ROLE OF EARLY LAPAROSCOPIC CHOLECYSTECTOMY IN PREVENTING COMPLICATIONS OF ACUTE CHOLECYSTITIS

General Surgery

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ABSTRACT

Background: Cholecystectomy is the standard and the only curative treatment for acute cholecystitis. The complications of acute cholecystitis are disastrous to the patients; on the other hand, conservative treatment is associated with recurrence of symptoms and other complications as common bile duct stone. The aim of this study is to weight out the complication of emergency surgery against the complications of conservative treatment in patients with acute cholecystitis. **Materials and methods:** A total of 80 patients were included in the study. All Patients underwent early laparoscopic cholecystectomy or interval laparoscopic cholecystectomies for acute calculous cholecystitis from October 2017 to September 2019 were included in the study. **Results:** The overall complication rate was 15% (6 of 40 in early group and 10% (4 of 40) in the delayed group. One case of delayed group suffering recurrent acute attack and the other one suffering common bile duct stone, there was no major bile duct injury in the delayed group. **Conclusion:** Laparoscopic cholecystectomy is a safe and cost-effective approach for the treatment of acute cholecystitis within 72 h after the onset of attack.

KEYWORDS

acute cholecystitis, laparoscopic cholecystectomy, and acute abdomen.

INTRODUCTION

Acute cholecystitis is the second common cause of acute abdomen. Acute cholecystitis constitutes about 20% of symptomatic gallstone. Most patients with acute cholecystitis have had attacks of biliary colic, but some have had no previous biliary symptoms. After an initial attack of acute cholecystitis, additional attacks of pain or inflammation are common. In a small proportion of patients, acute cholecystitis may coexist with choledocholithiasis, cholangitis, or gallstone pancreatitis.

Acute cholecystitis is a bacterial infection caused by an obstruction of the cystic duct with gallstones. The obstruction leads to gallbladder distention, wall edema and ischemia. The common complications of acute cholecystitis are necrosis and gangrene which leads to perforation, with the development of an abscess and generalized peritonitis.

Early diagnosis of acute cholecystitis allows prompt treatment and reduces both mortality and morbidity. Clinical symptoms of acute cholecystitis may include severe right upper abdominal pain, nausea, vomiting and fever. Signs of acute cholecystitis may include tenderness in the right upper abdomen.

Abdominal US is superior to CT in establishing the diagnosis of acute cholecystitis. The main findings of acute calculous cholecystitis on US include in addition to the presence of stones: distension of the gallbladder lumen, gallbladder wall thickening, a positive US Murphy sign, pericholecystic fluid and a hyperemic wall upon evaluation with Color Doppler.

There are two methods for the treatment of acute cholecystitis; which is laparoscopic cholecystectomy (LC) as definitive treatment. Or conservative treatment and delayed LC after an interval of 6–12 weeks.

About 30% of cholecystectomies performed are for acute cholecystitis. LC has the advantages of less pain, shorter hospital stays, early return to work, and minimal invasiveness compared with laparotomy.

In the developmental stages of LC, acute cholecystitis was considered a relative contraindication for cholecystectomy. With increasing

experience in laparoscopy, acute cholecystitis is considered as one of the indications for LC.

Laparoscopic cholecystectomy during acute inflammation is associated with an early recovery and shorter hospital stay. However, early LC is associated with the potential hazards of serious complications and a high conversion rate.

In acute inflammation, surgery becomes difficult because of edema, exudate, adhesions with adjoining structures, and distension of gallbladder, friability of tissues, unclear and distorted ductal and vascular anatomy, hypervascularity, congestion, and dissemination of infection.

Many evidences showed that LC is an effective treatment for acute cholecystitis and also LC appears safe and shortens the total hospital stay.

Delayed cholecystectomy increases the chance of further gallstone-related complications during the waiting interval and thus additional hospital admission.

Urgent LC for acute cholecystitis can now be performed safely with low rates of morbidity and conversion to open surgery. With significantly shorter postoperative hospital stay compared with interval.

PATIENTS AND METHODS

This study was conducted at the surgery department of IGIMS, Patna, Bihar.

A total of 80 patients were included in the study. All patients suffering acute cholecystitis were diagnosed in the outpatient clinic or at the emergency department or referred from the department of medicine.

All Patients underwent early LC or interval LC for acute calculous cholecystitis from October 2017 to September 2019 were included in the study.

Patients randomly divided into two groups the early group (early LC) and late group (interval LC). In the early group, LC was performed within 72 hrs of onset, whereas in the delayed group, conservative treatment with intravenous fluids and antibiotics including

amoxicillin, amikacin, and metronidazole was given. The patients who responded to conservative treatment underwent an elective LC 12 week after the acute attack. The patients who failed conservative treatment were treated with emergency open cholecystectomy and excluded from the study.

Investigations which include blood test, renal function tests, X-ray chest, ECG, Serum bilirubin, Serum alkaline phosphatase, ALT, AST and abdominal US. When US was not able to diagnose any associated pathology magnetic resonance cholangiopancreatography (MRCP) was done. To rule out malignancy contrast enhanced CT was done in selected cases.

All patients with uncomplicated acute cholecystitis are included in this study. Patients with obstructive jaundice, malignancy, cholangitis, pancreatitis, generalized peritonitis and patients who failed conservative therapy are excluded from the study.

Surgical technique

The operations were done under general anesthesia using endotracheal intubation. The incision sites were locally infiltrated with 3 ml of 0.25% bupivacaine before incision and after removal of the gallbladder. Intraperitoneal installation of 0.25% bupivacaine was done in the gallbladder bed. CO₂ gas was injected. The abdominal cavity is entered through an infraumbilical incision using open Hasson technique or direct trocar insertion using visual port. Another 3 ports were used: one 10-mm port subxyphoid which is the working port and two 5-mm ports (one at the midline midway between the umbilicus and the xyphoid and one in the right flank). The operation was done with the patient in an inverse Trendelenburg position. Adhesion was dissected and exposure of Calot's triangle was first done. If the gallbladder is distended, it was emptied through a laterally inserted spinal needle. Dissection was done to isolate the cystic duct and the artery [Figure 1, 2]. Cystic duct and artery clipped and divided [Figure 3]. The gallbladder was removed from its bed using hook and spatula. The gallbladder extracted through the epigastric incision, which was enlarged according to the need. A tube drain was placed and the incisions were closed.

Figure 1: The gall bladder is completely covered by omentum

Figure 2: Easy dissection of gallbladder adhesion more than 50% of surfaces

Figure 3: Double clipping of hyperemic cystic duct

RESULTS

A total of 80 patients with acute cholecystitis were admitted within the study period. The mean age was 40.5 and 43 years for Group A and B respectively. Female to male ratio (F: M) 2.3:1 and 3:1 in Group A and B respectively [Table 1]. Out of 80, 40 patients (50%) were diagnosed

as acute cholecystitis (AC) were labeled as Group A which subjected to early laparoscopic cholecystectomy, while the other 40 patients (50%) were treated by conservative treatment and interval laparoscopic cholecystectomy were labeled as Group B [Table 2]. The operative time was longer in Group A in most of cases. Drains were used in all cases. There were (3) cases converted to open cholecystectomy in Group A while only one case of group B converted to open cholecystectomy [Table 3].

Table – 1 : Patients Demography

Patients	Group A	Group B
Mean Age in Years	40.5	43
Sex		
Male	28	30
Female	12	10
Ratio	2.3:1	3:1
Conversion rate	3	1

Table – 2 : Operative time in each group

Groups (minute)	Group A	Group B
30-40	5	11
41-50	13	22
51-60	5	4
61-70	8	3
>70	9	-

Table – 3 : Various in operative procedure

Surgical Procedure	Group A	Group B
Gallbladder decompression	22	3
Subhepatic drain	40	40
Enlargement of the epigastric port site	13	4
Ligation of cystic duct	2	0

Complications

There was no death in either group. The overall complication rate was 15% (6 of 40) in early group and 10% (4 of 40) in the delayed group. One case of delayed group suffering recurrent acute attack and the other one suffering common bile duct stone there was no major bile duct injury in the delayed group. However, in the early group one patient experienced postoperative cystic duct stump leak, which was treated by endoscopic retrograde cholangiography (ERCP) and stent placement. Another patient had a minor bile duct injury at the junction of the cystic duct with the bile duct. This required conversion and suturing of bile duct with a single 4-0 Vicryl stitch which lead to postoperative leak and treated by ERCP and stent placement. In the delayed group, there were one wound infection and a postoperative ileus in one patient, which responded to conservative treatment [Table 4].

Table 4: Complications related to laparoscopic cholecystectomy and conservative treatment

Complications	Group A	Group B
Complications of conservative treatment	0	2
Intraoperative complications		
Bile duct injury	2	0
Postoperative complications		
Major bile leak	1	0
Minor bile duct leak	1	0
Wound infection	2	1
Ileus	1	1

Table 4: Length of Hospital stay

Hospital Stay	Group A	Group B
Mean hospital stay	3	10
2-3	18(45%)	0(0%)
4-5	15(37.5%)	25(62.5%)
>6	7(17.5%)	15(37.5%)

DISCUSSION

Acute cholecystitis is an acute inflammation of the gallbladder. Unrelieved obstruction causes a mediated chemical inflammatory

response that may lead to bacterial contamination, ascending cholangitis and possibly pancreatitis. Many surgeons have the concept that initial conservative treatment and interval cholecystectomy increases the chance of successful LC. Laparoscopic cholecystectomy now considered the standard treatment for acute cholecystitis. Many patients planned for interval LC, had non-resolution of symptoms before their surgery and emergency LC was done for them. Many studies have observed high conversion rates, ranging from 6% to 20% for early LC in treatment of acute cholecystitis. The higher conversion rate is weighted against the benefit of early LC this is supported by sakran study.

It is therefore claimed that delayed LC leads to a technically easier cholecystectomy with a lower conversion rate. The concept that conservative treatments increase the chance of LC is not true as in our study both the early and interval LC had little difference conversion rates. Timing of surgery is an important factor in determining outcome. Ideally, the surgery should be performed just after admission. Surgery within the first 72 hrs from the onset of symptoms was advisable. 90% of our patients had surgery within 48 hrs after admission. Difficult LC due to acute cholecystitis is due to distended, edematous gallbladder containing infected bile. Several technical key points should be done when laparoscopic surgery is done for acute cholecystitis which includes exposure of Calot's triangle, decompression of the gallbladder to allow better manipulation and retraction of the gallbladder and the use of a suction irrigation device for dissection. Early acute cholecystitis is associated with adhesions which easily separated due to the presence of edematous plane around the gallbladder. On the other hand in chronic cholecystitis there is a dense fibrotic adhesion.

There is a concept that LC for acute cholecystitis is associated with high complications rates. Many studies supporting Senapati et al and Cameron et al showed that LC done within 72 hrs was associated with a shorter hospital stay, quicker recovery. And consider that early LC is safe procedure. Our study showed that there is little difference in complication rates during early LC and the complication occurs during the conservative treatment and late cholecystectomy. Malik et al showed that marked decrease in hospital stay in early LC which supports our study that revealed a will observed decrease in hospital stay in early group (group A).

CONCLUSION

Our study demonstrated that early laparoscopic cholecystectomy was somewhat similar to interval laparoscopic cholecystectomy as regards complications while early laparoscopic cholecystectomy is associated with reduced length of hospital stay. Laparoscopic cholecystectomy is a safe and cost-effective approach for the treatment of acute cholecystitis within 72 h after the onset of attack. Laparoscopic cholecystectomy averts the risk of recurrent attack or the occurrence of other biliary complications.

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