

Gall Bladder Perforation: Our experience of Six cases



Surgery

KEYWORDS: Gall bladder perforation, Cholecystectomy, acute cholecystitis

Dr. Atul Jain

Senior Resident, Department of Surgery, ESI PGIMSR, Basaidarapur, New Delhi, India

Dr Subhajeet Dey

Professor, Department of Surgery, ESI PGIMSR, Basaidarapur, New Delhi, India.

Dr Tanweer Karim

Professor, Department of Surgery, ESI PGIMSR, Basaidarapur, New Delhi, India

Dr. Sajid Makbul Nurbhai

Junior Resident, Department of Surgery, ESI PGIMSR, Basaidarapur, New Delhi, India

ABSTRACT

Background: Gallbladder perforation is a rare but potentially fatal disease. In emergency setting cholelithiasis and its complications like biliary colic, acute cholecystitis are very frequently dealt by the surgeon. Gall bladder perforation still continues to be a important problem in terms of early diagnosis and therapeutic challenge for surgeon.

Method: Here we present six cases of gall bladder perforation that were dealt with by us during the period May 2016 to February 2017. Four patients underwent open cholecystectomy (1 emergency, 3 elective) and 2 had laparoscopic cholecystectomy. Pre operative diagnosis of gall bladder perforation was made in 4 cases whereas 2 cases were diagnosed intraoperatively. CECT abdomen was done in four out of six cases in which gall bladder perforation was evident and along with it, the type of perforation was also assessed and the decision for management was taken accordingly i.e. drainage first or surgery is urgently required.

Conclusion: Gall bladder perforation is a potentially lethal condition and early diagnosis is usually missed as the presenting clinical features are not specific to the condition. Cholecystectomy (open/laparoscopic) in cases of perforated gall bladder requires patient and diligent dissection as there may be distorted anatomy and adhesions.

INTRODUCTION

Gall bladder perforation (GBP) is a rare yet potentially fatal condition. The mortality rate of GBP is reported to be 12%-16% [1]. Acute Cholecystitis, calculous or acalculous, can lead to GBP in 6%-12% of cases [2, 3]. In emergency setting cholelithiasis and its complications like biliary colic, acute cholecystitis are very frequently dealt by the surgeon and at times clinical presentation of GBP may not be different from uncomplicated acute cholecystitis, leading to delay in diagnosis with resultant high morbidity and mortality.

Hence GBP still continues to be a important problem in terms of early diagnosis and therapeutic challenge for surgeon. Here we present six cases of GBP that were dealt with us during the period May 2016 to February 2017.

CASE STUDY

CASE 1

A 65 yr old female presented to surgical emergency with complaint of pain in right upper abdomen for last 2 days with no history of fever, vomiting, or trauma to abdomen. She was afebrile, dehydrated and had tachycardia. Abdominal examination revealed soft, non distended abdomen with tender right hypochondrium, with no palpable lump.

She was admitted and managed conservatively with the provisional diagnosis of acute cholecystitis. Routine laboratory investigations revealed raised alkaline phosphatase (ALP) and rest were within normal limits.

Ultrasonography (USG) of abdomen revealed a distended gall bladder with wall edema and mild ascites. No calculus was noted. As there was no clinical improvement in next 24 hours and there was increase in abdominal tenderness, contrast enhanced computed tomography (CECT) abdomen was done which revealed GBP- type 1.

Patient underwent emergency laparotomy where perforation at fundus was seen with bilious collection approximately 500 ml in peritoneal cavity. Cholecystectomy was done with peritoneal lavage and drainage. Post operatively patient was kept in ICU with ventilator and inotropic support, but patient succumbed to the sepsis after 2 days. Histopathology of the gall bladder showed features of chronic acalculous cholecystitis.

CASE 2

A 49 year old man was seen in surgery outpatient department(OPD) with complaint of pain in right side upper abdomen on & off since last one month. On detailed history there was an episode of severe abdominal pain along with fever and vomiting 1 month back for which he was treated conservatively in a private hospital. Abdominal examination revealed a mildly tender palpable lump in right hypochondrium, rest of the general and systemic examination was normal.

Laboratory investigations were within normal limits. USG and subsequent CECT abdomen were suggestive of a sealed GB perforation.

As patient was stable he was planned for elective surgery and open cholecystectomy was done. Intraoperatively there was a sealed perforation at body with a lot of dense adhesions with omentum and transverse colon. Post op period was uneventful and patient was discharged after removal of drain on post operative day (POD) 4. Histopathology of the gall bladder showed features of chronic calculous cholecystitis. On follow up at 6 months the patient remains symptom free.

CASE 3

A 47 yr old female was brought to emergency with complaint of pain abdomen with fever and vomiting since 3 days. On examination she was febrile with tenderness in right hypochondrium. Rest systemic examinations were normal.

Laboratory investigations revealed leucocytosis with raised ALP. USG and CECT abdomen revealed sealed Type 2 GBP with pericholecystic collection.

USG guided pigtail drainage of 400 ml of bile was done. Patient improved on conservative management and was discharged and underwent open cholecystectomy after 3 months where we found dense adhesions and sealed perforation site was identified at the body of the gall bladder. Patient was discharged on POD 5 after drain removal. HPE of the gall bladder showed features of chronic calculous cholecystitis. On follow up at 3 months, patient was doing well with no fresh complaints.

CASE 4

A 37 year old male presented in surgery OPD with complaint of pain abdomen since 1 month. He had history of high grade fever with chills, nausea 2 months back for which he was hospitalised and treated with diagnosis of typhoid fever. After two weeks of discharge from hospital he had an attack of acute upper abdominal pain for which he was hospitalized (outside) for 4 days and pain subsided after course of antibiotics and analgesics.

On abdominal examination there was a lump in right hypochondrium and rest of the physical examination was normal. Investigations revealed leucocytosis and raised ALP. USG was suggestive of sealed gall bladder perforation and subsequent CECT abdomen revealed features of cholecystitis and concealed perforation in gall bladder with inflammation of stomach, duodenum and transverse colon.

Conservative management with broad spectrum antibiotics and other supportive measures were started and progress of patient was closely monitored. The lump disappeared on 5th day and patient was planned for open cholecystectomy at a later date. Intraoperatively dense adhesions were found between gall bladder, duodenum, omentum, stomach and transverse colon. Cholecystectomy was done with drain placement. Histopathology of the gall bladder showed features of xanthogranulomatous cholecystitis.

Patient was discharged after drain removal on POD 8. Follow up at 3 month patient was doing well with no fresh complaints.

CASE 5

A 45 year old man with complaints of recurrent pain abdomen and a diagnosis of symptomatic gall stone disease was planned for laparoscopic cholecystectomy. His general and systemic examinations were normal. And so were the laboratory investigations. USG abdomen showed overdistended gall bladder with multiple calculi in lumen with normal wall thickness.

Intraoperatively gall bladder was seen distended with a lot of adhesions with omentum, colon and duodenum. Perforation site was identified as there was a area of blackish discoloration with perforation sealed by the adhesions at body. Patient underwent a successful laparoscopic cholecystectomy and subsequent HPE of the gall bladder showed features of eosinophilic cholecystitis with ulceration and xanthogranulomatous changes. Patient was discharged after drain removal on POD 6. Patient remains symptom free at 2 months follow up.

CASE 6

A 25 year old female was planned for laparoscopic cholecystectomy with a diagnosis of chronic calculous cholecystitis. She had history of pain abdomen since 3 months and was hospitalized for 3 days with diagnosis of acute cholecystitis two months back. General and systemic examination was normal. Investigations were normal and USG abdomen showed cholelithiasis with features of cholecystitis.

Intraoperatively there were dense adhesions between gall bladder omentum, colon and duodenum with bile staining of omentum. Further dissection revealed concealed perforation. Patient was discharged on POD 5 after drain removal. Histopathology of the gall bladder showed features of chronic calculous cholecystitis. Follow up at 2 months patient was symptom free.

DISCUSSION

GBP can be traumatic, iatrogenic or idiopathic. Infections, malignancy, trauma, drugs (e.g., corticosteroids) and systemic diseases such as diabetes mellitus and atherosclerotic heart disease are common predisposing factors.[4] GBP is a well known, although unusual complication, in enteric fever.[5], as was evident in our case number four, who had history of being treated for enteric fever in the preceding months.

GBP was classified by Niemeier in 1934 as 3 types [6] : Type I - generalized peritonitis, Type II- pericholecystic abscess and localized peritonitis, Type III- cholecystoenteric fistula. The relation between the site and the type of GBP has not been clearly defined.[7]

When gall bladder is perforated at the fundus it results in generalized peritonitis. If the perforation site is other than the fundus, it is easily sealed by the omentum or the intestines and the condition remains limited to the right hypochondrium with formation of a plastrone and pericholecystic fluid or abscess. This observation suggests that if the perforation site is at the fundus, it is more likely to end up with a type I perforation. In our series case one had perforation at the fundus and resultant generalized peritonitis whereas in all other cases the perforation was in body and the perforation sites were sealed by omentum and intestines which lead to a localised leak and had a chronic presentation.

Clinically differentiation between GBP and uncomplicated cholecystitis can be difficult as the bile leak from a perforated gall bladder might get contained in the extra peritoneal gall bladder fossa and symptoms of generalized peritonitis might not be produced initially [8]. In none of our cases did we suspect perforation of gall bladder as the initial diagnosis.

It is suggested that gall bladder perforation should be suspected in patients of acute cholecystitis who suddenly deteriorates and become toxic [9]. A sudden relief in the abdomen pain has been observed after the release of intracholecystic pressure due to perforation [10]. Our case number one did not improve on conservative management and hence we decided to perform a CECT to exclude other causes like acute pancreatitis, which gave the clue to perforation of the gall bladder.

USG has low sensitivity in GBP as it is compromised by pain and gaseous distension of abdomen. In a study it has been observed that gall bladder distension and oedema of its wall may be the earliest signs of impending perforation [11]. But these signs are not reliable or sole indicator as these changes are also seen in other conditions such as cholecystitis. In our series except case two and three ultrasonography was not able to diagnose the gall bladder perforation. The findings of case two and three were also confirmed by CT scan i.e. GB distension, wall oedema/thickening, stones, collection etc.

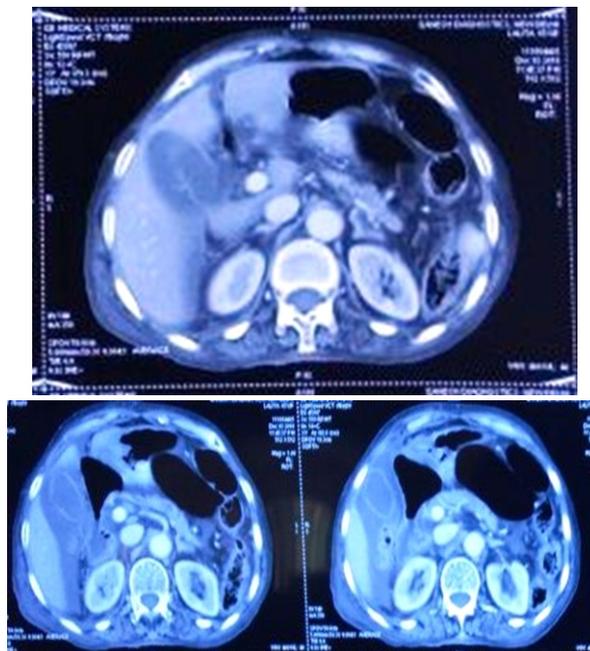


Photo 1- CT showing Gall bladder distended with 10 mm size defect posterosuperiorly and pericholecystic collection

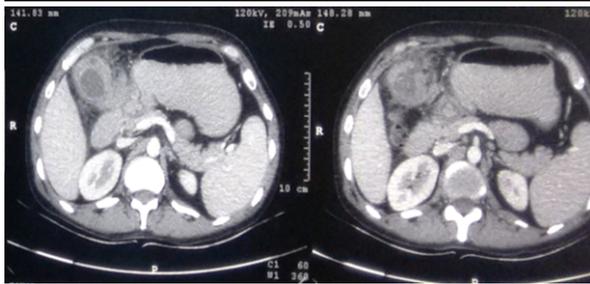


Photo 2- CT showing irregularly thick and heterogeneously enhancing wall with breach in wall and surrounding fat stranding

Computed tomography (CT) scan is the most sensitive radiological investigation for diagnosing GBP [12]. It demonstrates findings which can be divided into: Primary gall bladder changes (wall thickening, wall defect, stones etc), Pericholecystic changes (Fluid collection, abscess or biloma, stones), Findings in organs other than the gall bladder (liver abscess, portal vein thrombosis, reactive mural thickening of adjacent hollow organs ascites, ileus and Mirizzi syndrome etc.) [13]

In our series CECT was done in four out of six cases in which GBP was evident with changes in adjacent organs were evident and along with it, the type of perforation was also assessed and the decision for management was taken accordingly i.e. drainage first or surgery is urgently required.

The treatment of GBP is surgery (open/laparoscopic cholecystectomy with abdominal lavage). Early surgery is advocated by many in literature but clear guideline and consensus is not there. Laparoscopic cholecystectomy can be performed but a conversion to open cholecystectomy may be necessary in case of difficulties like an unclear anatomy or adhesions. [14,15] In our series 4 patients underwent open cholecystectomy (1 emergency, 3 elective) and 2 had laparoscopic cholecystectomy. Adhesions were found in all cases and the two cases done laparoscopically were done with extreme patience along with precise and meticulous dissection. This may imply that in cases of gall bladder perforation, laparoscopic cholecystectomy can be done and should be converted to open on the basis of intraoperative findings if required.



Photo 3- Showing gall bladder perforation after adhesiolysis

In type II GBP Cholecystectomy can be performed after the infection is relieved by US guided percutaneous drainage of pericholecystic collection/abscess and antibiotics. [16]

As seen in our case three in which the biloma was relieved by pigtail drainage with antibiotic course and surgery was planned later.

In our series there was one mortality out of six cases due to sepsis. Histopathological examination in our cases showed four cases of chronic cholecystitis and two cases of xanthogranulomatous cholecystitis.

CONCLUSION

Gall bladder perforation is a potentially lethal condition and early diagnosis is usually missed as the presenting clinical features are not specific to the condition.

USG has low sensitivity and specificity in diagnosis of gall bladder perforation. CECT abdomen is the investigation of choice in a suspected case of GBP or in a clinically equivocal case and should be done at the earliest.

Cholecystectomy is the treatment of choice for a perforated gall bladder, emergent or elective depends on the clinical presentation as well as type of perforation. Laparoscopic cholecystectomy can be done in these cases and one should not go with a preset mindset for open cholecystectomy anticipating adhesions. Cholecystectomy (open/laparoscopic) in cases of perforated gall bladder requires patient and diligent dissection as there may be distorted anatomy and adhesions.

REFERENCES:

1. Simmons TC, Miller C, Weaver R. Spontaneous gallbladder perforation. *Am Surg* 1989; 55:311-3.
2. Sherlock S, Dooley J. Gallstones and inflammatory gallbladder diseases. In: Sherlock S, Dooley J, eds. *Diseases of the liver and biliary system*. London: Blackwell Scientific, 1997:593-624
3. Stransberg SM, Clavien PA. Acute calculous cholecystitis. In: Haubrich W, Schaffner F, eds. *Gastroenterology*. Philadelphia: WB Saunders, 1995:2635-2664
4. Khan SA, Gulfam AW, Arshad Z, Hameed K, Shoaib M. Gall bladder perforation: A rare complication of Acute Cholecystitis. *J Pak Med Assoc*. 2010 60:228-9. [PubMed: 20225785]
5. Pandey A, Gangopadhyay AN, Kumar V. Gall bladder perforation as a complication of typhoid fever. *Saudi J Gastroenterol*. 2008 14:213. [PMCID: PMC2702929] [PubMed: 19568544]
6. Neimeier OW. Acute Free Perforation of Gallbladder. *Ann Surg* 1934; 99:922-44.
7. Derici H, Kara C, Bozdag AD, Nazli O, Tansug T, Akca E. Diagnosis and treatment of gallbladder perforation. *World J Gastroenterol*. 2006;12(48):7832-6.
8. Sood B, Jain M, Khandelwal N, Singh P, Suri S. MRI of perforated gallbladder. *Australas Radiol* 2002;46:438-40.
9. Gore RM, Ghahremani GG, Joseph AE, Nemcek AA Jr, Marn CS, Vogelzang RL. Acquired malposition of the colon and gall bladder in patients with cirrhosis: CT findings and clinical implications. *Radiology* 1989 171:739-42.
10. Chen JJ, Lin HH, Chiu CT, Lin DY. Gall bladder perforation with intrahepatic abscess formation. *J Clin Ultrasound* 1990 18:435.
11. Soiva M, Pamilo M, Paivansalo M, Taavitsainen M, Suramo I. Ultrasonography in acute gall bladder perforation. *Acta Radiol* 1988 29:414.
12. Sood BP, Kalra N, Gupta S, Sidhu R, Gulati M, Khandelwal N, Suri S. Role of sonography in the diagnosis of gall bladder perforation. *J Clin Ultrasound* 2002 30:2704.
13. Kochar K, Vallance K, Mathew G, Jadhav V. Intrahepatic perforation of gall bladder presenting as liver abscess: case report, review of literature and Niemeier's classification. *Eur J Gastroenterol Hepatol* 2008 20:2404.
14. Menakuru SR, Kaman L, Behera A, Singh R, Katariya RN. Current management of gall bladder perforations. *ANZ J Surg*. 2004;74:843-6.
15. Doherty GM, Way LW. Biliary Tract. In: Way LW, Doherty GM. *Current surgical diagnosis and treatment*. 11st ed. New York: McGraw-Hill. 2003:595-624
16. Sonnenberg VE, Agostino H, Casola G. Interventional gallbladder procedures. *Radiol Clin North Am*. 1990;28:1185-90.