

ORIGINAL ARTICLE**Lap versus open cholecystectomy: A case series**¹Anuj Kumar Kundalia, ²Anil Kumar¹Associate Professor, ²Assistant Professor, Department of General Surgery, Muzaffarnagar Medical College, Muzaffarnagar, Uttar Pradesh, India**ABSTRACT:**

Aim: To study the Lap versus open cholecystectomy. **Material and methods:** This research included all patients with symptomatic cholecystitis who were admitted to the surgical unit. A comprehensive medical history was obtained from the patient, followed by a thorough physical examination to diagnose the presence of gall bladder stones. Prior to the procedure, the following investigations were conducted: complete blood count, blood sugar level assessment, regular urine examination, liver function test, chest X-ray, and abdomen ultrasound. The participants were allocated into two groups using a random assignment method. Group A included patients who had Laparoscopic surgery, while Group B patients received open surgery for cholelithiasis. **Results:** The patients who underwent LC had higher levels of pain, post prandial fullness, and fever compared to the patients in group A. On the other hand, individuals in group B had a higher prevalence of dyspepsia and belching than those in group A. The symptom of nausea and vomiting was similarly prominent in both groups. The open cholecystectomy surgery lasted between 50 to 80 minutes, with an average duration of 73.11 minutes. In contrast, the laparoscopic cholecystectomy operation lasted between 40 and 60 minutes, with an average duration of 45.21 minutes. The average length of post-operative discomfort was found to be 19.12 hours in group A, whereas it was 31.43 hours in group B patients. Group A had a shorter post-operative hospital stay compared to group B. In group A, the average duration of post-operative hospitalization was 1.92 days, whereas in group B it was 5.12 days. Patients who had laparoscopic cholecystectomy showed a quicker return to their regular diet. Group A was able to resume a regular diet within 2 days after surgery, with an average duration of 1.33 days. In contrast, group B needed a longer period of time, with an average of 2.44 days. **Conclusion:** Open cholecystectomy and laparoscopic cholecystectomy are two therapeutic options available for people with symptomatic gallstones. Laparoscopic cholecystectomy is the preferred surgical therapy for patients with cholelithiasis because to its superior cosmetic outcomes, less discomfort, shorter post-operative hospitalization, and lower incidence of surgical site infection.

Keywords: Open cholecystectomy, laparoscopic cholecystectomy, Acute cholecystitis**Corresponding author:** Anil Kumar, Assistant Professor, Department of General Surgery, Muzaffarnagar Medical College, Muzaffarnagar, Uttar Pradesh, India**This article may be cited as:** Kundalia AK, Kumar A. Lap versus open cholecystectomy: A case series. J Adv Med Dent Scie Res 2017;5(11):178-182.**INTRODUCTION**

Acute cholecystitis (AC) develops when a gallstone blocks the cystic duct. This leads to the expansion of the gallbladder and subsequent inflammation of the gallbladder caused by either chemicals or bacteria. Gallstones are a prevalent gastrointestinal disorder, impacting around 10% of the Western population. Asymptomatic persons are affected by gallstones in over 80% of cases. Acute cholecystitis (AC) occurs in around 1-3% of people who have symptomatic gallstones. AC is defined by persistent pain in the upper right quadrant of the abdomen, loss of appetite, feelings of sickness, throwing up, and an elevated body temperature. AC (calculous cholecystitis) is characterized by the presence of gallstones in 95% of patients, while AC is characterized by the absence of gallstones in 5% of individuals [1-3].

Patients exhibiting symptoms suggestive of appendicitis should have abdominal ultrasonography to definitively diagnose the condition. If the first ultrasound does not provide a definitive diagnosis or is needed to exclude problems or other diagnoses, further imaging techniques such as hepatobiliary iminodiacetic acid or CT scan may be necessary. The

administration of AC has two facets, namely, medical and surgical. Treatment for the medical condition include prescribing bed rest, administering pain medication, prescribing antibiotics, and providing intravenous fluids. Surgical intervention involves a process known as cholecystectomy, which refers to the surgical extraction of the gallbladder. Cholecystectomy may be performed using either an open approach or a laparoscopic approach.

John Stough Bobbs (1809-1870), a physician during the Civil War from Pennsylvania, is recognized as the one who conducted the first surgery on a human gallbladder. In 1867, he conducted a cholecystostomy procedure in Indianapolis [4]. In 1882, Carl Johann Langenbuch performed the first cholecystectomy in the French suburb of West Berlin [5].

Laparoscopic cholecystectomy (LC) is gradually replacing open cholecystectomy (OC) as the preferred therapy for acute cholecystitis (AC). The percentage of cholecystectomies performed laparoscopically has risen from 0% in 1987 to 80% in 1992 [6]. Open surgeries have been substituted by laparoscopic techniques because to advancements in laparoscopic technology, increased skill and experience of

surgeons, reduced hospital stays, and quicker recovery times for returning to routine activities.

Laparoscopic cholecystectomy (LC) gained popularity in France and the United States during the late 1980s. By the early 1990s, 80% of general surgeons in the United States had embraced the use of LC equipment and techniques [7]. Regarding AC, LC plays a multifaceted function and has a few disadvantages, including a high incidence of conversion to an open operation. This conversion is mostly caused by inflammation, edema, and necrosis associated with AC, which not only makes the surgery more challenging but also increases the likelihood of postoperative problems. However, in 2006, the Tokyo recommendations suggested that LC should be the first treatment option for AC [8]. In 2013, a new version of the Tokyo recommendations for acute cholecystitis (AC) was released. The main objective of this revision was to prioritize the provision of optimal surgical therapy by considering factors such as the severity of the illness, the timing of the surgery, and the kind of procedure. AC has been categorized into three classes, namely mild, moderate, and severe, based on the extent of inflammation in the gallbladder [9,10].

Controversy exists over the optimal timing for surgical procedures. The two primary alternatives explored are early surgery or an initial conservative therapy with antibiotics, followed by a delayed LC some weeks later, in order to achieve full remission of inflammation [11]. The justification for postponing surgery is that inflamed tissue that has been harmed is more susceptible to surgical interventions, hence increasing the likelihood of surgical problems. Consequently, during the first stages of its development, LC was deemed unsuitable for use in AC. Laparoscopic cholecystectomy (LC) or open cholecystectomy (OC) is performed based on the patient's health, the level of inflammation, the timing of the operation, and the surgeon's expertise and proficiency.

MATERIAL AND METHODS

A department of surgery conducted a prospective research including 120 patients. The research obtained

approval from the Institutional Ethical Committee. This research included all patients with symptomatic cholecystitis who were admitted to the surgical unit. A comprehensive medical history was obtained from the patient, followed by a thorough physical examination to diagnose the presence of gall bladder stones. Prior to the procedure, the following investigations were conducted: complete blood count, blood sugar level assessment, regular urine examination, liver function test, chest X-ray, and abdomen ultrasound.

The participants were allocated into two groups using a random assignment method. Group A included patients who had Laparoscopic surgery, while Group B patients received open surgery for cholelithiasis. The patients were provided with comprehensive explanations on both procedures. Those patients who expressed their willingness to participate in the research were obtained informed consent. The patients were assessed for the length of the surgical procedure, duration of pain after surgery, length of hospital stay after surgery, time taken to resume a regular diet after surgery, and occurrence of wound infection after surgery.

RESULTS

The majority of participants in the research were female, comprising 76.77% of the total. The group of patients who received laparoscopic surgery consisted of 45 females and 15 males, whereas the group treated with open surgery consisted of 47 females and 13 men. The patients' ages spanned from 18 to 72 years. The majority of patients were between the age range of 40 to 60 years. The patients most often reported pain in the right hypochondrium as their main complaint, followed by postprandial fullness, nausea and vomiting, dyspepsia, belching, and fever. None of the patients in either group reported experiencing jaundice upon admission to the hospital for surgery. The patients who underwent LC had higher levels of pain, post prandial fullness, and fever compared to the patients in group A. On the other hand, individuals in group B had a higher prevalence of dyspepsia and belching than those in group A. The symptom of nausea and vomiting was similarly prominent in both groups.

Table 1: Gender and age distribution

Sex	LC group	OC group	Number	Percentage
Male	15	13	28	23.33
Female	45	47	92	76.77
Age group				
<20 years	2	2	4	3.33
20-40	20	12	32	26.67
40-60	35	42	77	64.17
Above 60	3	4	7	5.83

Table 2: Symptom profile of patients in both groups

	LC group	OC group
Pain	53	51
Post prandial fullness	37	35

Nausea and vomiting	32	32
Dyspepsia	21	22
Belching	13	14
Fever	10	7

The duration of the surgical procedure was much greater in the OC group compared to the LC group. The open cholecystectomy surgery lasted between 50 and 80 minutes, with an average duration of 73.11

minutes. In contrast, the laparoscopic cholecystectomy operation lasted between 40 and 60 minutes, with an average duration of 45.21 minutes.

Table 3: Operative time

Operativetime	LC(group A)	OC(groupB)
Less than 40mins	3	-
40-50mins	45	-
50-60mins	12	13
60-70mins	-	20
70-80mins	-	27

Patients who had Laparoscopic cholecystectomy received quicker pain alleviation compared to those who underwent Open cholecystectomy. The average length of post-operative discomfort was found to be 19.12 hours in group A, whereas it was 31.43 hours in

group B patients. Group A had a shorter post-operative hospital stay compared to group B. In group A, the average duration of post-operative hospitalization was 1.92 days, whereas in group B it was 5.12 days.

Table 4: Duration of hospital stay after surgery

	LC group	OC group
Below 2 days	43	0
2-3	15	3
3-4	2	14
4-5	0	33
Above 5 days	0	10

Patients who had laparoscopic cholecystectomy showed a quicker return to their regular diet. Group A was able to resume a regular diet within 2 days after surgery, with an average duration of 1.33 days. In contrast, group B needed a longer period of time, with an average of 2.44 days. With the exception of surgical site infection, no significant problems connected to the procedure were seen in either of the two groups. Indeed, the infection incidence among patients in group B was almost twice as high as that reported among patients in group A. The incidence of operative site infection was 6.67% in the open cholecystectomy (OC) group and 3.33% in the laparoscopic cholecystectomy (LC) group, respectively.

DISCUSSION

Carl Langenbuch, the trailblazer of open cholecystectomy, famously said that the gall bladder should be excised not alone because to the presence of stones, but also because it is the source of their formation. Both open cholecystectomy and laparoscopic cholecystectomy aim to safely remove the damaged gall bladder in order to bring comfort to the patient. The indications for surgery are same for both procedures. Therefore, the selection of the surgical procedure is determined by factors such as

the patients' personal preference, the cost of hospitalization, a lower occurrence of post-operative complications, and the skill level of the surgeons. An increasing number of patients and surgeons are increasingly favoring laparoscopic cholecystectomy (LC) as the preferred surgical procedure for cholelithiasis because to its superior cosmetic outcomes, less pain, and earlier mobilization.

The current research found that the majority of patients were female (76.77%) and most of them were between the ages of 40 and 60. These findings align with the outcomes of other studies[13,14]. In our research, the duration of Laparoscopic surgery was less than that of open cholecystectomy, with times of 45.21 minutes and 73.11 minutes, respectively. Pessaux P et al also noticed similar results in their trial of 139 patients, where they discovered that the time of surgery was shorter in the LC group compared to the OC group (103.3 min vs 149.7 min)[15]. Waldner H et al. discovered that there was no statistically significant disparity in the length of the surgical operation between the two methods [16]. However, the majority of other research that assessed the duration of both treatments found that OC took less time than LC[14,17,18]. LC need specialized training and a more extensive learning period. As a surgeon's expertise increases, the duration of the

procedure decreases.

Pain is an unavoidable consequence of every surgical operation, and achieving prompt pain relief is a key objective of therapy. The current research observed that group A patients had prompt alleviation of post-operative discomfort in comparison to group B patients. The postoperative discomfort lasted for 19.12 hours and 31.43 hours in patients belonging to group A and group B, respectively. In a comparable research conducted by Shukla A et al, the duration of postoperative pain was found to be 14.68 hours in the LC Group and 27.92 hours in the OC Group [14]. Furthermore, it was shown that patients who had open cholecystectomy need a greater amount of analgesic medication compared to those who underwent laparoscopic cholecystectomy[19]. Laparoscopic surgery is a minimally invasive surgical procedure that only impacts a small region, leading to prompt pain alleviation after the operation.

This research observed an association between the surgical procedure performed and the length of time a patient stayed in the hospital after the operation. In group A, the average duration of post-operative hospitalization was 1.92 days, whereas in group B it was 5.12 days. According to a research conducted by Anmol N et al, the median length of hospital stay was three days for LC (laparoscopic cholecystectomy) and seven days for OC (open cholecystectomy), which aligns with the findings of our own study[20]. In a study conducted by Karim T et al, it was shown that among the 100 patients examined, patients who had open cholecystectomy (OC) had an average hospital stay of 5.46 days, which was significantly longer than the average stay of 3.7 days seen in patients who underwent laparoscopic cholecystectomy (LC)[21].

Group A was able to resume a regular diet within 2 days after surgery, with an average duration of 1.2 days. In contrast, Group B took longer, with an average time of 2.1 days. Shukla A et al found a similar result, with the LC Group taking an average of 11.68 hours and the OC Group taking an average of 17.24 hours to restore oral feeds[14]. The incidence of surgical site infection was greater in the OC group (6.5%) compared to the LC group (3%). Karim T et al found that the risk of wound infection in open procedures was three times higher than in laparoscopic procedures.

CONCLUSION

Gallstone formation, known as cholelithiasis, is a prevalent issue in India, making it crucial to have an efficient approach for its treatment. Open cholecystectomy and laparoscopic cholecystectomy are two therapeutic options available for people with symptomatic gallstones. The current research was undertaken to compare Open cholecystectomy versus laparoscopic cholecystectomy as therapeutic alternatives. Laparoscopic cholecystectomy is the preferred surgical therapy for patients with cholelithiasis because to its superior cosmetic

outcomes, less discomfort, shorter post-operative hospitalization, and lower incidence of surgical site infection.

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