International Surgery Journal
Meena A et al. Int Surg J. 2018 May;5(5):1843-1846
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20181594

Original Research Article

Laparoscopic cholecystectomy in acute calculus cholecystitis

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Received: 28 February 2018
Accepted: 31 March 2018

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ABSTRACT

Background: Acute calculus cholecystitis was traditionally treated conservatively followed by open interval cholecystectomy. Laparoscopy has revolutionized abdominal surgeries. Laparoscopic cholecystectomy is gold standard in management of cholelithiasis. Role of laparoscopic cholecystectomy in acute calculus cholecystitis is still controversial. Present study is evaluating the role of Laparoscopic cholecystectomy as treatment of acute calculus cholelithiasis.
Methods: An observational study was conducted at tertiary care academic hospital and a total of 33 patients were enrolled. Patient with acute abdomen clinically and ultrasonologically diagnosed as acute cholecystitis were included as case. Exclusion criteria included patients with Acalculus cholecystitis, Choledocholithiasis, obstructive jaundice, Cholangitis and pregnant patients. The study factor was standard four port laparoscopic cholecystectomy was performed within 72 hours of onset all patients. The primary outcomes were operative time, intra-operative complications, conversion to open surgery and secondary outcome was postoperative complications.
Results: A total of 33 cases were enrolled. The mean age of the patients was 44.00±12.2 years (26-68 years) with female preponderance Mean duration of pain was 1.16 days. Mean Operative time was 102.06±10.36 minutes (60-142 minutes). Post-operative surgical site infection present with 4 (12.1%) patients and post-operative fever in 5 (15.2%) patients. The mean hospital stay was 5.30±1.42 days. The open conversion rate was 9.1% and there were no complications.
Conclusions: Laparoscopic cholecystectomy in acute calculus cholecystitis is a safe operative procedure.

Keywords: Acute calculus cholecystitis, Cholelithiasis, Laparoscopic cholecystectomy, Obstructive jaundice

INTRODUCTION

Acute calculus cholecystitis is a life-threatening condition which affects >20 million Americans yearly and causes high economic burden around the world. It is a major complication of gall stone disease which is found in 10-35% patients. Cholelithiasis with cholecystitis is one of the predominant indications of cholecystectomy done after an interval of 4-6 weeks to let the inflammation subside.[1,2] The concept of early with 72 hours cholecystectomy in acute calculus cholecystitis was based on easy dissection of the tissue planes due to edema. Early cholecystectomy reduces post-operative morbidity and save cost, time and avoid re-admission for interval cholecystectomy.

Laparoscopy is one of the biggest revolution in surgerical field. Laparoscopic cholecystectomy has become a new gold standard for management of cholelithiasis and cholecystitis. Role of laparoscopic cholecystectomy in acute calculus cholecystitis has been controversial because of billiary tract injuries, high open conservation rate and increased post-operative complications which are shown by meta-analysis.[3]

Tokyo guidelines (2006) recommended laparoscopic cholecystectomy as first option for acute calculus cholecystitis as it reduces cost and post-operative morbidity and hospital stay.[4] Early laparoscopic cholecystectomy performed within 72 hours is now days preferred over interval and delayed cholecystectomy. Hence present study was aimed to assess the utility of laparoscopic cholecystectomy in acute calculus cholecystectomy in an academic tertiary care setup.

METHODS

This observational study was conducted in tertiary care hospital in between September 2015 to August 2017. Patients with acute abdomen suspected as acute cholecystitis with following criteria's a clinical assessment (tenderness in right upper quadrant, Murphy's sign, fever), laboratory findings (elevated CRP and WBC) and ultrasound imaging signs of acute cholecystitis on imaging (thickened gallbladder wall, stones, enlarged gallbladder wall, edema) were enrolled as subjects. Patients with Acalculus cholecystitis, Choledocholithiasis, obstructive jaundice, Cholangitis, pregnant patient and patients not consenting for Laparoscopic cholecystectomy were excluded from study. The study factor was standard four port laparoscopic cholecystectomy performed on all enrolled subjects within 72 hours of onset of acute pain episode. There was no formal sample size calculation carried out as the study was hypothesis generated endeavor.

The study project was approved by institutional ethical committee of the institute. The outcome factors were operating time calculated from skin incision to skin closure recorded by stop watch in mobile phone. Conversion to open was based on criteria of obscure callus triangle anatomy, dense adhesion of gall bladder leading to abandoning the laparoscopic procedure and any intra-operative complication observed such as hemorrhage and biliary tract injury. Post-operative complication studied was namely surgical site infection as per CDC guidelines and post-operative fever. The results are presented as mean with SD and tables.

RESULTS

Total 33 patients were enrolled based on the inclusion criteria in this non comparative observational study. The mean age of the patients was 44.00±12.2 years with a range from 26-68 years. Maximum numbers of patients were observed in 4th and 5th decade accounting 57.5% of all cases. There was female preponderance with 21 (63.6%) patients being female and 12 (36.4%) patients were male. Male female ratio of 1:1.75. Pain in abdomen was main inclusion criteria which observed in all patients. 12 patients (36.4%) presented within 24 hours while maximum 19 (57.6%) patients between 12 to 24 hours. Only 2 patients presented after 48 hours. Ultrasonography of abdomen confirmed present of inflamed gall bladder with pericystic collection with gall stone in all patients. Standard four port Laparoscopic cholecystectomy was performed in all 33 patients. The mean duration of operation recorded was 102.06±10.36 minutes (Range between 82-122 minutes).

The operative time was more in initial cases which slowly come down as the learning curve improved. The operative outcome factors were intra operative complication. There was no biliary tract injury or bleeding in any case. The conversion to open cholecystectomy was observed in 3 patients (9.1%), which done due to obscured callot's triangle anatomy or dense adhesion and failure to dissect Gall bladder. Surgical site infection was noted in 4 patients (12.1%) all being in grade I according to CDC classification which is similar with the literatures. Post-operative fever was observed in 5 (15.2%) patients who responded to routine antibiotics and antipyretics. Mean hospital stay was 5.30±1.42 days with range 4-9 days. 29 (87.8%) patients were discharge up to 5th post-operative days.

DISCUSSION

Interval cholecystectomy done after 4-6 weeks after an acute episode of cholecystitis was the standard treatment for patients suffering from acute calculus cholecystitis. In the decade of 1980's open cholecystectomy proved to be beneficial for management of acute cholecystitis in terms of reducing morbidity and shortened hospital stay as compared with conventional conservative treatment and delayed operation.[5] Acute calculus cholecystitis was a contraindication for laparoscopic cholecystectomy in early days solely because of increased probability of Billiary tract injuries and high open conversion rate. With training and development of laparoscopic skills, surgeons started doing laparoscopic cholecystectomy for acute calculus cholecystitis within 72 hours with significant reduction in rate of overall postoperative complication and hospital stay.[6]

The benefit of early laparoscopic cholecystectomy was due to inflammatory edema that provides plane of cleavage and easy dissection, however there was a linear relationship between technical difficulties and timing of surgery.[7,8] Therefore it has been suggested that laparoscopic cholecystectomy should be done within 72 hours of disease onset to minimize technical difficulty, conversion rates and postoperative complications with benefits of shortening the length of hospital stay. In the present study 9.1% patient was converted to open surgery which is similar with literature, this conversion rate quoted in Table 1.

The post-operative complication observed in present study was Surgical site infection and Post-operative fever which is quite consistant with the literarture in Table 2. The mean duration of hospital stays 5.03±1.42 is quite similar with the literature.[9-11]

Table 1: Comparison of Open Conversion rate with literature.

Study	n	Conversion to open
Van der Steeg et al.,[12]	972	12%
Ballal M et al.,[9]	376	9.4%
Johansson M et al.,[10]	74	9.8%
Present study	33	9.1%

Major advantage of emergency laparoscopic cholecystectomy is complete abolition of second admission for planed cholecystectomy after 6 weeks thus saving patient the cost, discomfort and loss of working days. The factors like operative difficulty which increased the duration of surgery was one of the major arguments against early laparoscopic intervention but with the experience and skill of laparoscopic surgeon both these factors could be minimize in years to come.

Table 2: Comparison of post-operative complications with literature.

Studies	n	Biliary leak	Wound infection	Bile duct injury	Port site hernia	Hemorrhage	Post-operative fever
Elsamani et al.,[13]	70	2.9%	0	0	4.3%	0	0
Mishra et al.,[14]	50	4%	4%	0	0	0	10.2%
Kawaguchi et al.,[15]	30	0	3.2%	6.4%	0	0	9.5%
Chau et al.,[16]	296	0	3.2%	6.5%	0	0	0
Present study	33	0	12.1%	0	0	0	15.2%

The limitation of present study was that it was an observational study without any comparative group and no formal sample size calculation was done making present study a hypothesis generating study. The result of present study will help in planning a randomized control trial to generate class I evidence for laparoscopic cholecystectomy in acute calculus cholecystectomy with a proper comparative group.

CONCLUSION

The laparoscopic cholecystectomy in acute calculus cholecystectomy appears to be a safe procedure with gradually decreasing open conversion rate and complication as the operative experience of surgeon's increases.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Meena A, Chaudhari A, Akhtar AM. Laparoscopic cholecystectomy in acute calculus cholecystitis. Int Surg J 2018;5:1843-6.