

# Laparoscopic cholecystectomy in the elderly: An experience at a tertiary care hospital in Eastern Nepal

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## Abstract

**Background:** The prevalence of laparoscopic cholecystectomy in Nepal ranges from 2.44% to 6.45%. The prevalence of gallstones increases with age. Age is considered to be one of the major risk factors in determining the results of morbidity and mortality during laparoscopic cholecystectomy. Laparoscopic cholecystectomy is the gold standard modality for the management of gallstones.

**Objectives:** The aim of this study was to determine the clinical outcome of laparoscopic cholecystectomy in the elderly.

**Methods:** This was a descriptive cross-sectional observational study done after ethical clearance. Retrospective data were included of all the patients' aged  $\geq 60$  years who underwent laparoscopic cholecystectomy at Nobel Medical College Teaching Hospital, Biratnagar, Morang, Nepal from 2021 July to 2022 June using convenience sampling. Data were entered in Microsoft Excel Sheet and descriptive findings are presented.

**Results:** A total of 1688 laparoscopic cholecystectomies were performed during the study duration. Consecutively, 250 elderly patients who underwent were included in the study. The mean age of the elderly was 67.88 years. The incidence of the elderly at the institute was 26.7% (452/1688). In the present study, 95 (38%) elderly patients had some kind of comorbidities. Isolated intraoperative complications were seen in 26 (10.4%) patients. Post-operative complications were seen in 53 (21.2%) patients. The need to convert laparoscopic cholecystectomy to open cholecystectomy was observed in 3 (1.2%).

**Conclusion:** For the elderly, laparoscopic cholecystectomy is a safe and reliable modality. They benefit from this mode of treatment without increasing the risk of surgery.

**Key words:** Cholelithiasis; Elderly; Gall bladder; Laparoscopic cholecystectomy.

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## INTRODUCTION

The prevalence of cholelithiasis in western Europe ranges from 5.9% to 21.9%,<sup>1</sup> whereas its prevalence in Nepal ranges from 2.44% to 6.45%.<sup>2</sup> The prevalence of gall bladder (GB) stones increases with age.<sup>3</sup> Its prevalence increases from 8% in the young population to more than 50% in people older than 70 years.<sup>4</sup> The elderly have been found to have a higher risk of developing complications related to gallstones.<sup>5</sup> Started first by Philip Mouret in 1987, laparoscopic cholecystectomy (LC) has been described as an effective and safer modality for the management of cholecystectomy.<sup>6</sup> With advancements in the field of laparoscopic skill and technology, the perioperative complications have decreased, as has the incidence of open cholecystectomy (OC). Despite advances, the elderly still have a higher



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risk of perioperative complications.<sup>7</sup> Age is considered to be one of the major risk factors in determining the results of morbidity and mortality during laparoscopic cholecystectomy.<sup>8</sup> As a result, understanding the incidence and manner of complications that arise in the elderly during the procedure of laparoscopic cholecystectomy is critical. The aim of this study was to determine the clinical outcome of LC in the elderly.

## METHODOLOGY

This was a descriptive, cross-sectional (observational) study done by collecting data retrospectively of 2021 July to 2022 June. All patients'  $\geq 60$  years of age that underwent LC at Nobel Medical College Teaching Hospital, Biratnagar, Morang, Nepal were included in the study. The LC technique used is four ports standard LC.

Variables like age, gender, comorbidities, indications, radiological findings, total leukocyte count, liver function test, hospital stay, complications, intraoperative difficulties, American Society of Anaesthesiologists (ASA) gradings, symptoms, and conversion to open cholecystectomy were studied.

Assuming that 32% of the elderly in the population undergo LC,<sup>9</sup> the study would require a sample size of 250 to estimate the expected proportion with 5% absolute precision and 95% confidence. Convenience sampling technique was used for data collection after ethical approval from institutional review committee of Noble Medical College (Ref. 635/2022). The data were entered in Microsoft Excel Sheet and descriptive analysis has been done.

## RESULTS

A total of 1688 LC were performed during the study duration. Among them, 452 patients were elderly. Out of 452 elderly patients, 250 patients were included in the study by convenience sampling. The incidence of LC in the elderly at this institute was 26.7% (452/1688). The mean age of the elderly was 67.88 years. Males comprised 79 (31.6%) of total cases (Table 1). ASA grade 3 or 4 was seen in 54 (21.6%) cases. Laparoscopic cholecystectomy was indicated for biliary colic in 94 (37.6%) patients (Table 2).

In the present study, 95 (38%) elderly individuals had some kind of comorbidity, and 62% of the patients did not have any of the comorbidities. In the study, 27 (10.8%) patients had diabetes mellitus, whereas hypertension was seen in 72 (28.8%) patients. In the study, 21 (8.4%) of the patients had multiple comorbidities (Table 3). Isolated intraoperative complications were seen in 26 (10.4%)

patients, whereas a few complications like haemorrhage were seen together with other co-locations as well.

The need to convert LC to open cholecystectomy was observed in 3 (1.2%) patients (Table 4). Post-operative complications were seen in 53 (21.2%) patients (Table 5). The main indications for conversion to open were severe adhesion in two patients and uncontrolled bleeding in one patient. The mean duration of hospital stay in cases with complications was five days, whereas for those without any complications it was three days. There was no mortality seen during the study period among the elderly patients undergoing LC.

**Table 1: Distribution according to age**

Age group (years)	Male (Frequency)	Female (Frequency)
60-74	69	143
75-89	9	24
$\geq 90$	1	4

**Table 2: Distribution according to indications of laparoscopic cholecystectomy**

Indications	Frequency (Percent)
Biliary colic	94 (37.6)
Chronic calculous cholecystitis	107 (42.8)
Acute calculous cholecystitis	27 (10.8)
Mucocele of GB	12 (4.8)
GB polyp	4 (1.6)
Empyema GB	6 (2.4)

**Table 3: Distribution according to comorbidities**

Comorbidity	Frequency (Percent)
Diabetes mellitus	27 (10.8)
Respiratory disease	9 (3.6)
Renal disease	5 (2)
Hypertension	72 (28.8)
Neurological problem	3 (1.2)
None	155 (62)

**Table 4: Intraoperative complications**

Complications	Frequency (Percent)
Bile duct injury	1 (0.4)
Bile leak	4 (1.6)
Haemorrhage	17 (6.8)
Conversion to OC	3 (1.2)
Arrhythmia	5 (2)
Carbon dioxide narcosis	1 (0.4)

**Table 5: Post-operative complications**

Post-operative complications	Frequency (Percent)
Surgical site infection (SSI - port site)	5 (2)
Urinary retention	20 (8)
Chest infection	7 (2.8)
Urinary tract infection	18 (7.2)
Thrombophlebitis	2 (0.8)
Deep vein thrombosis	1 (0.4)

## DISCUSSION

Laparoscopic cholecystectomy has been shown to be the gold-standard treatment for gallstone diseases. LC provides a shorter hospital stay and earlier return to daily activities. Such a positive aspect of LC is especially required for elderly patients.<sup>10</sup> As it is well known that the elderly are at significant risk during the post-operative period because of their comorbidities. Preoperative assessment of various comorbidities is crucial.<sup>11</sup> In the current study, 95 (38%) had comorbidities. Hypertension was the most common, whereas diabetes mellitus (DM) was the second most common. A significant number of the patients had multiple comorbidities. In a study by Bhandari et al.,<sup>12</sup> 35.9% had some sort of comorbidity, and DM was the most common (11.5%). The most common indication in current study was chronic calculus cholecystitis (107, 42.8%), followed by biliary colic (94, 37.6%), which is in accordance with the study by Bhandari et al.<sup>12</sup> where chronic calculus cholecystitis was most common (25.6%). Intraoperatively surgeons have to face some challenges in some of the cases which is mainly due to the age factors. In this settings, distorted anatomy because of severe adhesion led to conversion to open. This challenges has been reported in literature also that elderly patients suffer from repeated inflammation, resulting in adhering to the surrounding structures, rendering laparoscopic surgery difficult.<sup>13</sup>

In a study by Yetkin,<sup>13</sup> post-operative complications were 13.2%, whereas, in the present study, 26 (10.4%) had some kind of post-operative complications. Carbon dioxide pneumoperitoneum has harmful intraoperative circulatory and ventilatory effects during LC. Such an effect will be deleterious for patients with ASA grades 3 and 4.<sup>14,15</sup> The carbon dioxide narcosis was seen in one patient with ASA grade 3 in the present study. He was managed conservatively in the intensive care unit. In a study by Genc et al.<sup>16</sup> the conversion rate to open was 3.16%, whereas in this study it was seen in three (1.2%). The main indication for conversion to open in a study by Genc et al.<sup>16</sup> was severe adhesion and fibrosis of Calot's triangle. Similar indications were noticed in present study as well. Morbidity and mortality for laparoscopic cholecystectomy in the elderly range from 5% to 15% and 0% to 1%, respectively.<sup>8,17</sup> There was no mortality during this study duration. Bradycardia is well established complication of laparoscopy.<sup>18-19</sup> Peritoneal stretch due to insufflation leads to increase in vagal tone.<sup>20</sup> The risk of developing bradycardia during laparoscopy increases with coexisting comorbidities which is more prevalent in elderly patients.<sup>21,22</sup> In a study by Qureshi et al.,<sup>21</sup> four percent of the patient undergoing LC developed arrhythmias where as in this study is seen in 2%.

## CONCLUSION

Laparoscopic techniques have replaced many common surgical procedures even in elderly. For the elderly, laparoscopic cholecystectomy is a safe and reliable modality. They benefit from this mode of treatment without increasing the risk of surgery.

**Conflict of interest:** None

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