

## Original Research Article

## Comparative Study of Laparoscopic Vs. Open Cholecystectomy in Patients at a Tertiary Care Hospital

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**Abstract**

**Background:** Laparoscopic surgery has induced a tremendous revolution in the treatment of gallbladder disease. Laparoscopic cholecystectomy (LC) has become a popular alternative to open cholecystectomy (OC) in the treatment of acute cholecystitis (AC). Hence; the present study was conducted for comparing the effectiveness of Laparoscopic vs. Open Cholecystectomy. **Materials & Methods:** A total of 50 patients schedule to undergo laparoscopic cholecystectomy and 50 patients schedule to undergo open laparoscopic cholecystectomy were enrolled. Complete demographic and clinical details of all the patients were obtained. Patients with stones in the gallbladder proven by cholecystography and/or ultrasonography, at least one attack of severe upper abdominal pain and who were generally considered fit for elective cholecystectomy were included in the study. All the surgical procedures were performed under the hand of skilled and experienced surgeon. Follow-up details were recorded and compared. All the results were recorded and analysed by SPSS software. **Results:** Mean operative time among the patients of the LC group was 86.3 minutes while that of OC group was 65.1 minutes. Significant results were obtained while comparing the mean operative time among the two study groups. Mean hospital stay among the patients of the LC group was 1.2 days while that of OC group was 3.8 days minutes. Significant results were obtained while comparing the mean hospital stay among the two study groups. Postoperative complications were seen in 5 patients of the LC group and 11 patients of the OC group. **Conclusion:** Laparoscopic cholecystectomy is a safe procedure for acute cholecystitis, resulting in fewer complications and shorter hospital stay than open cholecystectomy.

**Key words:** Cholecystectomy, Open, Laparoscopic.

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**Introduction**

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 cholecystostomy have been commonly favored as less invasive alternative. 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. Laparoscopic cholecystectomy (LC) has become a popular alternative to open cholecystectomy (OC) in the treatment of acute cholecystitis (AC). Laparoscopic cholecystectomy (LC) is now considered the gold standard of therapy for symptomatic cholelithiasis and chronic cholecystitis[1-3].

Hence; the present study was conducted for comparing the effectiveness of Laparoscopic vs. Open Cholecystectomy.

**Materials & methods**

The present study was conducted in Department of General Surgery, Shri Shankaracharya Institute of Medical Sciences, Bhilai, Chhattisgarh (India) for comparing the effectiveness of Laparoscopic vs. Open Cholecystectomy. A total of 50 patients schedule to undergo laparoscopic cholecystectomy and 50 patients schedule to undergo open laparoscopic cholecystectomy were enrolled.

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Complete demographic and clinical details of all the patients were obtained. Patients with stones in the gallbladder proven by cholecystography and/or ultrasonography, at least one attack of severe upper abdominal pain and who were generally considered fit for elective cholecystectomy were included in the study. All the surgical procedures were performed under the hand of skilled and experienced surgeon. Follow-up details were recorded and compared. All the results were recorded and analysed by SPSS software. Chi-square test and student t test were used for evaluation of level of significance.

**Results**

Mean age of the patients of the LC group and OC group was 43.5 years and 45.8 years respectively. There were 18 males and 32 males in LC group while there were 15 males and 35 females in OC group. Mean operative time among the patients of the LC group was 86.3 minutes while that of OC group was 65.1 minutes. Significant results were obtained while comparing the mean operative time among the two study groups. Mean hospital stay among the patients of the LC group was 1.2 days while that of OC group was 3.8 days minutes. Significant results were obtained while comparing the mean hospital stay among the two study groups. Postoperative complications were seen in 5 patients of the LC group and 11 patients of the OC group.

Table 1: Demographic data

| Variable         | LC group | OC group |
|------------------|----------|----------|
| Mean age (years) | 43.5     | 45.8     |
| Males (n)        | 18       | 15       |
| Females (n)      | 32       | 35       |

Table 2: Comparison of mean operative time

| Operative time (minutes) | LC group            | OC group |
|--------------------------|---------------------|----------|
| Mean                     | 86.3                | 65.1     |
| SD                       | 12.8                | 10.4     |
| p- value                 | 0.000 (Significant) |          |

**Table 3: Comparison of hospital stay**

| Hospital stay (days) | LC group            | OC group |
|----------------------|---------------------|----------|
| Mean                 | 1.2                 | 3.8      |
| SD                   | 0.8                 | 1.6      |
| p- value             | 0.010 (Significant) |          |

**Table 4: Comparison of postoperative complications**

| Postoperative complications | LC group | OC group |
|-----------------------------|----------|----------|
| Number                      | 5        | 11       |
| Percentage                  | 10       | 22       |
| p- value                    | 0.48     |          |

## Discussion

Laparoscopic cholecystectomy is a minimally invasive surgical procedure for removal of a diseased gallbladder. This technique essentially has replaced the open technique for routine cholecystectomies since the early 1990s. At this time, laparoscopic cholecystectomy is indicated for the treatment of cholecystitis (acute/chronic), symptomatic cholelithiasis, biliary dyskinesia, acalculous cholecystitis, gallstone pancreatitis, and gallbladder masses/polyps. These indications are the same for an open cholecystectomy. Cases of gallbladder cancers are usually best treated with open cholecystectomy. Approximately 20 million people in the United States have gallstones. Of these people, there are approximately 300,000 cholecystectomies performed annually. Ten percent to 15% of the population has asymptomatic gallstones. Of these, 20% are symptomatic (biliary colic). Of the 20% who are symptomatic approximately 1% to 4% will manifest complications (acute cholecystitis, gallstone pancreatitis, choledocholithiasis, gallstone ileus). The incidence of gallstones increases with an increase in age, with females more likely to form gallstones than males. Age 50 to 65 approximately 20% of women and 5% of men have gallstones. Overall, 75% of gallstones are composed of cholesterol, and the other 25% are pigmented. Despite the composition of gallstones the clinical signs and symptoms are the same[6-8]. Hence; the present study was conducted for comparing the effectiveness of Laparoscopic vs. Open Cholecystectomy.

In the present study, mean age of the patients of the LC group and OC group was 43.5 years and 45.8 years respectively. There were 18 males and 32 males in LC group while there were 15 males and 35 females in OC group. Mean operative time among the patients of the LC group was 86.3 minutes while that of OC group was 65.1 minutes. Significant results were obtained while comparing the mean operative time among the two study groups. U Berggren et al randomized 30 consecutive patients below the age of 65 years without acute cholecystitis and with no signs of common bile duct stones to laparoscopic or conventional open cholecystectomy. Median (interquartile range) intravenous consumption of pethidine with a patient-controlled injection device between 13 and 24 h after surgery was 125 (62-175) mg in patients who underwent the laparoscopic procedure and 200 (150-250) mg in those who had open operation. Urinary adrenaline and cortisol levels as well as those of plasma glucose, C-reactive protein and interleukin 6 were increased after surgery in both groups of patients, but without any significant difference between them. The mean(s.d.) duration of postoperative hospital stay (2.8(0.8) versus 1.8(0.6) days) and sick leave (24.0(4.4) versus 11.7(4.1) days) was significantly longer with open than laparoscopic cholecystectomy. The findings demonstrated obvious advantages of laparoscopic surgery as regards postoperative pain and convalescence, although factors reflecting the magnitude of trauma did not differ[9].

In the present study, mean hospital stay among the patients of the LC group was 1.2 days while that of OC group was 3.8 days minutes. Significant results were obtained while comparing the mean hospital stay among the two study groups. Postoperative complications were seen in 5 patients of the LC group and 11 patients of the OC group.

**Conflict of Interest: Nil** **Source of support: Nil**

Antoniou SA et al, in another study, investigated the comparative effect of laparoscopic and open cholecystectomy in elderly patients. Laparoscopic cholecystectomy has induced a revolution in the treatment of gallbladder disease. 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[10].

## Conclusion

From the above results, it can be concluded that Laparoscopic cholecystectomy is a safe procedure for acute cholecystitis, resulting in fewer complications and shorter hospital stay than open cholecystectomy.

## References

1. DerSimonian R, Laird N. Meta-analysis in clinical trials. *Control Clin Trials*. 1986;7:177–188.
2. Massie MT, Massie LB, Marrangoni AG, D'Amico FJ, Sell HW. Advantages of laparoscopic cholecystectomy in the elderly and in patients with high ASA classifications. *J Laparoendosc Surg*. 1993;3:467–476.
3. Glenn F. Trends in surgical treatment of calculous disease of the biliary tract. *Surg Gynecol Obstet*. 1975;140:877–884.
4. Gallstones and laparoscopic cholecystectomy. NIH Consens Statement. 1992;10:1–28.
5. Kuhry E, Jeekel J, Bonjer HJ. Effect of laparoscopy on the immune system. *Semin Laparosc Surg*. 2004;11:37–44.
6. Huang SM, Wu CW, Lui WY, P'eng FK. A prospective randomised study of laparoscopic v. open cholecystectomy in aged patients with cholezystolithiasis. *S Afr J Surg*. 1996;34:177–179.
7. Lujan JA, Sanchez-Bueno F, Parrilla P, Robles R, Torralba JA, Gonzalez-Costeal R. Laparoscopic vs. open cholecystectomy in patients aged 65 and older. *Surg Laparosc Endosc*. 1998;8:208–210.
8. Maxwell JG, Tyler BA, Rutledge R, Brinker CC, Maxwell BG, Covington DL. Cholecystectomy in patients aged 80 and older. *Am J Surg*. 1998;176:627–631.
9. U Berggren et al. Laparoscopic versus open cholecystectomy: hospitalization, sick leave, analgesia and trauma responses. *Br J Surg*. 1994 Sep;81(9):1362–5.
10. Antoniou SA, Antoniou GA, Koch OO, Pointner R, Granderath FA. Meta-analysis of laparoscopic vs open cholecystectomy in elderly patients. *World J Gastroenterol*. 2014;20(46):17626–17634.

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