

Original Article

Laparoscopic Cholecystectomy in Patients with Emphysematous and Gangrenous Cholecystitis: An Experience at Khwaja Yunus Ali Medical College & Hospital, Enayetpur, Sirajgonj.

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Abstract

Objective- To look for the feasibility and safety of laparoscopic cholecystectomy in patients with emphysematous and gangrenous cholecystitis.

Back ground- Emphysematous and gangrenous cholecystitis are severe form of acute cholecystitis. They are considered as contraindication of laparoscopic cholecystectomy due to peri operative life threatening complications, surgical technical difficulties, frequent conversion to open procedure. This study describe our experience in terms of feasibility and safety with laparoscopic cholecystectomy in patients with emphysematous and gangrenous cholecystitis.

Materials and methods- From January 2012 to December 2014, total 37 patients with clinical diagnosis of severe acute cholecystitis under went laparoscopic cholecystectomy within 72 hours of admission. Operative findings and histopathological reports were used to identify patients of emphysematous and gangrenous cholecystitis.

Results- 35(94.59%) among 37 patient's laparoscopic cholecystectomy were performed successfully. 29 case were emphysematous and 8 cases were gangrenous cholecystitis. Two patient's laparoscopic procedure were converted to open procedure due to various operative difficulties, of which the most common was distorted calot's triangle. Maximum operating time was up to 130 minutes (one case), Post operative major complications occurred in 2 cases (5.40%). maximum patients were discharged by 48 to 72 hours. There was no mortality.

Conclusion- laparoscopic cholecystectomy is feasible and safe in emphysematous and gangrenous cholecystitis. However the experience of the surgeon and his patience during surgery play key role in over all out come. Based on our experience we recommend an early laparoscopic cholecystectomy for these group of patients, provided expertise & gadgets are available.

Key words- Laparoscopy, Emphysematous, Gangrenous, Acute cholecystitis, Complications, Outcome.

Introduction

Gall bladder disease remain one of the most common medical problems leading to surgical intervention. Acute

cholecystitis frequently leads to hospitalization and a significant burden on health system. A study of natural history of cholelithiasis demonstrates that approximately

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35% of patients initially diagnosed with having but not treated for, gall stones later developed complications or recurrent symptoms leading to cholecystectomy¹. Empyema and gangrene of the gall bladder are potentially fatal complications of acute cholecystitis, characterized by friable walls and the presence of pus within the lumen of the gall bladder^{2,3}. These are produced by suppuration superimposed on acute cholecystitis. The clinical presentation is often difficult to distinguish from acute cholecystitis^{2,4}. Features suggesting diagnosis and seriousness of this conditions are few^{1,2,5}. Empyema of gall bladder is more often encountered in males and the elderly². Percutaneous gall bladder drainage has often been recommended as a safe and effective procedure for the initial management of in such patients with the better outcome since these patients are more sick and elderly⁶. The scientific trials supports an early cholecystectomy in such patients⁵. During the last two decades, the general principle of gall stones management have not notably altered. The treatment of choice still remains cholecystectomy¹.

However the gadget supported minimally invasive cholecystectomy has dramatically changed the out look of patients with symptomatic gall stone diseases. Initially due to the lack of experiences and trials, empyema gall bladder used to be considered as a contraindication for laparoscopic cholecystectomy because of fear of life-threatening complications due to obscured local anatomy and extensive adhesions³. With the evolution of laparoscopic cholecystectomy, there has been a global re-education and retaining program of surgeons. The surgeons of today are more experienced in laparoscopic dissection^{1,7}. But these two conditions are still considered the commonest reasons for the conversion^{2,8}. Despite various encouraging reports, some consider the role of laparoscopic surgery in such acute conditions still under evaluation³, but various recent trials and studies so far supports early laparoscopic cholecystectomy in patients with acute cholecystitis. Laparoscopic cholecystectomy is more likely to be successful when performed not later than 72 hours of the onset of symptoms. The aim of our study was to look for the feasibility and safety profile of laparoscopic cholecystectomy in patients with emphysematous and gangrenous cholecystitis.

Materials and method

This prospective study was conducted in the department of General Surgery, KWHAJA YUNUS ALI MEDICAL COLLEGE & HOSPITAL, ENAYETPUR,

SIRAJGONJ, BANGLADESH, during January 2012 to December 2014. Patients were admitted through OPD and Emergency department with the diagnosis of severe acute cholecystitis. The demographical profile, clinical records, operative details, complications and follow up details were prospectively gathered on a Performa. A well informed written consent was taken from each patient prior to surgery.

Patient with elective admission for laparoscopic cholecystectomy, patients in sepsis, who had preoperative percutaneous drainage for the empyema gall bladder, patient with suspected choledocholithiasis and those having suspicion of growth in the gall bladder were excluded from the study. Diagnosis of severe acute cholecystitis was made, based on clinical, laboratory and ultrasound findings. Based on gross appearance (dusky patchy areas, black patches) of the dissected gall bladder and histopathological report, the diagnosis of gangrenous gall bladder was made. Diagnosis of empyema gall bladder was made on ultrasound evidence of distended, thick wall gall bladder with impacted stone at it's neck and presence of pus in the lumen of gall bladder (intraoperatively).

As a policy, Acute cholecystitis patients under went early laparoscopic cholecystectomy (with in three days of admission). The laparoscopic cholecystectomy was done by standard 4-ports technique with few modifications depending upon the situation such as an additional port, decompression of gall bladder before dissection by spinal needle. At times the suction cannula was also used to dissect the dense adhesions in the area of calot's triangle. In some cases fundus first method was applied, wide cystic duct was ligated with Hemoclip/2-0 vicry¹.

Our patients had three routine follow up visits in Out Patients Department and we had maximum follow up to one year. Patients who developed complications were managed with multidisciplinary approach. The data was analyzed using statistical package for social sciences (SPSS version 10). continuous variables were expressed as mean \pm SD, while categorical variables were presented as frequencies and percentages. Chi square test was used to compare the categorical variables. P value of <0.05 was considered significant.

Results

The study comprised of 37 patients. There were 13 male patients compared to 24 female patients. The mean age, operative time and hospital stay are shown

in table no-1. These patients were further subdivided into two groups. Total no. of emphysematous gallbladder patients were and gangrenous gall bladder patients were⁸. A comparison of two groups showed that the mean age, Mean operative time and hospital stay was longer in gangrenous gall bladder patients. Incidence of severe acute cholecystitis is more in female patients than male patients, although male gall bladders are more difficult to operate and time consuming.

Table-1: Clinical details of patients with early laparoscopic cholecystectomy.

Diagnosis	Empyema gall bladder	Gangrenous gall bladder
No. of pt.	29(78.37%)	8(21.62%)
Mean age	50±13.15 years	62±12.75 years
Age range	28 to 78 years	34 to 80 years
Male: Female	10:19	3:5
Co-morbidities	25(86.21%)	7(87.5%)
Acalculous cholecystitis	2(6.89%)	3(37.5%)

Table -2: Observation and Outcome of patients with early laparoscopic surgery:

A) Intraoperative		
	Empyema gall bladder	Gangrenous gall bladder
Perforation of gall bladder	11 (37.93%)	6 (75%)
Bleeding --significant (major)	5 (17.24%)	1 (12.5%)
Bleeding --- minimum	18 (62.07%)	7 (87%)
Duodenal serosal tear	3(10.34%)	1 (12.5%)
Difficulty in clipping cystic duct	13 (44.82%)	6 (75%)
Difficult adhesiolysis	9 (31.03%)	4 (50%)
Conversion rate	1 (2.70%)	1 (2.70%)
	Total = 2 (5.40%)	

Reasons for conversion to open cholecystectomy:		
Reasons	no of patients	
Totally obscured anatomy in the calot's triangle	1 (2.70%)	
Biliary leakage with difficult anatomy	1 (2.70%)	
B) Postoperative		
	Empyema gall bladder	Gangrenous gall bladder
Mortality	Nil	Nil
Bile leak	3 (10.34%)	2 (25%)
Paralytic ileus-not more than two days	11 (37.93%)	7 (87%)
Wound infection-needed dressing	6 (20.68%)	2 (25%)
Prolonged drainage	5 (17.24%)	5 (62.5%)
Chest infection	3 (10.34%)	5 (62.5%)
Mean operative time	67.00±13.08 minutes	88±17.53 minutes
Range	45 to 135 minutes	68 to 140 minutes

Empyema gall bladder group:

There were patients in empyema gall bladder group, among them 10 were male and were female patients. Mean age was 50±13.15 years. Out of patients, 25 (86.20%) patients had significant co-morbidities (table-1). Laparoscopic procedure was converted to open procedure for one patient due to difficult anatomy, tight dense adhesion around calot's triangle, significant bleeding and gall bladder perforation with spillage of sludge, pus and stones in the operative area. Although

this patient had smooth postoperative recovery. Perforation of the gall bladder, bleeding, dense omental adhesion around gall bladder were the common Intraoperative events encountered. Among these, oozing/Bleeding and difficulty in holding edematous gall bladder wall for traction was painful and time consuming. There was no mortality in this group³. Patients developed bile leakage. Major Bile leakage was noted in one patient which was managed by Papillotomy, ERCP and Stenting. Other two patients had minor leakage that stopped spontaneously with in 3 days⁶. Patients developed minor wound infection, managed with dressing and antibiotics. The laparoscopic procedure was technically challenging in most of the patients. Sub hepatic drain was placed in all patients, majority of them were removed by 3rd postoperative day. Mean operative time was significant (67.00±13.08 minutes). Hospital stay was between 2-7 days, with an average of 4.18±1.11 days.

Gangrenous gall bladder group:

This group comprised of 8 (eight) patients. Among them 3 were male and 5 (five) were female patients. Average age was more than the empyema group⁷. Out of 8 patients have significant co-morbidities. (table-1). Laparoscopic procedure was converted to open procedure in 1(one) patient, reason being difficult anatomy, friable gangrenous tissue-difficult to hold with forceps, bleeding and bile leakage. Two patients developed bile leakage postoperatively, one of them developed controlled biliary fistula, which was managed by ERCP and Stenting. Other one had minor leakage and that was stopped spontaneously by 3 days. There was no mortality in this group also. Laparoscopic procedure was technically more challenging than empyema gall bladder group. Sub hepatic drain was placed in all patients to drain all toxic fluid and bile (suspicious accessory bile duct injury). Two patients developed wound infection, managed by minor dressing. Mean operative time and hospital stay were comparatively higher than empyema group (table-2). Acalculous cholecystitis is more susceptible to turn into gangrenous cholecystitis.

Discussion

Laparoscopic surgery has radically changed the field of general surgery and with the mounting experience it's application are expanding rapidly. The pioneers of laparoscopic cholecystectomy initially considered acute cholecystitis to be a contraindication for laparoscopic surgery⁹.

However, with growing experiences, passionate attempts have been made to treat acute cholecystitis with laparoscopic surgery¹⁰. Early experience with laparoscopic surgery in acute cholecystitis raised some cautions in literature with reports of higher complication and conversion rates, even for non-complicated symptomatic gall bladder stone disease^{11,12}, but now, laparoscopic cholecystectomy has become a preferred and acceptable choice even in most difficult situation associated with complicated gall bladder disease¹³. Encouraged by these results, we undertook a prospective evaluation of our laparoscopic experiences in treating patients with severe acute cholecystitis. Severe acute cholecystitis in our series is comparable to the experience reported earlier in the literature.

Conversion rate (5.40%) was quite low compared to the previously reported literature. The low conversion rate may be due to proper case selection, experience of surgeon, careful laparoscopic dissection that helped better anatomical identification of vital structures¹³. ARSHAD Malik et al³ reported conversion rate of 19.40 in their series, history of recurrent acute cholecystitis and an undue delay in the surgery are the main contributing factors in their series. After confirming the diagnosis, patients were subjected to laparoscopic cholecystectomy within 72 hours of admission in this series. Similarly Hunt et al¹⁴ reported safety of laparoscopic intervention for the gangrenous cholecystitis with a low conversion rate (8.7%) contrary to Arshad malik et al's experience. The conversion rate can be significantly reduced by keeping patience, clear display and identification of the anatomy of calot's triangle before cutting or applying clips. The dissection should proceed with extreme caution and gentle separation of the adhesion. The surrounding viscera should be identified and gently pushed down to avoid injury. The use of diathermy should be minimal and so be the threshold for conversion³.

We had 2 (5.40%) major complications in our series, and these patients were managed successfully with the help of Gastroenterologist. There was no mortality in our series, where as Rehan et al¹³ reported 4 major complications and one mortality in their series. The difficulties that we encountered in dissection in the area of calot's triangle are more or less the same as mentioned by other similar studies^{3,15}, duration of surgery was not significantly prolonged and the outcome in terms of morbidity and hospital stay was significantly better in patients in whom laparoscopic

cholecystectomy was successful^{16,17}. We decompressed the distended gall bladder before proceeding to adhesiolysis and dissecting calot's triangle to facilitate dissection. Malik A with his colleagues³ and Tseng et al¹⁸ have also favored the procedure to make surgery safe and easier. There is always a risk of common bile duct injury if surgeon is impatient and anatomy of the field is not clearly displayed. we did not have any single case of CBD injury.

Now more and more laparoscopic surgeons are persuaded to perform laparoscopic cholecystectomy in acute cholecystitis as suggested by Hunter¹⁹, 'Get it while its hot'. While in the medical literature several reports of large case series^{20,21}, and nonrandomized studies^{15,22}, have been published, documenting the emergency use of laparoscopic cholecystectomy for acute cholecystitis. In these studies laparoscopic cholecystectomy has been proven to be a feasible and safe treatment for acute cholecystitis. Like our series, the hospital mortality rate was less than 1% and bile duct injury was less than 1%. Furthermore the postoperative hospital stay and complications after laparoscopic cholecystectomy were significantly lower²³. The over all benefits conferred by the use of Laparoscopic cholecystectomy could lead to a reduced cost of treatment, as a result of shorter hospital stay, rehabilitation, and sick leave needed by these patients²⁴.

Conclusion

Our study showed that among acute gall bladder diseases, Gangrenous gall bladder are not only prolongs the operative time but also affect the mean hospital stay. Based on our experience we recommend an early laparoscopic gall bladder removal which is safe and feasible, provided expertise and gadgets are available.

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