

## ORIGINAL RESEARCH

# Assessment of Efficacy of Laparoscopic Cholecystectomy in Comparison to Open Cholecystectomy

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## ABSTRACT

**Background:**The present study was conducted for assessing efficacy of laparoscopic cholecystectomy in comparison to open cholecystectomy.

**Materials & methods:**A total of 200 Cholecystectomy patients were enrolled. Inclusion criteria for the present study included 200 patients undergoing cholecystectomy for symptomatic cholecystitis due to cholelithiasis irrespective of age or gender. These patients were evaluated in the hospital and after evaluation are put in two groups based on open cholecystectomy and laparoscopic cholecystectomy. These patients were followed for a period of 6 months after discharge for any complications. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software.

**Results:**Mean intraoperative blood loss among the patients of the LC group and OC group was 89.13 ml and 123.1 ml respectively. Significant results were obtained while comparing the mean intraoperative blood loss among the patients of the LC group and OC group. Mean duration of postoperative pain among patients of LC group was 14.3 hours and was significantly lower in comparison to the patients of the OC group (23.1 hours). While comparing statistically, it was seen that incidence of postoperative complications was significantly higher among the patients of the OC group.

**Conclusion:**Laparoscopic cholecystectomy is an easy to perform, has low complication rates as compared to open cholecystectomy.

**Key words:** Laparoscopic cholecystectomy, Gallstones, Open cholecystectomy

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## INTRODUCTION

Gallbladder is an accessory organ of the digestive tract, storing and concentrating bile between meals. In response to feeding, the gallbladder contracts and releases bile into the small intestine. Gallstone disease is a worldwide medical problem, but the incidence rates show substantial geographical variation, with the lowest rates reported in African populations. Cholelithiasis has been described as a disease of civilization. Gallstones are becoming increasingly common; they are seen in all age groups, but the incidence increases with age; and about a quarter of women over 60 years will develop them.<sup>1-3</sup> Since most gallstones are asymptomatic, it is

essential to define exactly which symptoms are caused by gallstones: true biliary pain and/or complications, versus nonspecific abdominal complaints including dyspepsia. Gallstone-associated pain seems to follow a certain pattern in most patients. Laparoscopic cholecystectomy is a minimally invasive surgical procedure for removal of a diseased gallbladder. With the advent of laparoscopic cholecystectomies, the indications to perform an open cholecystectomy have decreased. The most common instance that an open cholecystectomy is performed is when converting from a laparoscopic to open cholecystectomy. This change is made for a variety of reasons.<sup>4-6</sup> Differences in primary

outcomes like mortality and complication proportions are important reasons to choose one of the two operative techniques. When these primary outcomes show no significant difference, then secondary outcomes like non-severe complications, pulmonary outcomes, differences in health status related quality-of-life, hospital stay, and differences in cost-effectiveness analysis should help decide which technique is superior.<sup>6-8</sup>Hence; the present study was conducted for assessing efficacy of laparoscopic cholecystectomy in comparison to open cholecystectomy.

### MATERIALS & METHODS

The present study was conducted for assessing efficacy of laparoscopic cholecystectomy in comparison to open cholecystectomy. A total of 200 Cholecystectomy patients were enrolled. Inclusion criteria for the present study included 200 patients undergoing cholecystectomy for symptomatic cholecystitis due to cholelithiasis irrespective of age or gender. These patients were evaluated in the hospital and after evaluation are put in two groups based on open cholecystectomy and laparoscopic cholecystectomy. These patients were followed for a period of 6 months after discharge for any complications. Patients opting for laparoscopic cholecystectomy are explained the possibility of conversion to open cholecystectomy. Complete demographic details of all the patients were obtained. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software.

### RESULTS

A total of 200 patients scheduled to undergo cholecystectomy were enrolled and were broadly divided into two study groups as follows:LC Group: 100 patients undergoing laparoscopic cholecystectomy, andOC group: 100 patients undergoing open cholecystectomy.Mean age of the patients of the LC group and OC group was 46.2 years and 44.9 years respectively. Both the groups were comparable in terms of age-wise distribution of patients. 88 percent of the patients of LC group and 84 percent of the patients of the OC group were females while the remaining were males. Both the groups were comparable in terms of gender-wise distribution of patients. Mean duration of surgery among patients of LC group was 66.11 minutes and was significantly higher in comparison to the patients of the OC group (45.36 minutes). Mean intraoperative blood loss among the patients of the LC group and OC group was 89.13 ml and 123.1 ml respectively. Significant results were obtained while comparing the mean intraoperative blood loss among the patients of the LC group and OC group. Mean duration of postoperative pain among patients of LC group was 14.3 hours and was significantly lower in comparison to the patients of the OC group (23.1 hours). While comparing statistically, it was seen that incidence of postoperative complications was significantly higher among the patients of the OC group.

**Table 1: Duration of surgery**

Duration of surgery (minutes)	LC group	OC group
Mean	66.11	45.36
SD	12.11	8.13
p- value	0.000 (Significant)	

**Table 2: Postoperative pain**

Duration of Postoperative pain (hours)	LC group	OC group
Mean	14.3	23.1
SD	1.88	2.11
p- value	0.000 (Significant)	

### DISCUSSION

Surgical treatment of symptomatic gallstone disease has changed in the past decade since the introduction of laparoscopy. Elective laparoscopic cholecystectomy has almost replaced the conventional open procedure, and various studies have confirmed its safety and efficacy. In the early years of minimally invasive surgery acute cholecystitis was considered to be a relative contraindication to laparoscopic cholecystectomy because of the potential risks of severe complications owing to distorted anatomy caused by acute inflammation. However, randomized studies over the

past few years have now proven this fear to be exaggerated. Laparoscopic cholecystectomy for acute cholecystitis is safe, with mortality rates similar to those described in the era of open surgery.<sup>9,10</sup>Laparoscopic surgery has induced a tremendous revolution in the treatment of gallbladder disease. Surgery has been traditionally considered the last therapeutic resort for symptomatic cholelithiasis before the advent of laparoscopy, whereas lithotripsy and cholecystectomy have been commonly favored as less invasive alternatives. In the era of minimally invasive surgery, indications for surgery have become more liberal,

resulting in an enormous rise in the number of laparoscopic cholecystectomies performed annually. The laparoscopic procedure has been shown to offer the advantages of decreased pain, shorter convalescence, reduced operative stress and limited inflammatory response.<sup>10, 11</sup>Hence; the present study was conducted for assessing efficacy of laparoscopic cholecystectomy in comparison to open cholecystectomy. A total of 200 patients scheduled to undergo cholecystectomy were enrolled and were broadly divided into two study groups as follows: LC Group: 100 patients undergoing laparoscopic cholecystectomy, and OC group: 100 patients undergoing open cholecystectomy. Mean age of the patients of the LC group and OC group was 46.2 years and 44.9 years respectively. Both the groups were comparable in terms of age-wise distribution of patients. 88 percent of the patients of LC group and 84 percent of the patients of the OC group were females while the remaining were males. Both the groups were comparable in terms of gender-wise distribution of patients. Mean duration of surgery among patients of LC group was 66.11 minutes and was significantly higher in comparison to the patients of the OC group (45.36 minutes). In a previous study conducted by Kumar BR et al, authors compared open and laparoscopic cholecystectomy on the basis of duration of the procedure, intra and post-operative complications, and duration of hospital stay at our tertiary care hospital. Patients were randomly divided into two groups as open cholecystectomy (30 patients) and laparoscopic cholecystectomy (30 patients). The primary outcome measured were mortality, major complications (intraoperative bleeding, bile duct injuries). Most common age group in both groups was 40 -59 years. Female (78%) were more than male patients (22%). Male to female ratio was 1:3.61. Mean duration required for open cholecystectomy was  $53.11 \pm 12.56$  minutes, was more than laparoscopic cholecystectomy duration  $38.27 \pm 6.29$  minutes and difference was statistically significant. 2 (3%) laparoscopic procedures required conversion to open surgery due to obscured vision. Laparoscopic cholecystectomy had better results than open cholecystectomy in terms of post- op pain (VAS > 4), duration of hospital stay and return to work and difference was statistically significant. Wound infection was significantly more in open cholecystectomy patients. Postoperative ileus and intra operative bleeding were noted in both groups. 1 patient had bile duct injury during laparoscopic cholecystectomy. 1 patient from open cholecystectomy had wound dehiscence. No severe morbidity or any mortality noted during study period. Laparoscopic cholecystectomy offers definitive advantages (e.g. shorter duration of surgery, less intra and post-operative complications, less analgesic use, early discharge and mobilisation) over

open cholecystectomy in acute cholecystitis.<sup>11</sup>Pateria A et al evaluated and compared open versus laparoscopic cholecystectomy. 100 subjects divided in two groups based on modality employed. The operative and post-operative parameters were noted and presented. The study displayed that the advent of post-operative complications as well as hospital stay duration was higher in traditional laparoscopic cholecystectomy cases. The study reiterated the long-known fact that laparoscopic surgeries in gall stones is favorable from the patient perspective but is riddled with unavailability due to financial and infrastructure-based concerns.<sup>12</sup>In the present study, mean intraoperative blood loss among the patients of the LC group and OC group was 89.13 ml and 123.1 ml respectively. Significant results were obtained while comparing the mean intraoperative blood loss among the patients of the LC group and OC group. Mean duration of postoperative pain among patients of LC group was 14.3 hours and was significantly lower in comparison to the patients of the OC group (23.1 hours). While comparing statistically, it was seen that incidence of postoperative complications was significantly higher among the patients of the OC group. Kumar V et al compared conventional cholecystectomy and laparoscopic cholecystectomy with respect to duration of procedure, complications, postoperative pain, analgesic requirement and period of hospital stay. This study consists of 52 patients who have undergone gallbladder removal in GMC Budaun. 26 patients who have undergone laparoscopic cholecystectomy and 26 patients who have undergone open cholecystectomy for a study period of one year have been taken into the study. The overall percentage of complications is lesser in laparoscopic surgery than open surgery, The VAS was median grade 2 in LC group as compared to median grade 4 in LC group. The NSAID'S were used for more days in OC group compared to LC group, 23 patients who underwent laparoscopic cholecystectomy were discharged before 5 days. All patients who underwent OC stayed >5 days in hospital.<sup>13</sup>Kurtulus I et al compared the effectiveness of laparoscopic partial cholecystectomy (LPC) and open partial cholecystectomy (OPC). The data of 4712 patients who underwent laparoscopic cholecystectomy between 2012 and 2020 were reviewed. A total of 98 patients who had partial cholecystectomy were included in the study. Patients were examined in two groups according to whether the procedure was open or laparoscopic. The first group of patients was named the OPC group (n = 52), and the second group of patients was the LPC group (n = 46). The mean operative time and the postoperative hospital stay, respectively, were 118.2 minutes and 4.8 days in the OPC group, and 87.3 minutes and 2.55 days in the LPC group (P < .005 and P = .005). It was found that wound infection decreased by 83.1% (P = .026; odds ratio [OR] = 0.169) in the LPC

group compared with the OPC group, and the probability of developing incisional hernia decreased by 81.1% ( $P = .014$ ;  $OR = 0.189$ ). At least one complication was observed in 17 patients in the OPC group and in 7 patients in the LPC group ( $P = .045$ ). The probability of developing complications in any patient was 63% lower in the LPC group ( $P = .049$ ;  $OR = 0.370$ ). The indications that cause the surgeon to perform partial cholecystectomy are inherently open to complications, regardless of the surgical technique used.<sup>14</sup>

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## CONCLUSION

Laparoscopic cholecystectomy is an easy to perform, has low complication rates as compared to open cholecystectomy.

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