

A Comparative Study Of Early Versus Delayed Laparoscopic Cholecystectomy For Acute Cholecystitis

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Abstract

Introduction: Laparoscopic cholecystectomy is the most common laparoscopic surgery performed in the world¹. The traditional treatment (initial) of acute calculus cholecystitis includes bowel rest, intravenous hydration, correction of electrolyte abnormalities, analgesia, and intravenous antibiotics. Following this treatment, patients with uncomplicated disease are managed on outpatient basis and are called for laparoscopic cholecystectomy after a period of 6–8 weeks.

Materials and methods: Between January 2017 and December 2017, 40 patients with a diagnosis of acute cholecystitis underwent early laparoscopic cholecystectomy within 72 h of admission. This study group was compared with a control group of 40 patients of acute cholecystitis, who underwent delayed laparoscopic cholecystectomy after an initial period of conservative treatment.

Results: There was no significant difference in the conversion rates (3 early versus 2 delayed), postoperative analgesia requirements, postoperative pain scores, or duration of postoperative stay (1.66 days early versus 1.46 days delayed). However, duration of surgery was significantly more in the early group (65.89 minutes early versus 55.76 minutes delayed). Surgery was abandoned in 3 patients from the early group because of difficult anatomy. No complications and mortality were seen in either group.

Conclusion: The duration of surgery, post-operative complications, conversion to open cholecystectomy, mean days of hospital stay and mean days of return to full activities was less in early laparoscopic surgery group as compared to delayed laparoscopic surgery group in acute cholecystitis.

Key words: Laparoscopic cholecystectomy, early laparoscopic surgery, delayed laparoscopic surgery

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I. Introduction

Laparoscopic cholecystectomy is the most common laparoscopic surgery performed in the world¹. The traditional treatment (initial) of acute calculus cholecystitis includes bowel rest, intravenous hydration, correction of electrolyte abnormalities, analgesia, and intravenous antibiotics. Following this treatment, patients with uncomplicated disease are managed on outpatient basis and are called for laparoscopic cholecystectomy after a period of 6–8 weeks. Laparoscopic cholecystectomy is avoided for acute cholecystitis due to concerns about the potential hazards of complications, especially common bile duct injury and a high conversion rate to open cholecystectomy². Initial studies, however have shown that early laparoscopic cholecystectomy can be done during acute cholecystitis. Since most surgeons prefer to delay surgery during the acute phase, we undertook a prospective randomized study to compare early and delayed laparoscopic cholecystectomy in the treatment of acute cholecystitis.

In the presence of acute inflammation, LC becomes more challenging and difficult because of edema, exudate, adhesions with adjoining structures, distension of gallbladder, friability of tissues, unclear and distorted ductal and vascular anatomy³, hypervascularity, congestion, and dissemination of infection. These risk factors predispose for suboptimal outcome and high conversion rate to open cholecystectomy. As a result, the patient is deprived of potential benefits of LC which is now a “gold standard” for the management of symptomatic gallbladder stones⁴.

Early open cholecystectomy had been established as the preferred treatment of acute cholecystitis to reduce morbidity, mortality, and total hospital stay⁵; however, with the advent of LC, the benefits of early surgery have been the subject of some contention. Initial reports suggested that early LC for acute cholecystitis was associated with increased complication rates, prolonged operation time, and increased conversion rates (5%–35%). As a consequence, initial conservative management with subsequent delayed or elective LC became accepted practice⁷.

Delayed cholecystectomy potentially increases the chance of further gallstone-related complications⁸ during the waiting interval and thus additional hospital admission. Recent evaluation has indicated early LC to be safe option in acute cholecystitis, although conversion to open cholecystectomy rates may be higher^{9,10}.

II. Materials And Methods

The study was conducted at the Department of Surgery, Saptagiri Institute of Medical Sciences and Research Center, Bangalore, from January 2017 to December 2017. The study population included patients between 18 and 60 years of age with acute calculus cholecystitis (ASA grade 1–3) presenting to surgery emergency and OPD of Saptagiri Institute of Medical Sciences and Research Center, Bangalore.

The study included 40 consecutive patients presenting with acute calculus cholecystitis, which were compared with a control group of 40 patients of acute calculus cholecystitis undergoing delayed laparoscopic cholecystectomy. Randomization of patients was done using a table of random numbers. Diagnosis of acute cholecystitis was based on the following four diagnostic criteria: acute upper abdominal pain with tenderness under the right costal margin, fever more than 37.5°C, leukocytosis more than 10,500/mm³, and ultra sonographic evidence of acute cholecystitis (thickened gallbladder wall, edematous gallbladder wall, presence of gallstones, and pericholecystic fluid collection). Patients of acute cholecystitis with ASA grade >3, who had pancreatitis and common bile duct stones, were excluded. The study protocol was approved by the Hospital Ethics Committee and an informed consent was obtained from every patient. In the early group, laparoscopic cholecystectomy was performed within 72 h of admission, whereas in the delayed group laparoscopic cholecystectomy was done after 6 to 8 weeks.

Laparoscopic cholecystectomy was performed using the standard 4 port technique. Modifications were used in the surgical technique in both groups (Table 1). Postoperatively, the patients were allowed oral intake 6–12 h after surgery provided they had no nausea or vomiting. Pain relief was obtained by intramuscular diclofenac (75 mg) injection, which was changed to tablet form once patient was allowed orally. Postoperative pain assessment was performed by visual analog scale (VAS). The patients were discharged once the patients were afebrile and taking nutrition orally.

In the intraoperative period, the following parameters were evaluated: duration of surgery starting from incision for the port to closure of port sites, gall bladder perforation, common bile duct injury, conversion to open cholecystectomy and requirement of drains.

In the postoperative period, the following parameters were evaluated: analgesic requirement, pain scoring using visual analogue scale, duration of postoperative hospital stay, wound related complications.

Statistical analysis was performed using paired -test and chi-square test. SPSS version 17 was used to determine the value (value less than 0.05 was considered significant).

III. Results

Modification	Early group	Delayed group	P value
Subhepatic drain	25	11	0.012
Gallbladder decompression	8	2	0.013
Retrieval Bag	5	1	0.012

Table 1: Modification of the operative technique

	Early group (N=40)	Delayed Group (N=40)	P Value
Age (Years)	32.6	33.8	0.560
Sex(M:F)	14:26	12:28	0.114
Duration of acute symptoms (h)	36.6	37.5	0.088
Operating time (min)	65.89	55.76	0.045
Postoperative stay (days)	1.66	1.46	0.354
Conversion Rate	3	2	0.756

Table 2: Overall comparison of the patients in the early and delayed groups.

During the study period, a total 80 patients were evaluated: 40 patients in the early group and 40 patients in the delayed group. The two groups were well matched in terms of age and sex, as well as clinical and laboratory parameters.

More modifications in the operation technique (Table 1) and a longer operation time were required in the early group than in the delayed group. The mean operating time was 65.89 min in the early group and 55.76 min in the delayed group. The difference in operation time was statistically significant (*P* value: 0.046).

Three patients in early group and 2 patients in delayed group underwent conversion to open surgery (P value:0.780). The main reasons for conversion in the early cases were unclear Calot's triangle anatomy and hemorrhage. The main reason for conversion in the delayed group was hemorrhage.

Surgery was abandoned in 3 patients from the early group because of difficult anatomy. The pain scores, assessed by the visual analogue scale at 12 hours, 24 hours, and 7 days after surgery, in the two groups were statistically insignificant (P value: 0.115). There was no statistically significant difference (P value: 0.115) in the analgesia requirement of the two groups postoperatively.

The mean duration of postoperative stay in the early group was 1.67 days as compared to 1.47 days in the delayed group. The difference was statistically insignificant (P value: 0.379).The overall comparison of the patients in the early and delayed groups is shown in Table 2.

IV. Discussion

The technical difficulty of laparoscopic cholecystectomy is related to operative findings during early surgery. A distended and edematous gall bladder is commonly seen in cases of acute cholecystitis. On the basis of our experience, we believe that certain key points must be kept in mind when laparoscopic surgery is performed for acute cholecystitis. For good exposure of Calot's triangle, decompression of the gallbladder should be done early because this allows better grasping and retraction of the gallbladder. The other technical rules call for the use of a suction-irrigation device for dissection and the use of a retrieval bag to remove spilled stones and perforated gallbladder. In our study, decompression of the gallbladder was required for 50% of the patients in the early group. Stone spillage was seen in 25% of the cases, which was removed by using retrieval bags. A subhepatic drain was required for 20% of the early cases.

Our experience supports the belief that the inflammation associated with acute cholecystitis creates an edematous plane around the gallbladder, thus facilitating its dissection from the surrounding structures. Waiting for the inflamed gallbladder to "cool down" allows maturation of the surrounding inflammation and results in organization of the adhesions, leading to scarring and contraction, which make the dissection more difficult.

The postoperative pain scores and analgesia requirements were similar in the two groups. Longer operation times were required in the early group than in the delayed group.

V. Conclusion

The duration of surgery, post-operative complications, conversion to open cholecystectomy, mean days of hospital stay and mean days of return to full activities was less in early laparoscopic surgery group as compared to delayed laparoscopic surgery group in acute cholecystitis.

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