

## An analytical study of laparoscopically operated patients of acute cholecystitis with empyema gall bladder

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**Abstract:** *Objective:* To study the feasibility of laparoscopic cholecystectomy in patients with empyema gall bladder. *Background:* Empyema of gall bladder is severe form of acute cholecystitis with superadded suppuration. It is considered as contraindication for laparoscopic cholecystectomy due to complications, surgical technical difficulties and often conversion to open surgery. In this study our experience for feasibility of laparoscopic cholecystectomy in patients with empyema of gall bladder is studied. *Materials and Methods:* From June 2018 to June 2020, total 20 patients with clinical diagnosis of severe acute cholecystitis underwent laparoscopic cholecystectomy within 24 hours of admission. Operative findings were of empyema of gall bladder or suppurative cholecystitis. *Results:* Out of 20 patients 18(90%) were operated successfully by laparoscopy. Laparoscopic procedure were converted to open procedure due to various operative difficulties like frozen calot's triangle, dense adhesions, Mirrizi's syndrome etc. in 2 patients. Maximum operating time was up to 145 minutes. Maximum patients were discharged within 4 days. There was no mortality. *Conclusion:* Laparoscopic cholecystectomy is feasible and safe in inempyema of gall bladder or suppurative cholecystitis. However the experience of the surgeon and patience during surgery have a major role in out come.

**Keywords:** Complications, Empyema of gall bladder, Laparoscopic Cholecystectomy

### Introduction

Cholelithiasis remains one of the most common medical problems leading to surgical intervention. Acute cholecystitis frequently requires hospitalization. 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 [1-2]. These are produced by suppuration superimposed on acute cholecystitis. The clinical presentation is often difficult to distinguish from acute cholecystitis [1, 3].

Empyema of gall bladder is more often found in elderly male [1]. The treatment of choice still remains cholecystectomy. Empyema gall bladder used to be a contraindication for Laparoscopic Cholecystectomy because of fear of life-threatening complications and intraoperative difficulties [4-8]. It is also considered one of the commonest reasons for the conversion [9].

Increasing experience and technology in the field of laparoscopic surgery has brought a significant change and a number of studies have reported Laparoscopic Cholecystectomy to be safe and effective option in acute cholecystitis and associated conditions like empyema of the gallbladder [10-14]. Obscured local anatomy, uncontrolled bleeding and damage to nearby vital structures are the common factors responsible for conversion [15]. This study aimed to find out safety and outcome of Laparoscopic Cholecystectomy in empyema gallbladder.

### Material and Methods

This prospective study was conducted in the department of General Surgery during June 2018 to June 2020. Patients were admitted through OPD and Emergency department with the diagnosis of severe acute cholecystitis. Patient with 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.

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. All the times the suction and irrigation (hydrodissection) cannula was 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 vicryl endoloop. Patients who developed complications were managed with multidisciplinary approach.

**Results**

Out of 20 patients 7 were male and 13 were female patients. The age was from 30 to 78. Incidence of severe acute cholecystitis was more in female patients than male patients in our study, although male gall bladders are more difficult to operate and time consuming. The diagnosis of empyema gallbladder was established on the basis of such findings such as tender, palpable gallbladder, leucocytosis > 11000, ultrasound findings and per-operative aspiration of frank pus from edematous gallbladder. The main diagnostic criteria is shown in Table 1 and 2.

<b>Table-1: Clinical Features</b>	
<b>Features</b>	<b>No. of patients</b>
Pain in right hypochondrium	20(100%)
Fever	15(75%)
Vomitting	4(20%)
Palpable gall bladder	14(70%)

<b>Table-2: Ultrasound Findings</b>	
<b>Findings</b>	<b>No. of Patients</b>
Distended gall bladder	16(80%)
Thickened wall	15 (75%)
Gallstones or sludge	19(95%)
Pericholecystic fluid	8(40%)

All of these patients were operated laparoscopically within 24 hours of the

admission. 18 (90%) Laparoscopic cholecystectomy were completed successfully while in 2(20%) patients the procedure was converted to Open Cholecystectomy due to various reasons such as frozen calot's triangle, stomach perforation, Mirrizi's syndrome etc. Conversion was found more common in those who had diabetes and history of previous attacks of acute cholecystitis. Total operating time ranged from 50-145 minutes with a mean of 80 minutes. Operative complications of varying degrees and severity occurred in 5 (25%) of successfully operated cases [Table 3].

<b>Table-3: Operative Complications</b>	
<b>Complications</b>	<b>No. of cases</b>
Gall bladder perforation	2(10%)
Minor bile duct trauma	1(5%)
Bleeding	1(5%)
Stomach perforation	1(5%)

The overall rate of postoperative complications was 20% in successfully completed Laparoscopic cholecystectomies [Table 4].

<b>Table-4: Postoperative Complications</b>	
<b>Post operative Complications</b>	<b>No. of Patients by LC</b>
Wound Infection	2(10%)
Bile Leak	2(10%)

Major bile leakage was noted in one patient which was managed by Papillotomy, ERCP and Stenting. One patient had minor leak which was stopped spontaneously with in 3 days. Patients developed minor wound infection, were managed with dressing and antibiotics. Majority of the patients (80%) with successful Laparoscopic cholecystectomy were discharged with in 4 days. In 2 patients (10%), the stay in hospital was extended to 7 days. The average hospital stay in patients converted to open operation was 9 days. 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.

## Discussion

Laparoscopic cholecystectomy has become a preferred and acceptable choice even in most difficult situation associated with complicated gall bladder disease [16-18]. More and more laparoscopic surgeons are persuaded to perform Laparoscopic cholecystectomy in acute cholecystitis as suggested by Hunter [19] "to get it while its Hot". Very few reports have specifically assessed safety of Laparoscopic cholecystectomy in empyema of the gallbladder. 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 [2, 20].

Conversion rate (10%) 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 structures [21].

Arshad Malik et al [2] 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. Similarly Hunt et al [22] reported safety of laparoscopic intervention for the gangrenous cholecystitis with a low conversion rate (8.7%) contrary to Arshadmalik 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 adhesions by hydrodissection.

The use of diathermy should be minimal and so be the threshold for conversion. We had one (5%) major complications in our series, and these patients were managed successfully. There was no mortality in our series, where as Rehan et al [21] reported 4 major complications and one mortality in their series. We decompressed the distended gall bladder before proceeding to adhesiolysis and dissecting calot's triangle to facilitate dissection. Malik A with his colleagues

and Tseng et al [23] have also favored the procedure to make surgery safe and easier.

Another way of handling such life threatening situations is to perform subtotal cholecystectomy after removal of all the stones to ensure safety of patients life instead of continuing dissection in the frozen Calot's triangle with totally obscured anatomy. There is always a risk of common bile duct injury. We did not have any single case of CBD injury. Major cystic artery bleed and stomach perforation occurred in two patients respectively and we had to resort to open technique considering safety of the patients.

The cystic artery bleed was initially attempted to be controlled by pressure of gauze piece and then by cautery. The stomach perforation was identified and the operation was converted to open surgery with subsequent primary closure of stomach. While in the medical literature several reports of large case series [24-25], and nonrandomized studies [20, 26], 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. Laparoscopic cholecystectomy in empyema has shown less morbidity and no mortality in our study. The analysis of our study and literature review has shown that this procedure was associated with less intraoperative blood loss, shorter hospital stay, less wound infection and less postoperative pain, earlier return to work.

## Conclusion

Laparoscopic cholecystectomy is a safe and acceptable option in empyema of gallbladder. There are difficulties due to edema, adhesions and distorted anatomy in the area of Calot's triangle. The experience and patience of the surgeon plays a key role. Partial cholecystectomy may be considered where ever dissection difficult.

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