ORIGINAL ARTICLE

Early Vs Interval Cholecystectomy in Acute Cholecystitis: an Experience at Ghurki Trust Teaching Hospital, Lahore

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ABSTRACT

Background: Laparoscopic cholecystectomy is the procedure of choice in chronic cholecystitis. The probability of employing this procedure for cases of acute cholecystitis has always remained a question.

Aim: To assess its safety and practicability in acute cholecystitis and to compare the results with interval cholecystectomy.

Methods: Between 2010 and 2013, 88 patients with a diagnosis of acute cholecystitis were assigned to two groups. Group A (n=47) and group B (n=41). The group A patients underwent cholecystectomy within 48 hours of admission while the group B patients were offered initial conservative management followed 6 weeks later by interval laparoscopic cholecystectomy.

Results: Regarding conversion rates (early, 14.89% vs delayed, 14.63%), operating times (early, 51.28 min vs delayed, 46.09 min), or postoperative complications (early, 27.65% vs delayed, 26.82%) were almost similar. However, the group A patients had significantly shorter hospital stay (5.08 vs 7.99 days).

Conclusions: Early laparoscopic cholecystectomy is safe and practical in cases of acute cholecystitis. It has an added benefit of a shorter hospital stay. The procedure is recommended to patients with acute cholecystitis.

Keywords: Acute cholecystitis, laparoscopic cholecystectomy

INTRODUCTION

Cholecystectomy is recognized as the procedure of choice for the treatment of symptomatic gallstones. Few decades from now it was performed through a long right subcostal incision. The dawn of minimally invasive techniques has now made laparoscopic cholecystectomy the gold standard procedure for removal of gall bladder. The procedure is preferred because it offers less postoperative pain, better cosmetic results, short hospital stay, and an early recovery.

Laparoscopic cholecystectomy was initially reserved for chronic cholecystitis but with the advent of modern instrumentation and refinements in the surgical technique and experience, the surgeons are moving more and more towards performing the procedure in cases of acute cholecystitis. Previously the preferred treatment for acute cholecystitis was conservative, with Intravenous antibiotics followed 6 weeks later by interval cholecystectomy, once the acute inflammation had subsided. It was believed to be much safer and also had less conversion rates. The most feared threat of performing surgery in acute setting was inflammation which made tissue dissection difficult and led to increased risk of complications[1-3].

It was observed that laparoscopic cholecystectomy when performed in cases of acute cholecystitis if successful was associated with a short hospital and an early recovery.

Several studies have been performed to prove the superiority of laparoscopic cholecystectomy for acute cholecystitis but the controversy still exists and it is difficult to choose between two[2-4]. Although the results of the trials have been fruitful, yet it has not been clearly proven beyond doubt. We as a part of the third world have attempted to share our experience of performing laparoscopic cholecystectomy in cases of acute cholecystitis.

PATIENTS AND METHODS

The study was conducted in Ghurki Trust & Teaching Hospital between the year 2010 and 2013. All the patients with cholelithiasis and acute cholecystitis admitted in the Department of Surgery were included in the study. Informed consent was taken from these patients and after initial evaluation they were then randomly assigned to ‘‘early (Group A)’’ or ‘‘delayed (Group B)’’ groups. Patients belonging to the early group were the ones in whom; laparoscopic cholecystectomy was performed on the next available

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list after admission (within 24-48 hours). The delayed group included the ones who were offered initial conservative management (with intravenous fluids and antibiotics including ampicillin, gentamicin and metronidazole) followed 6-8 weeks by interval laparoscopic cholecystectomy.

The diagnosis of acute cholecystitis was made clinically and ultrasonographically. The clinical findings included (acute right upper quadrant pain and tenderness, persistent vomiting, palpable tender gall bladder and temperature exceeding 37.5^{o}C). Total leukocyte count over 11000/mm^{3} suggested infection. The Ultrasonographic findings of thickened edematous distended gallbladder, presence of gallstones, pericholecystic fluid collection and sonographic Murphy's sign were the features employed to suggest acute cholecystitis.

Exclusion criteria: All those patients having symptoms for over 1 week, coexisting common bile duct stones, previous major upper abdominal surgery and those with medical ailments leaving them unfit for laparoscopic surgery were excluded from the study.

Study parameters: The collection of Data was prospective and the focus was on operative time and operative findings, conversion to open cholecystectomy and reason for conversion, postoperative complications and duration of hospital stay. In case of delayed group, admission at presentation and admission for subsequent interval surgery were included.

Statistical analysis: The results were subjected to analysis using paired t-test and a p value less than 0.05 was the aim.

RESULTS

From 2010 to 2013 a total of 88 patients included in the study underwent laparoscopic cholecystectomy in surgical unit I at Ghurki trust teaching hospital. Of these 68 patients were females while the remaining 20 were males. The ages of patients belonging to the two groups varied between 19-68 years, with an average age of 43.7 years. The patients were divided into two groups A and B. Patients having acute cholecystitis who were operated within 48 hours (early group) were included in Group A. Patients, who were offered initial conservative management followed by interval cholecystectomy were placed in group B (delayed group). Of the total number of patients 47 patients were included in group A, 41 patients in group B.

Table 1: Operating time

Groups	Minimum (mins)	Maximum (mins)	Average (mins)
Group A	25	75	51.28
Group B	20	65	46.09

The operative time of these patients was noted. In Group A the mean operative time was 51.28 minutes (range 25-90 minutes) while that of Group B was 46.08 minutes (range 20-65 minutes) *p* value 0.094 (Table 1).

Table 2: Hospital stay

Groups	Minimum	Maximum	Average
Group A	3	21	5.08
Group B initial admission	3	7	4.14
Group B after interval cholecystectomy	3	20	3.85
Total Group B	6	24	7.99

Regarding the hospital stay of patients, the patients in Group A had an average hospital stay of 5.08 days (range 3-21 days). Patients of Group B had a mean cumulative hospital stay of 8.79 days (range 6-24 days) a *p* value of 0.28. Although in this group of patients the post operative hospital stay (2nd admission) was slightly less than the patients of Group A, yet, when their time of initial hospitalization was included the cumulative hospital stay rose considerably (Table 2).

Conversion rate: Seven patients (14.89%) in group A and six patients (14.63%) in group B had to be converted to open cholecystectomy *p* value < 0.05. In group A, unclear Calot's triangle anatomy, bile duct injury and transaction of gallbladder at Hartman's pouch, were the reasons for conversion to open cholecystectomy. In contrast the patients of group B had to be converted because of either hemorrhage or dense omental adhesions around gallbladder and Calot's triangle which made dissection difficult (Table 3).

Table 3:

Groups	No of patients converted	%age
Groups A	7	14.89
Groups B	6	14.63

Post operative complications: None of the patients undergoing cholecystectomy died. In Group A the complication rate on the whole was 27.65% (13 of 47) while those of Group B had a complication rate of 26.82% (11 of 41) *p* value <0.05. Two patients (4.25%) in Group A suffered from common bile duct injury while in the Group B there was only one (2.43%) such incident. All of the injuries were identified per-operatively and dealt with primary repair over a T-tube after converting to an open cholecystectomy. Excessive bleeding was experienced in one (2.12%) case in the Group A whereas 2(4.87%) patients of Group B had bleeding more than the routine. Only one patient amongst those of Group B had to be converted while the others were adequately managed by pressure and

suction irrigation. Bile leakage was observed in some patients in both the groups. Two such cases were seen in Group A while one in Groups B. This leakage of bile was managed by suction and irrigation. A few cases of port site infections occurred in both the groups. In contrast to four patients in Group A, three patients in Group B developed this complication. Postoperative ileus was also encountered in some cases in both groups which responded to conservative treatment (Table 4).

Table 4

Complications	Group A	Group B
Common bile duct injury	2	1
Transection of Hartmann's pouch	2	2
Hemorrhage	1	2
Bile leakage	2	1
Ileus	2	2
Umbilical port site infection	4	3
Total complication	13(27.65%)	11(26.82%)

DISCUSSION

When laparoscopic cholecystectomy began it was limited to only patients with chronic cholecystitis and biliary colic and nobody could risk performing it in acute cases. The popular belief that laparoscopic cholecystectomy when performed in an acute setting would be associated with more difficulty, higher conversion rates and increased rate of complications, is now being increasingly questioned. Conversion rates varying between 6% to 35% [5, 7] reported in some studies do seem to be quite high. If this were so then laparoscopic cholecystectomy would undoubtedly be reserved for delayed interval cholecystectomy and its effectiveness in acute cholecystitis be obviated.

Contrary to this belief as experienced in our study, both the acute (group A) and delayed (group B) groups had conversion rates which were comparable. The reasons for conversion, however, were different. In group A, it was difficult to handle the gall bladder which was edematous, soft and friable and easily perforated where ever grasped. The anatomy of calots triangle was relatively obscure because of severe edema and fibrinous adhesions of the surrounding structures (omentum, duodenum and transverse colon). During surgery dissection in this region was the cause of excessive bleeding which made laparoscopic dissection impossible in some cases. Furthermore it was observed that most (66% in first 17 cases) of these conversions occurred in the initial surgeries and as the time progressed the rate of conversion decreased (34%). It is appreciated that the initial high rate could be the result of inexperience and with the improvement in the technique the conversion rate decreased. In group B the primary factor leading to conversion was dense fibrous adhesions in the calot's triangle which obscured the regional anatomy. In an attempt to dissect the Calot's triangle for isolation of the cystic artery and duct injuries to the common hepatic duct were incurred. Secondly excessive bleeding during dissection also made the field unclear to carry on the procedure laparoscopically. More important in this scenario is that the rate of conversion in this group remained the same throughout the study period[6].

Probably the most important concern in both the groups is the common bile duct injury. There were two cases in each group who suffered from this complication. Three of the cases in both groups had complete transaction of the common bile duct while one case from group B suffered from partial injury. All of these injuries were recognized per-operatively and the cases were converted and dealt with accordingly. Those, in whom common bile duct was completely transected, underwent primary ansatamosis of the cut ends over a T-tube, while the patient from group B who suffered from partial injury was managed by repair with vicaryl 3/0 suture over a T tube drain. All of the injuries occurred as result of difficult anatomy and dissection in the region of Calot's triangle. The other important feature in this perspective is that all of these injuries occurred earlier on in the study. Whether it was the lack of experience or the surgeons were adamant to carry on the procedure laparoscopically for the sake of the critism of not being able to complete the procedure is not clear. Although the atrocity of this complication may have been devastating and the patients had to pay a fair enough price for it yet it is evident that with time and experience the surgeons learned to avoid this complication. Now the incidence of this complication has become virtually nonexistent[8].

There is a general consensus that an important factor which determines the outcome of cholecystectomy in acute cholecystitis is the timing of surgery. It is recommended that the surgery be conducted as soon as possible (golden 72 hours)[9]. In clinical practice this may not always possible due to management issues. About 74% of patients in group A of our study were operated within 24 hours and the rest 26% within 72 hours after admission.

The duration of surgery in any operation is reliant on the operative findings. The most vital step in laparoscopic cholecystectomy is dissection in the Calot's triangle and the success of the procedure depends upon its anatomy[10]. Both the groups in our study had certain technical issues while dissecting the calot's triangle. In group A the operative findings included an edematous, distended gallbladder containing infected bile and having adhesions to the

surrounding structures This inflammatory reaction created problems of holding the gall bladder. We have learnt from experience that by passing a trocar through the 5mm port in the right hypochondrium and emptying the gallbladder via suction helped improve grasping of the gallbladder. Freeing gall bladder off the surrounding omentum and visceras apart from causing hemorrhage poses a risk of rupture of the gall bladder and leakage of the infected bile into the peritoneal cavity. In acute cholecystitis dissection of calot's triangle is also difficult due to the acute inflammatory reaction. This increases the chances of injury to the common bile duct or the duodenum. By applying traction on the empty gall bladder a better exposure of the calot's triangle can be obtained. We had to carry out decompression in about 89% of cases and in 21% of cases there was spilling of stones. A subhepatic drain was placed in all cases. Retrieval bags were used for removing the spilled stones. Initially this problem was cumbersome but with experience it was realized that in acute cholecystitis an edematous plane is created around the gallbladder and once within the proper plane dissection becomes much easier[12]. In group B on the other hand adhesions around the gallbladder and porta hepatis were dense and fibrotic after initial conservative measures. This led to difficult dissection and was the sole reason for injury to the common bile duct and also conversion[8]. The difficulties encountered in both group A and B led to increased duration of surgery which was almost the same as depicted from the results.

The results of our study show that although the post operative hospital stay of group A patients is slightly greater than that of group B patients but the cumulative hospital stay of the latter group is far greater than the group A patients. Secondly the working hours lost in the group B patients are much more than in group A patients. This apart from many physiological, social and psychological stresses has immense economical repercussions to both the patients and the hospital[11].

CONCLUSION

Early laparoscopic cholecystectomy is safe and feasible in cases of acute cholecystitis. There is not much difference in the duration of surgery, conversion rates. The rate or severity of complications although is the same in both groups yet it can be brought down as the experience increases. Early laparoscopic surgery has the added benefit of reducing costs to the patient and health care system and subsequent patient stresses.

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