystectomy encompass a shorter duration of hospitalization, diminished postoperative discomfort, and a reduction in both mortality and morbidity rates.<sup>8-10</sup>

Mean age of patients of group A and group B was 71.9 years respectively. Majority proportion of patients of both the study groups were females. Mean

surgical time among patients of group A and group B was 71.3 minutes and 75.1 minutes respectively. Mean blood loss among patients of group A and group B was 60.6 ml and 65.1 ml respectively. In a prior investigation conducted by Yetkin G et al., the potential benefits of laparoscopic cholecystectomy for elderly patients were examined. A total of 595 individuals were categorized into two distinct groups: those aged over 70 years (group A) and those under 70 years (group B). Group A was subsequently subdivided into three age brackets: 70 to 74 years, 75 to 79 years, and 80 years and older. The study noted a correlation between advancing age and increased ASA scores. Among patients whose surgical duration exceeded one hour, 26 individuals aged 70 and above, alongside 152 individuals aged 69 and below, exhibited no significant differences in PaCO<sub>2</sub> and pH levels. Notably, in the cohort aged 80 years and older, there was a marked increase in the incidence of acute cholecystitis, the necessity for conversion to open surgery, and postoperative complications compared to the other age groups. The authors concluded that laparoscopic surgery can be performed safely in elderly patients without substantially elevating surgical risks.<sup>11</sup>

There was similar incidence of common bile duct injury, postoperative bleeding and postoperative ileus among both the study groups. However; elderly patients with higher age were associated with conversion rate and higher incidence of surgical complications. Perioperative outcomes of laparoscopic cholecystectomy between the elderly ( $\geq 60$  years old) and the young ( $< 60$  years old) was compared in a previous study conducted by Bhandari TR et al. A retrospective analysis was conducted on the medical records of 78 elderly patients (aged 60 years and above) and 164 younger patients (under 60 years) who underwent laparoscopic cholecystectomy. The median ages recorded were 65 years for the elderly cohort and 45 years for the younger cohort. The majority of the patients were female. The study found no significant differences in the conversion rates, postoperative complications, or length of hospital stay, which averaged four days for both groups. Additionally, there were no reported fatalities in either group. The outcomes of laparoscopic cholecystectomy in elderly patients were found to be comparable to those in their younger counterparts. Therefore, laparoscopic cholecystectomy is safe even in the elderly population.<sup>12</sup>

Shin MS et al evaluated the effects of thorough preoperative assessment and consultation for complications on clinical outcomes in elderly patients over 65 and over 80 years. A retrospective analysis was conducted involving 205 patients diagnosed with acute cholecystitis. The participants were categorized into three distinct age groups: group A (individuals under 65 years), group B (individuals aged 65 to 79 years), and group C (individuals over 79 years). The study revealed no significant differences in

complication rates across the various age groups. Among the patients, open conversion was necessary for eight out of 114 individuals in group A, seven out of 70 in group B, and one out of 21 in group C; however, these findings did not reach statistical significance. Additionally, there were no notable differences in the timing of meals or the duration from surgery to the final follow-up visit, although groups B and C experienced longer hospital stays post-surgery. The results suggested that when adequate preoperative evaluation and management are conducted, the rates of complications and conversions do not significantly vary among the different age cohorts.<sup>13</sup>

## CONCLUSION

Elderly patients with higher age were associated with conversion rate and higher incidence of surgical complications.

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