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Laparoscopic Cholecystostomy in Emphysematous Cholecystitis a Fulminant Variety in Difficult Case- A Race against Time

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Abstract: ***Introduction: This study was conducted to evaluate role of laparoscopic cholecystectomy in difficult case. Gallstone is a very common disease condition and affects 10-20% of the adults in the developed countries and 20% of the patients present with acute calculous cholecystitis.[1] One of the severe complications is emphysematous cholecystitis, which can occur in as 1%-3% of patients with acute cholecystitis which was first reported by Stoltz in 1901, and perforation of gallbladder (GB) in 1%.[2,3]Emphysematous cholecystitisa fulminant variety of acute cholecystitis is defined as gas in the lumen of the GB wall as a result of ischemia following progressive vascular insufficiency, and infection with gas forming bacteria such as clostridium perfringens, klebsiella and is a severe complication of cholelithiasis. Which can be rapidly fatal. Factors such as male sex, advanced age, delay in seeking treatment, cardiovascular diseases, and diabetes mellitus increase the likelihood of developing cholecystitis and carry a significantly higher mortality rate between 15% and 50%.[5] Hence, making early diagnosis and immediate intervention are required in these cases is emergent cholecystectomy. In severely ill patient, percutaneous cholecystectomy with broad-spectrum antibiotics may be an alternate choice. Safer treatment modalities such as laparoscopic cholecystostomy help the patient to recover from the critical illness and the definitive procedure can be performed at a later, safer period. Case description: Ten patients with emphysematous cholecystitis, i.e., Three females and seven male, underwent laparoscopic cholecystostomy. All the patients recovered well, and no complication like feature suggestive of sepsis and peritonitis was reported during or after the procedure and were discharged after a stay of 5-7 days. All the patients underwent elective laparoscopic cholecystectomy and are doing well at 3 and 6-months follow-up. Conclusion: Cholecystectomy in fulminant variety of emphysematous cholecystitis carries high risk of morbidity and mortality. In this setting, laparoscopic cholecystostomy is a safe and reliable procedure to recover the patient from the serious complication and proceed with elective laparoscopic cholecystectomy.***

Keywords: Emphysematous cholecystitis, Interval cholecystectomy, Laparoscopic cholecystostomy

1. Introduction

Gallstone is a very common disease condition and can affect 10 to 20% of the adults in the developed countries, up to 20% patients present with acute calculous cholecystitis.[1] One of the severe complications is emphysematous cholecystitis and can occur in as high as 1%,[3] patients with acute cholecystitis and perforation of GB Morbidity and mortality rates are high with gangrenous cholecystitis and demonstrated the mortality rate of as high as 15%,[3] so early diagnosis and immediate interventions are required in these cases.

We report a case series of ten patients who presented with features of emphysematous calculous cholecystitis and who underwent laparoscopic cholecystostomy.

2. Case Description

A 58-year-old diabetic female patient got admitted with complaints of pain abdomen, fever, vomiting evaluation suggest have emphysematous cholecystitis after being treated conservatively. On admission, with vital signs of borderline tachycardia with a heart rate of 82 BPM, Respiratory rate of 22 BPM, a blood pressure of 180/70 mmHg, and SPO2 of 98% on room air. On examination, the abdomen was soft but tender to palpation in the upper right quadrant and epigastric area, with a positive Murphy sign. The patient was negative for McBurney's point tenderness and no distension or rebound guarding was found. Blood and urine taken on the day of admission showed leucocytosis of 13.5 g/dl and normal haemoglobin and haematocrit of 11.2 g/dl and 32.5 g/dl, respectively. Her liver enzymes and bilirubin levels were within normal limits. USG suggestive of emphysematous cholecystitis. A Computed tomography (CT) scan with intravenous contrast revealed distended GB with pericholecystic fat stranding. She was started on broad-spectrum antibiotics empirically and intravenous fluids.

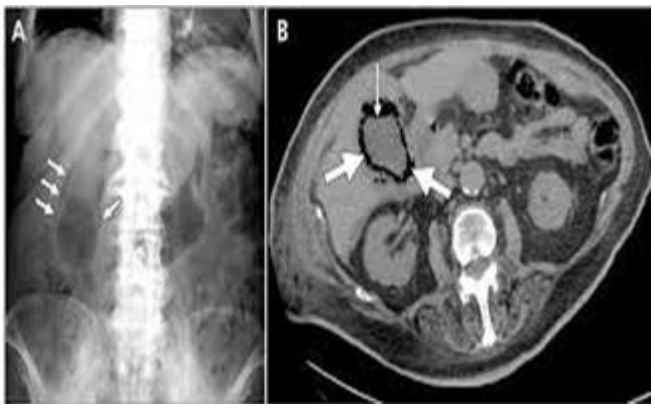


Figure 1: Computed tomography scan of gallbladder revealed distended GB with pericholecystic fat stranding

Figure 2: USG suggest emphysematous cholecystitis with air in the gall bladder lumen

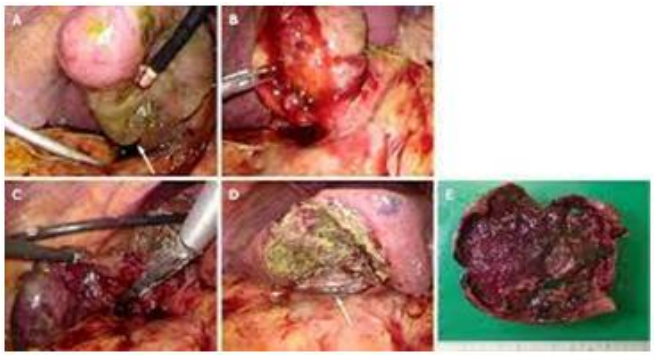


Figure 3: Laparoscopic Cholecystostomy in emphysematous Cholecystitis

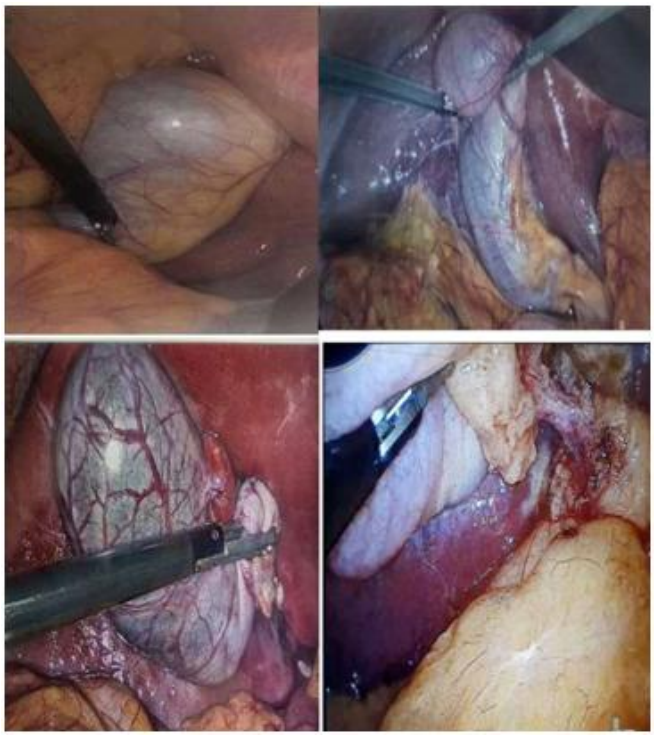


Figure 4: Showing laproscopiccholecystectomy clear retroperitoneal space

3. Discussion

Emphysematous cholecystitis is a rare clinical entity. Most patient are diagnosed incidentally on imaging on X-ray and CT. even though the incidence is low, acute cholecystitis can cause GB perforation in 2-18%[4] of patients and most common location was found to be in the fundus of the GB. Niemeier et al.[6]

Emphysematous cholecystitis is characterized by the presence of gas in the gallbladder lumen, wall.

In our study, Ten of our patients were three female and seven was male; and eight of them were aged between 55 and 65, the oldest patient being 64 years. One patient was 48-year-old. The study patients' average age being 58 years. Acute uncomplicated cholecystitis is more common among females, with a female to male ratio of 2:1.[7] However, GB perforation was more frequent in male gender.[4,8] Our study consisted of more females, with a male to female ratio of 2.3:1 (Table 1).

All patients had an elevated white blood cell (WBC) count, with an average value of 14,222. Parker et al.,[9] increased WBC count are not the diagnostic indications for GB perforation. Roslyn and Busuttil[4] reported that type I and type II GB perforation mostly occur in younger patients, around the age of 50 years, whereas type III GB perforation is more common in the elderly individuals. Our study being a small series, no significant findings were observed with age and type of perforation.

In our case series, the CT showed emphysematous GB in Ten patients and all of them were in the fundal region, thus diagnosis of were made preoperatively. Majority of the patients, the GB emphysematous was identified intraoperatively and these patients underwent surgery with a preoperative diagnosis of acute cholecystitis.

For the diagnosis of GB perforation, the CT scan is ideal. Ultrasound findings in acute cholecystitis, such as the GB wall thickening, GB distension, pericholecystic free fluid, and positive sonographic Murphy sign, may also be present in GB perforation cases.[10-12] On the contrary, CT scan accurately picks up signs of free intraperitoneal fluid, pericholecystic fluid, GB wall thickness, and the defect on the wall due to perforation.[10,13,14]

The mortality rate is high in patients with GB perforation. Hence, early diagnosis, stabilization of patient, and intervention are essential. Cholecystectomy, drainage of abscess, and abdominal lavage are the necessary treatment of GB perforation.[4,15] The reported mortality rate is up to 7% in emergency cholecystectomy.[16] Cholecystostomy is a reliable option for patients with biliary sepsis and can be done by ultrasound guidance or laparoscopically.

In our case series, we did laparoscopic cholecystostomy for all the ten patients, i.e., five of them with perforation and one having empyema GB with dense adhesions. Cholecystostomy ensues external drainage of the infected GB through a tube inserted into it, which can be achieved by percutaneous method under ultrasound guidance, open method, and laparoscopic approach. Of these, laparoscopic cholecystostomy is considered the best, as the surgeon can assess the disease severity and avoid trauma to the hepatic flexure and duodenum.[17,18]

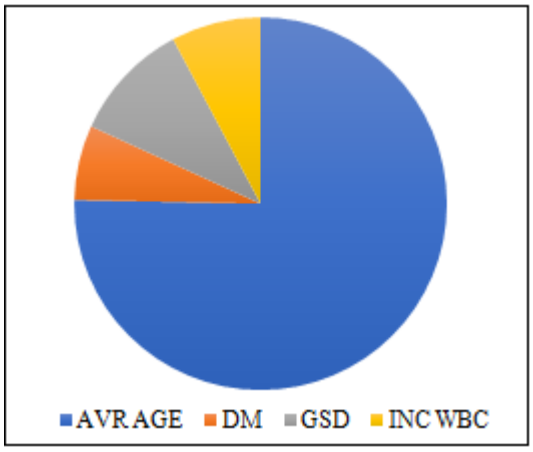
Laparoscopic cholecystostomy can be done in two ways, namely, transperitoneal and transcannular techniques. In transperitoneal technique, the Foley's catheter is introduced into the perforated site of the GB and the balloon is inflated

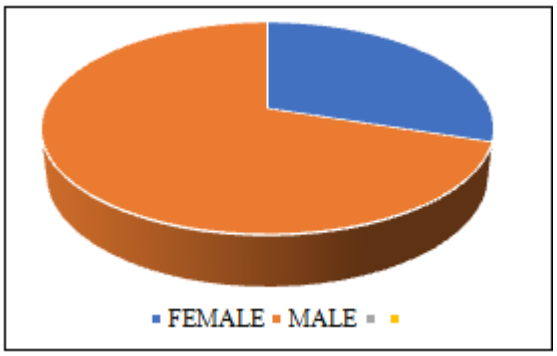
and finally fixed to the anterior abdominal wall. In transcannular technique, the trocar is used to puncture the GB, the catheter is introduced through the cannula into the GB, and the balloon is inflated.[16] Laparoscopic cholecystostomy is a safe procedure with minimum complications, including dislodgment of Foley's catheter, bile leakage into the intraperitoneal cavity, and bleeding.[17] So in a critically ill patient, resolution of sepsis can be achieved by cholecystostomy; and a definitive procedure like cholecystectomy can be planned electively when the patient is stable in calculous cholecystitis. No further procedure is required in case of acalculous cholecystitis. In our series, the average hospital stay for patients with GB perforation was 13 days.

Table 1: Patient variables and number count

Patients' variables	
Male to female ratio	2.3:1
Average age	58 years
Diabetes mellitus (*n*)	5
Known case of gallstone disease (*n*)	8
Elevated WBC count (*n*)	6
Average duration of symptoms	7 days
Empyema GB	10

n, number of patients





4. Conclusion

Cholecystostomy is an ideal procedure for patients in biliary sepsis associated with acute cholecystitis and can reduce the surrounding inflammation by definite elective cholecystectomy. Early diagnosis and emergency surgery are crucial in surgical management of emphysematous cholecystitis because of the high morbidity and mortality. So from our experience, we can conclude that laparoscopic cholecystostomy is a safe procedure.

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Conflict of interest: None

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