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Original Research Article

Comparative Study of Laparoscopic Cholecystectomy and Open Cholecystectomy Based on Post Operative Clinico Sonological Follow –Up

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Conflict of interest: Nil

Abstract:

Background: Laparoscopic cholecystectomy is the gold standard surgical method for treating individuals with symptomatic gallstones with numerous benefits over open cholecystectomy. In this study the preoperative risk factors are assessed and compared for the two modalities of treatment with special emphasis on postoperative clinic sonological follow-up for early detection of complications and to treat them if they arise. Based on the information, the best course of treatment for each patient can be determined, with the least amount of morbidity and mortality, and relieving the overburdened healthcare system.

Methods: A total 100 patients with gall stone disease were chosen from the Darbhanga Medical College & Hospital's Surgical outpatient Department as subjects for investigation. The study period spanned November 2020 to August 2022.The parameters like age, sex, socioeconomic status, dietary habits were noted. A thorough surgical history of any intra-abdominal procedures was obtained. A thorough medical history was collected to identify the patient's medical conditions and risk factors. Preoperative injections of ceftriaxone were routinely administered to all patients. Intraoperative events were recorded along with duration of operation. After surgery, the patients were closely monitored.

Results: One group of 50 patients out of 100 underwent a traditional open cholecystectomy; other group of 50 patients underwent a laparoscopic cholecystectomy. Four patients required conversion from laparoscopic to open cholecystectomy. Multi-calculi were present in 65% of individuals, 33% of patients had a single calculus, 2% of patients had no stones, 12% of patients had mucocele, 20% of patients had contracted gall bladder, 8% of patients had a distended gall bladder, gall bladder empyema affected 4% of patients, 24% of patients had gross pericholecystic adhesions, 1% of patients evidenced GB mass.

Conclusion: Laparoscopic cholecystectomy clearly is the better option in contrast to OC. It offers a faster recovery, less pain following surgery, early discharge, analogous postoperative sonographic results, a sooner arrival at work, fewer complications, especially those associated to wounds. All of these significantly cut morbidity, which reduces the financial burden on patients and the healthcare system.

Keywords: Gallstones, Open cholecystectomy, Laparoscopy.

Introduction

Gallstones are frequently the cause of acute cholecystitis, an inflammation of the gallbladder[1]. The care of patients with this illness is a significant load on the world's healthcare system[2]. Information on standards for diagnosis and treatment are provided by international recommendations [3,4]. The recommended course of treatment for acute cholecystitis is laparoscopic cholecystectomy during index admission in patients without significant comorbidity[3-5]. Laparoscopic cholecystectomy is one of the most common general surgical operations performed worldwide, with an estimated 115 performed per 100,000 people annually [6]. Treatment with antibiotics may be used as a temporary measure or as an effort to reduce symptoms in patients who are not well enough for surgery1. Additionally, patients who are unable to undergo surgery or in cases where operative treatment is not practical may benefit from radiologically guided percutaneous cholecystostomy [4,7,8]. The most effective method for treating gallbladder illness in both elective and emergency surgery is laparoscopic cholecystectomy (LC) [9] due to the reduced risk of surgical complications and shorter length of hospital stay [10-14.] According to Tokyo rules, acute cholecystitis was divided into three severity

levels, with Grade III being associated with a higher risk of vasculobiliary damage and a higher likelihood of requiring open surgery [15]. As a result of a stone or infection, a cholecystectomy is an open surgery to remove the gallbladder [16]. The gold standard surgical method for treating individuals with symptomatic gallstones is laparoscopic cholecystectomy [16, 17]. It has numerous benefits over open cholecystectomy, including less postoperative discomfort, improved aesthetics, a shorter hospital stays, and quicker recovery. However, 2-15% of patients who underwent laparoscopic cholecystectomy had their procedure changed to an open procedure for various reasons [18]. When there are dense adhesions at Calot's triangle, a history of upper abdominal surgery, an emphysematous gallbladder, a gallbladder that is acutely inflamed and gangrenous, Mirizzi's syndrome, a history of cholecystectomy, or a cholecystogastric or cholecystoduodenal fistula, the difficulty is considered [19]. Hemorrhage, gallbladder perforation, bile leakages, bile duct injuries, per hepatic collection, and others, such as external biliary fistula, wound sepsis, hematoma, foreign body inclusions, adhesions, metastatic port-site deposits, and cholelithoptysis, were the specific complications of laparoscopic cholecystectomy [20]. The rate of complications associated with laparoscopic cholecystectomy has, however, decreased significantly due to technological and procedural advancements, and is now only 2-6% [17].

The presence of gallbladder stones, the presence of acute cholecystitis with fever, leukocytosis, male gender, old age, body mass index (BMI), history of abdominal surgery, and certain ultrasonography findings (distension of the gallbladder, thick gallbladder lining, impacted stone, and pericholecystic fluid collection) are the risk factors that make laparoscopic cholecystectomy difficult [16, 21]. Age, male gender, previous abdominal surgery, upper abdominal tenderness at the time of surgery, sonographically detected thickened gallbladder wall, and the preoperative diagnosis of acute cholecystitis were six factors that were found to be significantly associated with the risk of open cholecystectomy [22] in a study by Kama et at. Despite all of its benefits, laparoscopic surgery has a number of drawbacks as well. Using an imaging technology that provides a 2-dimensional view with a whole new anatomical terrain that the surgeon must learn to navigate, the surgeon must do remote surgery away from the field of operation. These are lengthy instruments. All of these make hand-eye coordination challenging, especially for beginners. Secondly, intra-operative bleeding, especially arterial bleeding, can be challenging to control because blood obstructs vision and significantly lowers image quality due to light absorption. Another issue is the loss of direct tactile feedback, a crucial tool in the surgeon's toolbox for making intra-operative decisions. But when compared to open surgery, the main disadvantage of laparoscopic cholecystectomy is the higher rate of common bile duct injury. However, the incidence steadily declines as experience grows with each passing day.

The reported conversion rate from laparoscopic to open surgery is between 3% - 8% for straightforward patients. However, this could reach 20% in cases of acute cholecystitis. Fortunately, as surgeons' experience and expertise increase around the world, the rate of conversion is declining every day. The choice to change a laparoscopic cholecystectomy into an open procedure is crucial. It must always be done before complications arise rather than after they have already happened. However, when accidental damage has been done, prompt conversion is required. The goal of conversion shouldn't be limited to minimizing harm. More and more people with gallstone disease are now being diagnosed, many of whom were previously misdiagnosed and whose symptoms were attributed to other causes, because of the general growth in the use of diagnostic radiologic techniques and the introduction of more advanced instruments. The widespread use of radiology also aids in detecting asymptomatic gall stones, which are typically found accidentally during routine checkups or when conducting investigation for other complaints. The main objective of study is to assess the preoperative risk factors and compare the outcome of the two modalities of treatment with special emphasis on postoperative clinic sonological follow-up for early detection of complications and to treat them if they arise. Based on the aforementioned information, the best course of treatment for each patient can be determined, with the least amount of morbidity and mortality, and the least amount of strain placed on the already overburdened healthcare system.

Materials and Methods

Materials

A total 100 patients with gall stone disease were the subject of the investigation, 95 of them had symptomatic gall stone disease. While conducting investigations for other complains, it was accidentally found that 5 of the patients had asymptomatic gall stone disease. The patients were chosen from the Darbhanga Medical College & Hospital's Surgical outpatient Department. The study period spanned November 2020 to August 2022.

Methodology

Each patient had a thorough clinical history recorded to confirm the cholecystitis diagnosis. The parameters like age, sex, socioeconomic status, dietary habits were noted. Features such as pain (type, intensity, duration, site, and relationship to food;

aggravating and relieving factors, radiation), anorexia, flatulence, dyspepsia, acid reflux, history of fever, chills, and rigor (cholangitis).

If there was a history of acute attacks, the number of attacks was noted, and if there were more than one, the interval between attacks was recorded. Question regarding symptoms of pancreatitis was raised. A thorough surgical history of any intra-abdominal procedures was obtained. The following questions were asked to determine if any surgery had been performed:

The procedure type, the type of anesthesia,

- Following surgery, recovery
- Postoperative problem

A thorough medical history was collected to identify the patient's medical conditions and risk factors, such as hypertension, asthma, chronic obstructive pulmonary disease, etc.

A thorough family history was collected.

A thorough clinical examination that included a general assessment, local examination, and systemic examination was conducted after these. To make the provisional clinical diagnosis of cholecystitis.

The ultrasonography of whole abdomen was done to confirm the provisional diagnosis of acute cholecystitis. It revealed whether there were single or numerous stones, the size of the gallbladder, the thickness of the gallbladder wall, and pericholecystic inflammation. Additionally, it offers useful details regarding the common bile ducts diameter and the presence of stones or sludge in the duct. It offers details on the liver, including echogenicity, fatty changes, and intrahepatic biliary radicals.

After that, the patients had the following tests:

1. Blood tests for the following: erythrocyte sedimentation rate, differential leukocyte count, total erythrocyte and leukocyte count, and hemoglobin percentage.
2. Blood sugar levels, both during fasting and after meals.
3. Serum creatinine and urea level.
4. liver function test.
5. The bleeding, clotting, and prothrombin times: Coagulation profile.
6. The PA view on a chest x-ray.
7. A cardiac examination.
8. Anesthetic checkup.

A CT scan of the abdomen was performed on patients whose ultrasonography suggested a possible gall bladder mass.

The study did not include patients suspected of having gall bladder or common bile duct cancer or concurrent common bile duct stones.

Cases that were determined to be suitable for general anesthesia after using the aforementioned criteria were admitted. They were split up into two groups of 50 patients each at random. The procedure for one group was a laparoscopic cholecystectomy, while the procedure for the other group was an open cholecystectomy.

Preoperative injections of ceftriaxone were routinely administered to all patients.

The duration of operations and any problems that arose were noted. Intraoperative events were recorded. The cases when the laparoscopic to open cholecystectomy conversion was carried out received special attention, and the reasons for such conversion were recorded. Operational challenges and issues that cropped up during the operation were addressed appropriately.

On the morning of surgery, Inj. Ceftriaxone (1 gm) was administered to each patient. They received injections of Ceftriaxone, Metronizazole, Diclofenac, and Rantidine during the healing process. After stopping the drip, they received Tab Cefixime, Tab Metronidazole, and Tab Ranitidine.

After surgery, the patients were closely monitored. The following was observed:

1. Recovery from anesthesia.
2. Volume of drain output.
3. Pain following surgery.
4. Any post-surgical wound infections
5. Relief from symptoms
6. Time taken to stop intravenous fluid.
7. Whether or not the patient experienced jaundice
8. Whether or not the biliary fistula developed.

Every patient underwent whole abdominal ultrasonography on the third post-operative day. We searched for any collections in the peritoneal cavity, especially in the subphrenic areas. The common bile duct was examined as part of this process. Due to the risk of a stone entering the common bile duct, this was done especially in open cases.

Any postoperative complications were treated in accordance with the current treatment protocol.

Every patient's discharge date and time were recorded.

Every patient was closely monitored in the surgical outpatient department of Darbhanga Medical College & Hospital after being discharged. These things were noted:

1. Whether the symptoms completely subsided or lingered. Date of return to work and the start of regular activities.
2. Port site complications in laparoscopic instances include infection, discharging sinus, and hernia.

3. Incidence of incisional hernia in open cases.

The outcomes were then contrasted.

Result and Analysis

A total of 100 patients with gall stone disease, chosen from the Darbhanga Medical College & Hospital's Surgical outpatient Department were the subject of the investigation during the study period spanned November 2020 to August 2022. 95 of them had gall stone disease with symptoms, while conducting investigation for other complains; it was accidentally found that, 5 of the patients had asymptomatic gall stone disease.

The following are the baseline data of the study group:

Total no. of cases = 100
Sex ratio i.e., Female: Male =82: 18 = 4.5:1
Lowest age taken = 18 Years
Highest age taken = 70 Years

Age Group

It was surprising to see that almost 50% of the patients fall into the adult category. The disease was predominant in the age group of 31 to 50. This is an indication of sheer lifestyle negligence.

Sex

In terms of the aforementioned criteria the female overwhelmingly dominates the disease. The Female: Male ratio was 4.5: 1 i.e. for every 100 people getting treated for disease 82 were women.

Weight

From the data it was evident that more than 50% of the population under study was between 46-55 Kg weight categories, which are basically a healthier range of weight as per age group under study.

Socio-economic status

As per the information provided by individuals the majority population suffering the gall stone disease falls into middle class category with 33% mark.

Chief Complains

Out of the 100 subjects under study 70% (34% were treated through OC, 33% by LC and 3% were under LC→OC) chiefly complained about pain in right upper quadrant, which was followed by 23% (13% were treated through OC, 10% by LC) of patients who complained of flatulence and dyspepsia. 2% (1% each treated by LC or LC→OC) of the population under study complained of both pain in the right upper-quadrant and flatulence and dyspepsia, and 5% of patient remain asymptomatic for the disease and were incidentally detected for presence of gallstones only after ultrasonography.

Clinical Findings

From the available data it was evident that only 39% of population showed clinical signs related to disease. 8 patients (5 in the OC group and 3 in the LC group) had palpable livers. 16 patients (6 underwent open cholecystectomy, 8 underwent laparoscopic surgery, and 2 required conversion from LC to OC) had a positive Murphy's sign. 6 individuals had palpable gall bladders, 3 in the OC group and 3 in the LC group. 9 patients (4 in the OC group, 3 in the LC group and 2 in these patients who required conversion from LC to OC) had tenderness in the right hypochondrium.

Operative Findings

From the available data it is clear that presence of calculi is a major operative finding, the presence of solitary calculus (16 in OC and 17 in LC patients) and multiple calculi (32 in OC category and 33 in LC category) was the most common operative finding witnessed. Other than the presence of calculi, adhesions (12 in OC and 8 in LC); dilated CBD (10 in OC and 4 in LC, 1 in LC to OC) account for other operative findings.

Duration of Operation

The mean time taken to perform an open cholecystectomy was 55.4 minutes. The average time taken to perform a laparoscopic cholecystectomy was approximately 83.91 minutes. 15 cases took 1 hour or less. The cases in which Veress needle was used to create pneumoperitoneum took more time as the time needed to create the pneumoperitoneum was high. The cases in which pneumoperitoneum was created by Hason's port the operative times were less as pneumoperitoneum was created in a much shorter time. Patients having distorted anatomy and gross pericholecystitic adhesions also needed more time.

In 4 cases, it was necessary to switch from a laparoscopic to an open cholecystectomy. The first one was brought on by a serious intra-operative bleeding. After the operation began, the conversion was completed 90 minutes later. After the wound was opened, the treatment required an additional 120 minutes to finish and establish homeostasis.

The second instance resulted from a lack of anatomical definition. The decision to change it into an open procedure was made 60 minutes after the operation began but before any difficulties developed. After conversion, the process took an additional 120 minutes to finish.

The third conversion case resulted from unintentional damage to the bile duct. When it was discovered during the procedure, the operation was changed to an open one. After opening the abdomen, bile duct was repaired over a T tube. Moreover, the cholecystectomy was done. It took the entire process (1+2.5) i.e. 3.5 hours.

The fourth conversion occurred as a result of a slight gut injury sustained while constructing ports. Due to a history of intestinal blockage, this patient had an exploratory laparotomy, followed by gangrenous gut resection and anastomosis. Small intestinal loops were attached to the parities.

The small intestine suffered damage as a result when creating ports. Early on in the procedure, the injury was discovered, and a formal laparotomy was performed, followed by a cholecystectomy and repair of the damaged gut. It took 170 (20+150) minutes to complete the process. This instance served to highlight once again the relative contraindication to laparoscopic surgery that major abdominal surgery in the past poses.

Drain Output

The average output in instances with open cholecystectomy was 47.2 ml. It was less than 30 ml in the majority of uncomplicated cases. High drain output was present in the instances with severe adhesions and deformed anatomy. The drain was removed after an average of 48 hours. Drain was only removed once its production was insignificant. The average drain output for laparoscopic cholecystectomy procedures was 42.5 ml. Even here, the uncomplicated cases produced less drain. Most of the time, the drain was eliminated in 24 hours.

Time taken to omit I.V. Fluid

In open cholecystectomy cases, it took an average of 31.56 hours to stop the IV drip following the procedure.

The drip was stopped in the majority of simple instances within 24 hours. Some took roughly 36 hours longer.

When there were extensive adhesions, stopping the IV drip was longer and the restoration of bowel sound was delayed. But within 48 hours, all patients had stopped receiving drips.

The average time needed to stop the IV drip in instances of laparoscopic cholecystectomy was 17.08 hours.

The drip was discontinued as early as 12 hours in simple cases. By 24 hours, all of the patients' drips had been stopped.

After the drip was stopped, the patients in the OC and LC groups tolerated oral feeding well; no one required the I.V. drip treatment again.

It took longer to stop the IV drip in the cases where LC were converted to OC because all of them were difficult, it took longer for bowel sounds to return.

Requirement of analgesics in post operative period

When compared to open cholecystectomy cases, this was significantly reduced in laparoscopic cholecystectomy cases. Overall, LC patients reported substantially less discomfort than OC patients did.

Time taken to become ambulant.

In this regard, the LC patients moved significantly more quickly. Some patients even walked in the ward as early as 12 hours post operatively.

Post-operative USG (on third post-operative day)

All patients had normal post-operative USGs (on the third post-operative day), with the exception of one patient in whom a minor collection was seen in and around the liver bed. Open cholecystectomy was performed on this patient. He was just observed, and nothing untoward happened. Two weeks later, the repeat USG was completed, and the collection subsided.

Post-discharge Follow-up

There were 3 persistent dyspeptic symptoms among the 46 patients who underwent laparoscopic cholecystectomy. They had been further investigated which showed no abnormalities. These patients lacked any other abnormalities. Five of the fifty patients who underwent open cholecystectomy experienced ongoing dyspepsia. About 6 months later, 2 of the patients in this group experienced incisional hernia. In one case, a laparoscopic procedure resulted in common bile duct injury. The common bile duct was repaired because this lesion was discovered at the time of the operation. About 6 months later, this patient had obstructive jaundice. Biliary stricture (Bismuth type II) was discovered through investigation. Proximal to the stricture, the patient's common bile duct was dilated. He underwent Roux en Y hepaticojejunostomy surgery to treat him, and the patient is doing well.

Time taken to resume normal activities.

Patients who underwent OC typically took 16.24 days following surgery to resume their regular jobs. Patients who underwent LC typically returned to their regular activities 8.82 days after surgery.

Complications (both long-term and short-term)

The following problems were seen among the 4 patients who underwent conversion from laparoscopic to open cholecystectomy. All of them experienced wound infection; 3 of them had postoperative pain that persisted; 1 of them had a wound hematoma that later had an incisional hernia; and 1 patient whose conversion was brought on by bile duct injury later experienced biliary stricture.

Discussion

Over 100 patients who were admitted for cholecystectomy at the Department of Surgery, Darbhanga Medical College & Hospitals, participated in our study. The majority of Western authors indicated a female-male ratio of between 3:1 and 5:1. Our examination of 100 patients revealed 82 females and 18 males; as a result, the female-to-male ratio is approximately 4.5:1.In our study, 26% of the participants were between the ages of 41 and 50, and 24% were between the ages of 31 and 40.Gallstone illness appears to be becoming more common in younger people, according to recent reports from the past 20 years. Similar findings are found in our study, where 50% of patients were the age of 50 or less.The majority of patients' primary presenting complaint was pain in the right upper quadrant; some also experienced flatulent dyspepsia. Gallstones in four patients who had no symptoms were discovered by chance. Most patients' clinical examinations were normal. A positive Murphy's sign was the most frequent positive result, occurring in 16% of cases. Right hypochondrium tenderness accounted for 9%. Mucocele and empyema should add up to become 6% of palpable gallbladder cases with more mucocele cases. One group of 50 patients out of 100 underwent a traditional open cholecystectomy, whereas the other group of 50 patients underwent a laparoscopic cholecystectomy. Four patients required conversion from laparoscopic to open cholecystectomy.

- Multi-calculi were present in 65% of individuals.
- 33% of patients had a single calculus.
- 2% of patients had no stones.
- 12% of patients had mucocele.
- 20% of patients had contracted gallbladder.
- 8% of patients had a distended gall bladder.
- Gall bladder empyema affected 4% of patients.
- 24% of patients had gross pericholecystic adhesions.
- 1% of patients evidenced GB mass.

Table 1: Age affecting incidence of Gall stones.

Age	OC	LC	LC--->OC	P-value
<=20	2	2	1	
21-30	9	8	0	
31-40	11	12	1	0.1165
41-50	14	11	1	
51-60	8	7	0	
>60	6	6	1	

Table 2: Sex/ Gender affecting incidence of Gall stones.

Sex	OC	LC	LC--->OC	P-value
Female	41	39	2	
Male	9	7	2	0.3882

Table 3: Weight of patient affecting incidence of Gall stones.

Weight (Kg)	OC	LC	LC--->OC	P-value
35-40	5	3	0	
41-45	3	5	0	
46-50	8	7	0	
51-55	19	18	3	0.1510
56-60	8	7	0	
>60\	7	6	1	

Table 4: Socio-economic status of individuals affecting the incidence of Gall stones.

Socio economic status	OC	LC	LC-->OC	P-value
Upper Middle Class	14	11	0	
Middle Class	13	18	2	
Lower Middle Class	11	9	1	0.0066
Poor	12	8	1	

Table 5: Chief complains of patients.

Chief complains	OC	LC	LC--->OC	P- value
Pain Right upper quadrant	34	33	3	
Flatulence & Dyspepsia	13	10	0	
Asymptomatic	3	2	0	0.5518
Pain Right upper quadrant + Flatulence & Dyspepsia	0	1	1	

Table 6: Positive clinical findings that confirms incidence of Gall stones

Positive Findings	OC	LC	LC--->OC	P-value
Palpable liver	5	3	0	0.6679
Positive Murphy's sign	6	8	2	
Palpable gall bladder	3	3	0	
Tenderness in right Hypochondrium	4	3	2	

Table 7: Operative findings during Open or closed cholecystectomy

Operative Findings	OC	LC	LC--->OC	%
Contracted GB	8	8	4	20
Distended GB	5	3	0	8
Cholesterosis	1	0	0	1
Adhesions	12	8	4	24
Intra-operative hemorrhage	5	3	1	9
Distorted anatomy	2	1	4	7
GB mass	1	0	0	1
Multiple calculi	32	34	0	66
No calculus	2	0	0	2
Solitary Calculi	16	17	0	33
Mucocele	6	6	0	12
Empyema	2	2	0	4
Dilated CBD	10	4	1	15

Table 8: Duration of surgery for Open or Close Cholecystectomy

Duration of Operation	OC	LC	LC--->OC	P-value
30-40	22	0	0	0.5382
41-50	11	5	0	
51-60	2	13	0	
61-90	10	13	0	
more than 90	5	15	4	

Table 9: Incidence of various complications after Open or Close Cholecystectomy

Complication	OC		LC	
	No.	%	No.	%
General Complication				
· Mortality.	0	0	0	0
· Myocardial infarction.	0	0	0	0
· Respiratory tract infection.	5	10.00%	4	8.00%
· Urinary retention.	2	4.00%	0	0
· Post-operative pancreatitis.	0	0	0	0
· Prolonged post-operative pain.	6	12.00%	2	12.00%
Hemorrhage				
· Excessive intra operative.	1	2.00%	0	0
· Post operative	0	0	0	0
Wound related				
· Wound Infection.	4	8.00%	1	0
· Wound haematoma.	2	4.00%	0	0
· Scar hypertrophy.	9	18.00%	0	0
· Incisional hernia.	2	4.00%	0	0
Biliary				
· Jaundice.	3	6.00%	2	4.00%
· Bile duct injury.	1	2.00%	1	2.00%
· Bile leak.	2	4.00%	3	6.00%
· Retained stone.	0	0	0	0

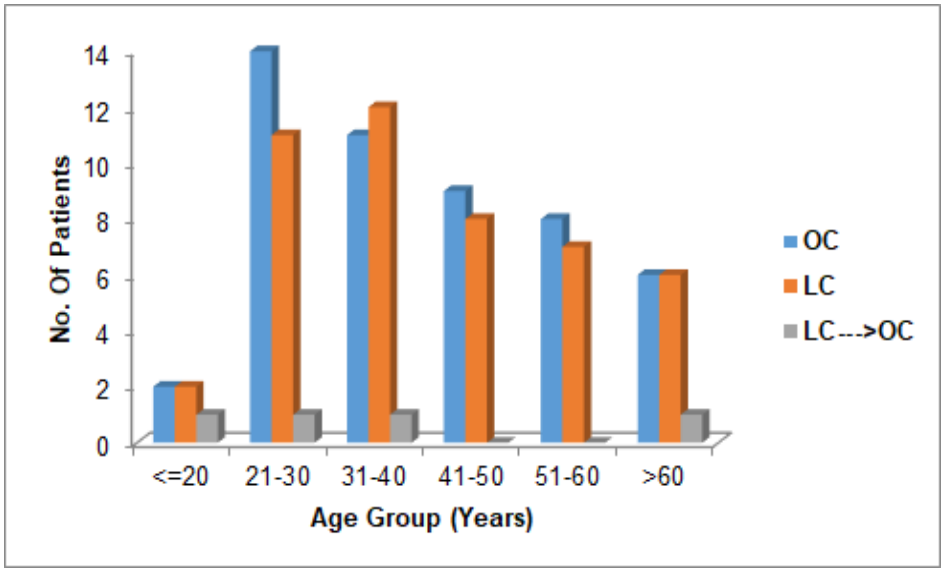

Figure 1: Age affecting incidence of Gall stones

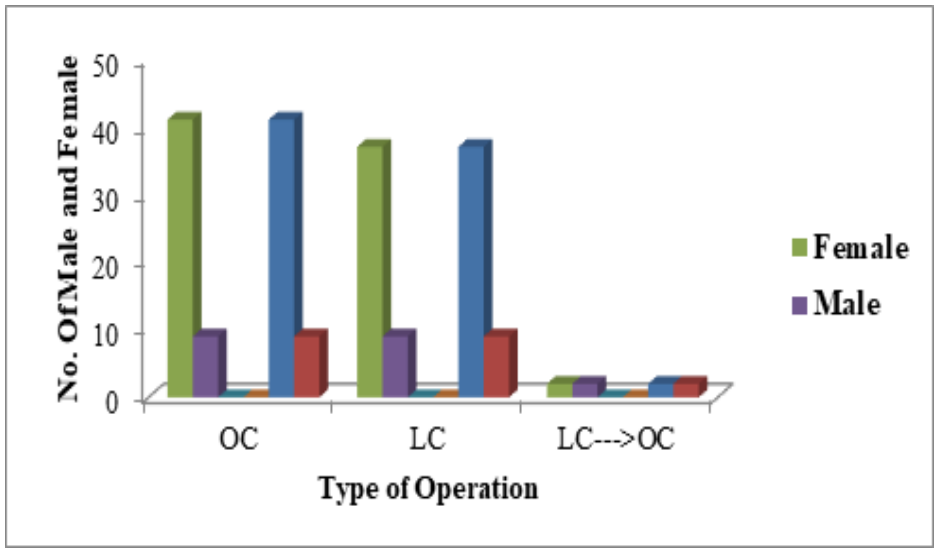

Figure 2: Sex/ Gender affecting incidence of Gall stones

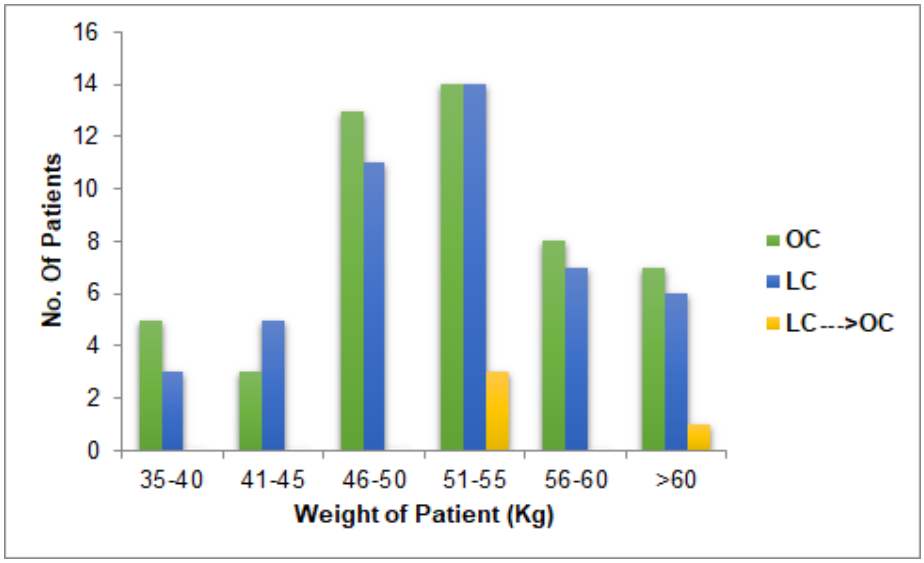

Figure 3: Weight of patient affecting incidence of Gall stones

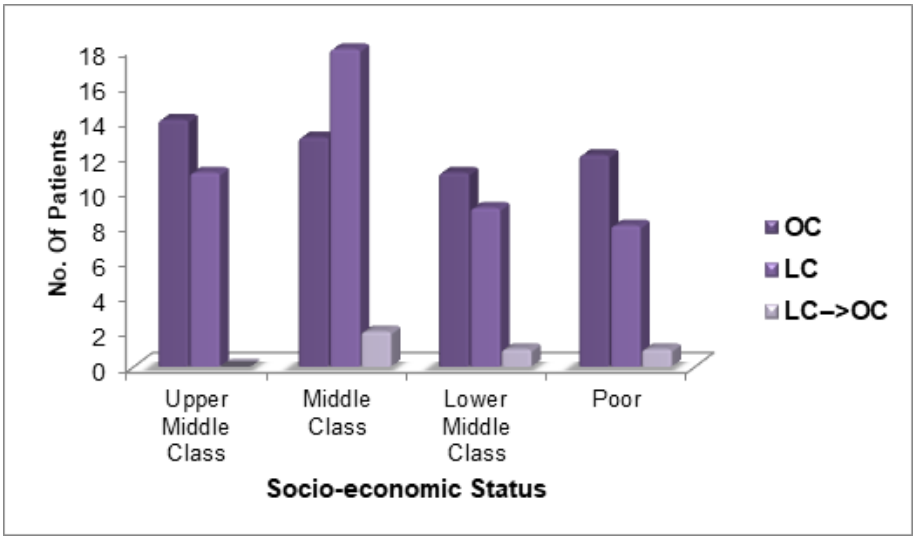

Figure 4: Socio-economic status of individuals affecting the incidence of Gall stones

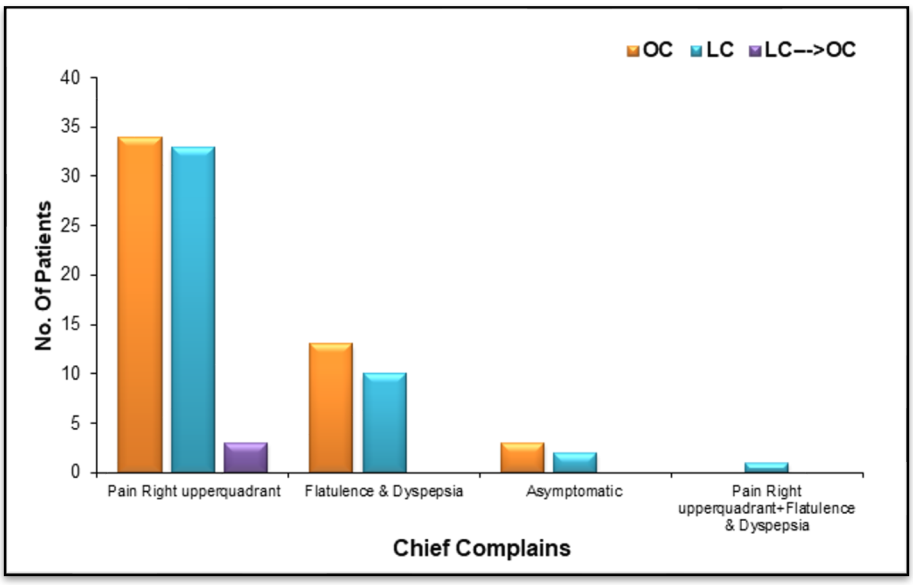

Figure 5: Chief complains of patients

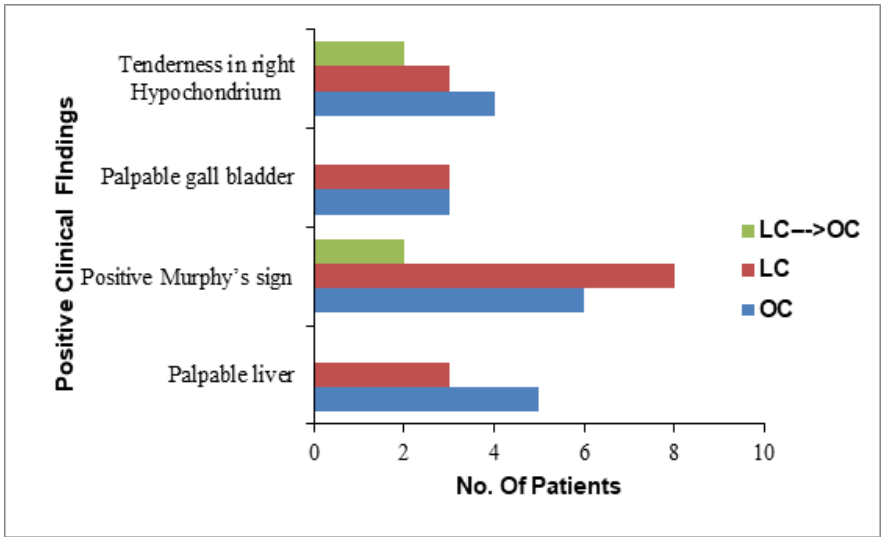

Figure 6: Positive clinical findings that confirms incidence of Gall stones

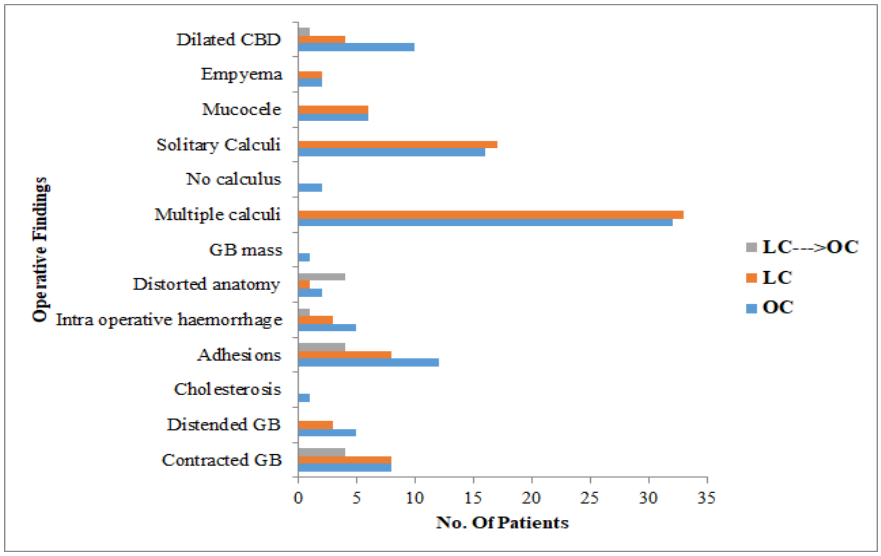

Figure 7: Operative findings during Open or closed cholecystectomy

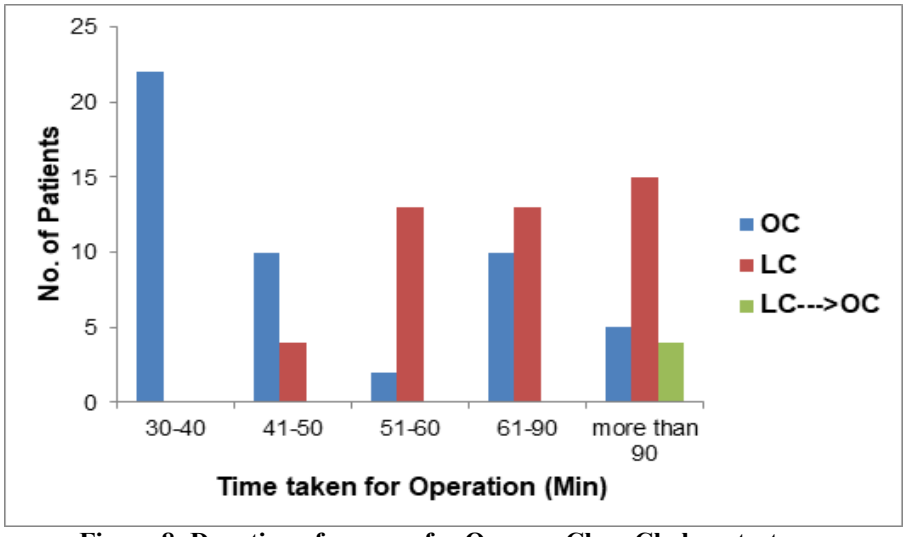

Figure 8: Duration of surgery for Open or Close Cholecystectomy

39 patients had at least one previous history of acute cholecystitis, of which 27 had adhesions, altered anatomy, or a distended or contracted gall bladder that presented challenges during surgery. While 6 additional individuals likewise experienced the same challenges, they had no prior history of an acute attack. Therefore, 1 or more acute attacks had previously occurred in 81.8% of patients with surgical complications. 3 of the 5 patients with a history of pancreatitis experienced complications during surgery. 7 patients had a history of jaundice, and all of them had multiple calculi. Laparoscopic cholecystectomy took longer to complete than open cholecystectomy. An open cholecystectomy typically took 55.4 minutes to complete, but laparoscopic cholecystectomy procedures typically took 83.91 minutes. However, the length of the procedure for laparoscopic cholecystectomy decreased as more and more cases were accumulated. The first 23 cases of the 46 cases where laparoscopic cholecystectomy was successfully performed took an average of 98.69 minutes, while the remaining 23 cases took an average of 69.13 minutes. Patients who underwent open cholecystectomy had a little higher drain output than those who underwent laparoscopic cholecystectomy when the two groups were compared. The laparoscopic cholecystectomy group also saw a noticeably speedier return of bowel sounds. Patients who underwent laparoscopic cholecystectomy required substantially fewer analgesics and were able to walk sooner. Therefore, compared to the open group, the I.V. drip was stopped earlier in these patients. In all but one case, post-operative USG did not identify any abnormalities. No patient displayed any stone retention. In the hepato-renal pouch, only one had a small collection. When compared to OC patients, LC patients were released far sooner (2.41 days as compared to 9.08 days). Additionally, the patients of LC returned to regular activities earlier (8.82 days on average versus 16.24 days). In contrast to individuals who

were self-employed or housewives, people with permanent positions generally started their jobs later.

If the complications are compared, the LC group did not have a higher occurrence. In the OC group, wound-related problems such infection, hemorrhage, scar hypertrophy, and incisional hernia were significantly more common. People with diabetes often had a higher rate of wound infection than people without diabetes. The gold standard procedure for treating gallstone disease is laparoscopic cholecystectomy (LC), which is also one of the most frequently done routine procedures in both elective and emergency settings globally [23, 24]. When compared to open cholecystectomy (0.2-0.3% of cases), bile duct injuries (BDIs) are serious cholecystectomy consequences that have become more common since laparoscopy was developed and adopted widely [23, 25, 26, 27, 28]. The frequency of BDIs during LC has steadily decreased since the first observations.

Seven of the 50 patients having OC had diabetes mellitus, while the other 43 did not. Only 3 of the 7 diabetics (42.857%) had wound infections. However, there was not a single instance of wound infection in the LC group; this included the 6 diabetics who underwent LC.

All other problems were comparable to those described in the literature, with the exception of wound infection, which occurred more frequently than what has been documented in the literature. 4 out of 50 instances, or 8%, were converted from LC to OC, which is in line with the internationally acknowledged rate of 10%.

Gallstones are not the primary target of current preventative methods. This strategy is supported by studies showing that, in a small subset of people who can be identified because of pain symptoms, gallstone development results in clinically significant consequences. The subset of individuals with symptomatic gallstones is the focus of current therapy efforts, which start after gallstones have already formed. Such treatment seeks to remove whatever gallstones the patient currently has as well as to stop the development of new stones. No single therapy strategy has been found to date to achieve these objectives in the full spectrum of gallstone patients. Variability in patients' overall health, gallstone composition, size, number, and location, as well as treatment-related morbidity and mortality, has limited success.

Fortunately, most individuals with symptomatic gallstones can already get safe with efficient treatment. Cholecystectomy accomplishes both objectives of gallstone treatment in patients who are at low risk for complications from general anesthesia. New research indicates that, at least in the short term, laparoscopic cholecystectomy is generally just as safe and successful as open cholecystectomy when carried out by skilled surgeons. However, it is now unclear whether this initial impression, which is based on information provided by a small group of highly skilled surgeons, accurately captures what the general public has experienced with laparoscopic cholecystectomy. To resolve this matter, all operators must accurately and centrally register each laparoscopic cholecystectomy and the related morbidity and mortality [29, 30]. Additionally, there aren't much data available to compare delayed complication between the two approaches.

Conclusion

From the above findings, our conclusion is that laparoscopic cholecystectomy clearly is the better option to treat gall stones patients. In contrast to OC, it offers a faster recovery, less pain following surgery, early discharge, analogous postoperative sonographic results, a sooner arrival at work, fewer complications, especially those associated to wounds. All of these significantly cut morbidity, which reduces the financial burden on patients and the healthcare system. More and more patients can utilize the limited healthcare system when treatment durations get shorter. As a result, more patients can gain from this. It follows that laparoscopic cholecystectomy is currently the preferred method of care for people with gall stone disease.

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