International Journal of Research in Medical Sciences
Gopal VR et al. Int J Res Med Sci. 2024 Jun;12(6):2083-2088
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20241563

Case Series

Gangrenous cholecystitis as an incidental finding during emergency laparotomies for acute abdomen at a tertiary centre: a case series

Vaibhav Raj Gopal[1], Priyanka Rai[1], Sunil Kumar Singh[1], Amarjot Singh[1]*, Mithlesh Bhargav[2], M. Gulfran[1]

[1]Department of Surgery, Dr Ram Manohar Institute of Medical Sciences, Lucknow, UP, India
[2]Department of Pathology, AIIMS, Gorakhpur, UP, India

Received: 22 April 2024
Accepted: 15 May 2024

***Correspondence:**
Dr. Amarjot Singh,
E-mail: dramarjot@gmail.com

ABSTRACT

Gangrenous cholecystitis is an uncommon cause of acute abdomen in surgery emergency. Most of the times, diagnosis is settled intraoperatively as signs and symptoms are non-specific. CT scan of abdomen can help in making a diagnosis but should be done only if the patient is stable. Here we have reported three cases in which laparotomy was done in view of acute abdomen with signs of peritonitis and gangrenous cholecystitis was found as an incidental finding. One patient had spontaneous gangrenous cholecystitis with gall bladder perforation with biliary peritonitis. The second patient had gangrenous gall bladder perforation secondary to gall bladder malignancy and the third patient had spontaneous gangrenous cholecystitis with terminal ileal stricture presenting as acute intestinal obstruction. A decision to perform cholecystectomy in such cases depends on the feasibility, general condition of the patient and the cause of gall bladder perforation.

Keywords: Gall bladder perforation, Acute intestinal obstruction, Gall bladder cancer, Gall bladder gangrene, Cholecystitis

INTRODUCTION

Gall bladder gangrene is a rare entity usually evident in old age and in patients with immunocompromised state. It can occur both with calculus or acalculus cholecystitis.[1] It is frequently associated with diabetes mellitus.[1,2] Many times diagnosis is not straightforward as the symptoms and signs are vague mimicking acute cholecystitis or a hepatic abscess (more common conditions), hence easily missed. Radiological help, if the time and condition of the patient permits, is required to settle a proper diagnosis. Gall bladder perforation secondary to malignancy, empyaema and mucocoele has been frequently reported in literature.[3,4] Moreover, gall bladder perforation secondary to other malignancies has also been reported.[5,6] Spontaneous perforation without any obvious cause is very rare. Here we present a case series of gangrenous gall bladder with perforation (Case 1 and 2) and without perforation (Case 3) as an incidental finding during emergency laparotomies done for acute abdomen in surgical emergency at a tertiary care centre.

CASE SERIES

Case 1

A 25 year old unmarried female presented to our emergency department with complains of off and on fever for past 15 days and sudden onset pain in abdomen for past 4 days associated with progressive abdominal distension. She had 2 episodes of vomiting and she had history of constipation. Her menstrual history was insignificant. No history of similar pain episodes in the past. On examination she had signs of peritonitis and her

vitals were, BP=100/60 mmHg, pulse=110/min, Respiratory rate=20/min, febrile. X-ray abdomen showed few air fluid levels and no pneumoperitoneum. Ultrasonography revealed gross free fluid collection with few air foci. Based on clinical findings and radiology, patient was planned for laparotomy.

Intraoperatively, gross greenish yellow bile was present in the peritoneal cavity, no obvious bowel perforation was identified. Fundus of the gall bladder was necrosed and a 1×1 cm perforation was identified. Gall stones were not present. Thorough peritoneal lavage was done with warm saline. Cholecystectomy was performed and histopathology was sent. Abdomen was closed in layers after putting a drain in the sub-hepatic space and pouch of Douglas.

Postoperatively, patient improved and was orally allowed after one day. Drain output was <25 ml serous, for 3 consecutive days and it was removed on 4th day. She was discharged with stable vitals on 5th postoperative day and was advised follow-up.

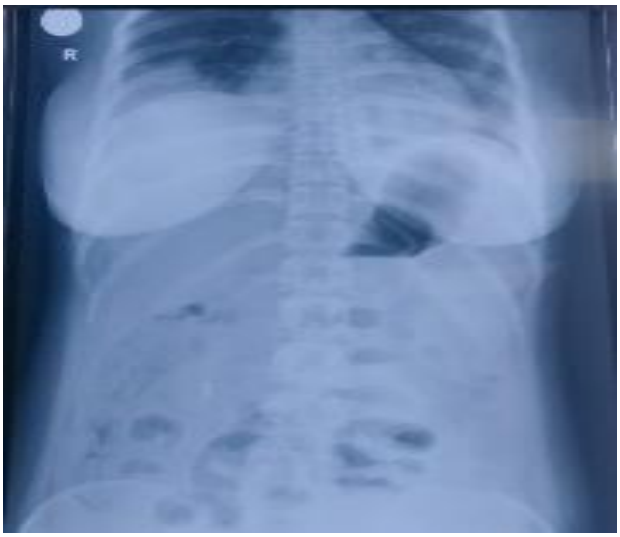

Figure 1: X ray abdomen erect view of insignificant air fluid levels and there is no evidence of pneumoperitoneum.

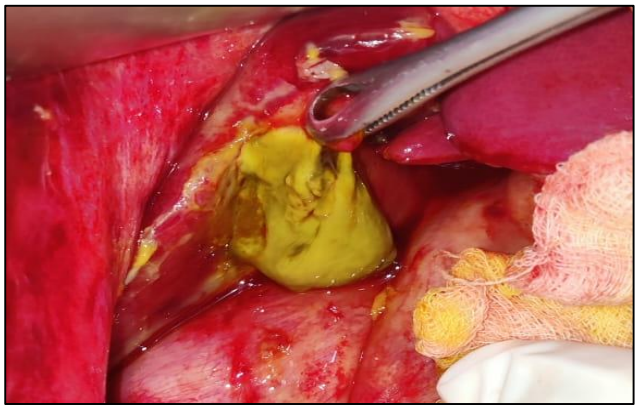

Figure 2: Necrotic fundus of the gall bladder.

Figure 3: Perforation at fundus of the gall bladder.

Case 2

A 60 year old male presented to surgery emergency with complains of fever, abdominal distension and pain with inability to pass flatus and faeces for 4 days. There was no history of vomiting, any addiction or similar complains in the past. He had off and on episodes of vague abdominal pain for the past 2 years which used to get relieved by medications. On examination he had distended abdomen, guarding and rigidity was present. Blood pressure=108/78 mmHg, pulse rate=100/ minute, respiratory rate=22/ minute, afebrile. X-ray abdomen had no evidence of pneumoperitoneum and colonic gas shadow was present. Blood investigations revealed raised total leucocyte count, deranged liver function tests and renal function tests.

Patient was taken up for exploration due to diffuse peritonitis and distension. Intraoperative findings included gross pyoperitoneum, multiple gall stones lying freely in the subhepatic space, gall bladder was gangrenous and perforation was present at the fundus. Dense adhesions were present in the Calot's triangle and hepatic flexure of the colon was densely adhered to the gall bladder. No perforation was identified in the bowel or other organ. Patient underwent partial cholecystectomy and a loop ileostomy was made owing to the suspicion of hepatic flexure involvement with gall bladder perforation. Abdomen was closed after placing drains and histopathology of the gall bladder specimen was sent.

Immediate postoperative period was uneventful. From day 4, he had 200 ml/day bile output from the subhepatic drain, he also developed fever, hypotension, tachypnoea, acidosis and decreased urine output for which he was kept on ventilator. Finally he succumbed on day 6 due to cardiorespiratory failure due to sepsis. Histopathology was suggestive of gall bladder adenocarcinoma.

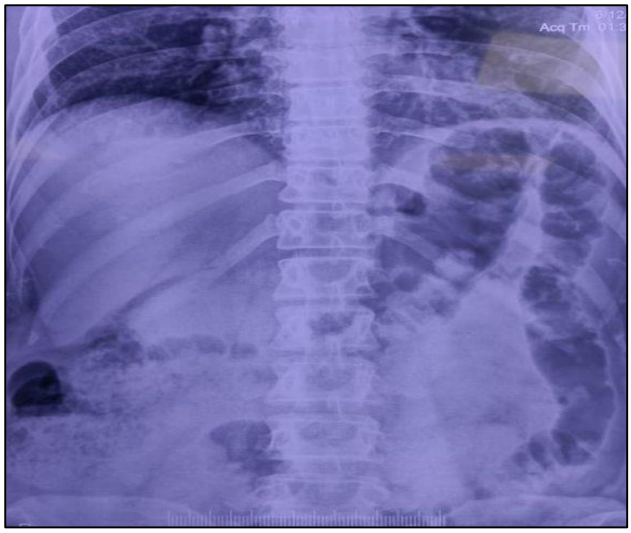

Figure 4: X-ray abdomen depicted colonic gas shadow, without significant air fluid levels and pneumoperitoneum.

Figure 5: Gross pyo-peritoneum during laparotomy.

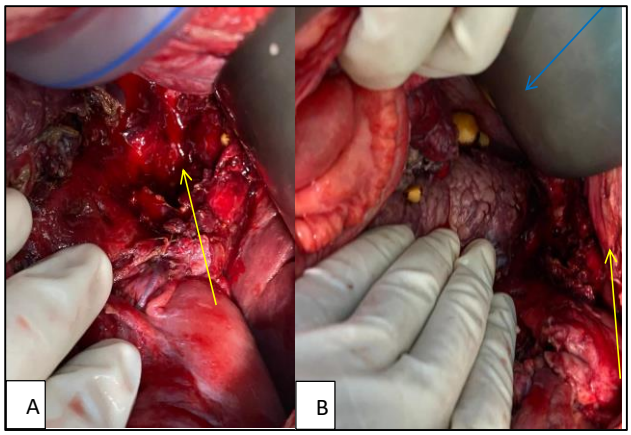

Figure 6 (A and B): Gangrenous gall bladder with perforation at the fundus. (yellow arrow) gallstones lying freely in the peritoneal cavity (blue arrow). Dense adhesions at the Calot's triangle and hepatic flexure of colon were also adhered to the gall bladder.

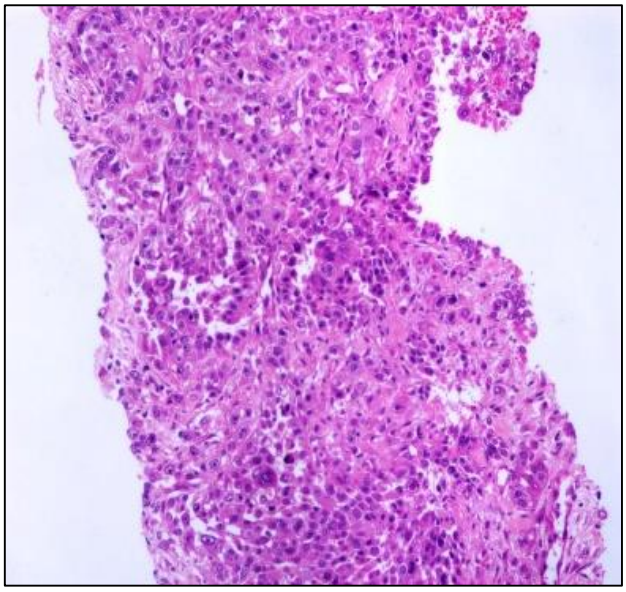

Figure 7: Photomicrography suggestive of gall bladder adenocarcinoma.

Case 3

The 50 year old female presented in surgical emergency with complains of inability to pass flatus and faeces for 5 days with abdominal distension and episodic vomiting. There was no history of fever, similar complains in the past nor did she have any previous surgical intervention. She did not have complains of loss of weight and appetite. On examination, her vitals were stable and abdomen was distended, bowel sounds were absent. No guarding or rigidity was present. Ryle's tube had 1000 ml stat bilious content. X-ray abdomen revealed dilated small bowel loops suggestive of small bowel obstruction. Total leucocyte counts were raised and other haematological parameters were within normal range. Based on clinical and radiological findings, patient was taken up for emergency laparotomy.

Intra-operatively, there was stricture segment of 5 cm in the ileum at 2.5 feet proximal to ileo-caecal junction with dilated bowel loops proximal to the stricture and collapsed bowel loops distally. No perforation was identified. Gall bladder was also distended and gangrenous without any perforation. A double barrel ileostomy was created after resecting the stricture segment and cholecystectomy was also done. Abdomen was closed in layers after putting a drain in the pelvis.

Post-operative outcome was uneventful. Ileostomy started to function on day 2 and patient was orally allowed from day 3 and drain was removed on day 5. She was discharged on day 6 and advised follow up. Histopathology of the stricture segment showed chronic non-specific inflammation with no evidence of granuloma or malignancy. Gall bladder histopathology was also suggestive of gangrenous cholecystitis.

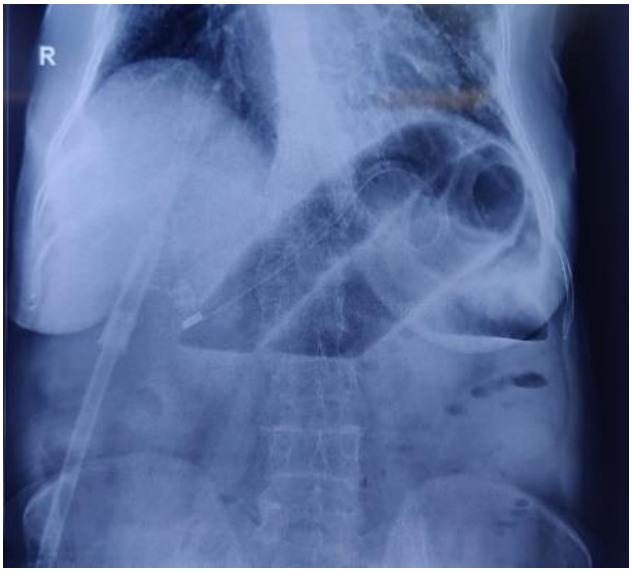

Figure 8: X ray abdomen depicting dilated small bowel loop with air fluid level.

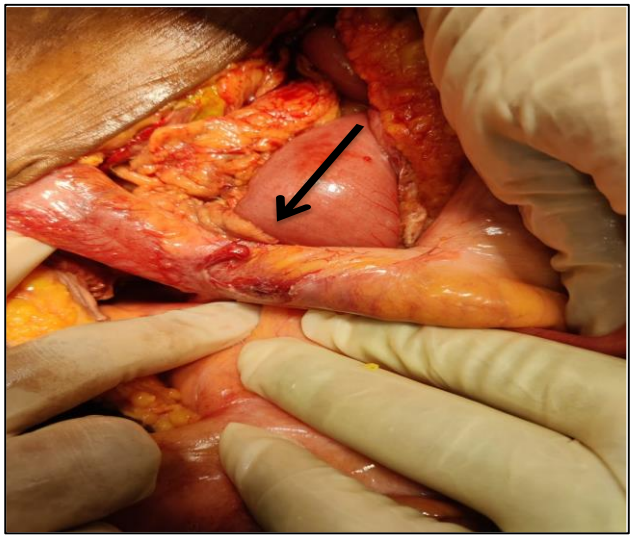

Figure 9: Stricture present in the terminal ileum (black arrow).

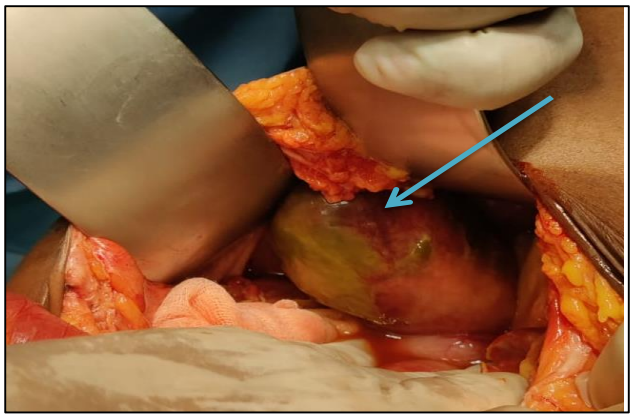

Figure 10: Intraoperatively, gangrenous gall bladder.

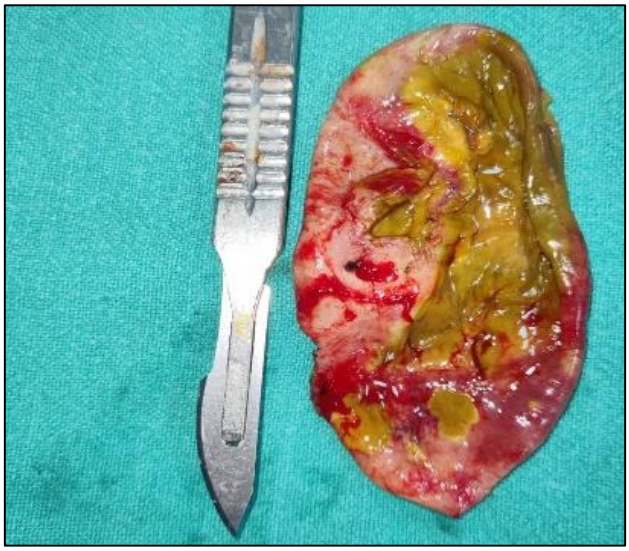

Figure 11: Specimen of gangrenous gall bladder.

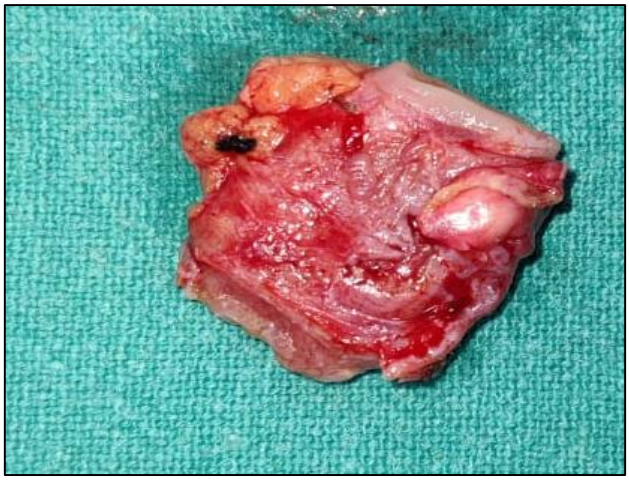

Figure 12: Resected stricture segment of terminal ileum.

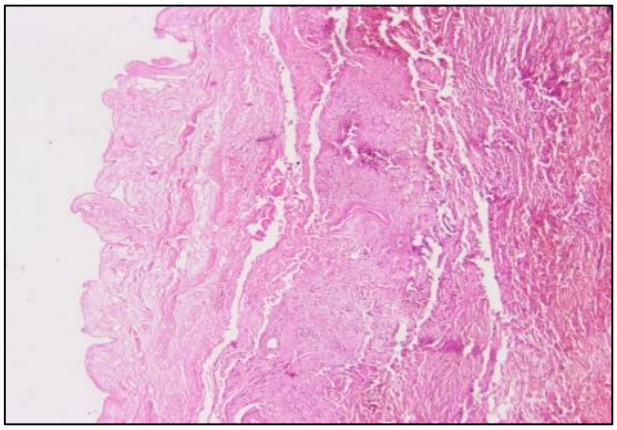

Figure 13: Photomicrograph (20 X, H and E staining) displaying atrophied mucosa with gangrenous changes in form of homogenous eosinophilic staining with loss of histomorphological outlines and cellular details suggestive of gangrenous cholecystitis.

DISCUSSION

Acute abdomen mostly presents in emergency department as abdominal pain, abdominal distension, nausea and vomiting. When signs of peritonitis are present, it usually indicates a surgical cause in which a hollow viscus perforation is very common. Clinically it is very difficult to ascertain the affected organ involved as the symptoms and signs are generalised. Since in emergency, a detailed investigative work-up is not possible; based on the clinical findings and supportive evidences from easily available investigations like X-ray abdomen and ultrasound abdomen, laparotomy has to be planned and a proper diagnosis can be settled only after exploration.

Predisposing factors for gall bladder perforation include a history of cholecystitis, diabetes mellitus, male gender, old age, malignancy.[7] Gall bladder cancer itself can lead to perforation or sometimes unusual presentations such as perforation due to pancreatic cancer, duodenal malignancy and post chemotherapy following gastric cancer have also been reported.[5,6]

If the signs of peritonitis are absent and the condition of the patient is stable, an abdominal CT scan is helpful as it holds the sensitivity of 88% in detecting the pathology.[8] Moreover it can also identify the cause of perforation. If there is a localised collection, an image guided percutaneous drain can be placed for sepsis control. In case of free gall bladder perforation, a peritoneal lavage is mostly required. Decision for cholecystectomy during laparotomy or afterwards will depend on feasibility with respect to surgical expertise, dense adhesions and risky Calot's triangle anatomy for the fear of biliary injury and overall general condition of the patient; and the cause of perforation. If the perforation is secondary to gall bladder malignancy, cholecystectomy should be deferred and endoscopic retrograde cholangio-pancreaticography followed by stenting should be opted.

According to Niemeier classification, gall bladder perforation has been divided into three types. Type 1 includes free perforation; type 2 is perforation with localised collection and type 3 is cholecysto-enteric fistula. Fundus is the most common site of perforation as it has less vascularity and hence easily prone to ischaemic insult, as it was in our case. Prolonged backpressure from the gall stones impacted at the neck of gall bladder, multiple gall stones, diabetic macroangiopathy and microangiopathy, salmonella infection and malignancy cause gall bladder wall necrosis and erosion which leads to gangrene and perforation. Spontaneous perforation without an obvious cause is very rare and very few such cases have been reported in literature.

Ausania et al have concluded that mortality in cases of gall bladder perforation is independently associated with preoperative sepsis.[9] Other factors include low albumin and open surgery, multiple co-morbidities and old age. Prognosis is better when the patient is young, perforation is localised and peritonitis is absent. If a preoperative diagnosis of gall bladder perforation is achieved and adequate sepsis control done, laparoscopic cholecystectomy can offer good postoperative outcomes under elective settings. Zhang et al reported a case of spontaneous gall bladder perforation secondary to chemotherapy and radiation in a patient of nasopharyngeal carcinoma.[10] Patient underwent emergency laparoscopic cholecystectomy and was discharged successfully. Hence laparoscopy in emergency settings is a good option but low threshold for conversion to open should always be borne depending upon the expertise.

Gangrenous cholecystitis with intestinal obstruction without any obvious cause is an unusual finding on exploration and again preoperative diagnosis in emergency situations is almost impossible. Intestinal obstruction secondary to gall stone ileus has been reported in literature but in our case no stone was retrieved.[11,12] Ramesh et al have reported a case of gangrenous cholecystitis with intestinal obstruction, however intraoperatively there was gangrenous gall bladder with adherent omentum. No obvious mechanical intestinal obstruction was identified as contrary to our case.[13] GG Croley has also reported in his retrospective study, 5 patients of intestinal obstruction with gangrenous cholecystitis; 2 out of which had mechanical cause of obstruction and the others had adynamic obstruction.[14] To the best of our knowledge, no such case of mechanical intestinal obstruction with gangrenous cholecystitis, apart from 2 cases in aforementioned study has been reported till date, hence ours being the third, mandates reporting.

Gangrenous cholecystitis with gall bladder perforation presenting as acute abdomen in surgery emergency is not very common and a preoperative diagnosis in such patients is very difficult and rather not needed indeed. Presence of diffuse abdominal tenderness, guarding and rigidity, generalised distension and evidence of free fluid in peritoneal cavity mandates an exploration irrespective of the cause. A decision to perform cholecystectomy in such a case depends upon feasibility, general condition of the patient and the cause of perforation. If conditions do not permit for cholecystectomy, a thorough peritoneal lavage with multiple abdominal drains is sufficient for sepsis control. Localised and contained perforations can be dealt with percutaneous drainage followed by definitive procedure after optimization. Emergency laparoscopic cholecystectomy in such situation is a good option but should be done in selected cases.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Fagan SP, Awad SS, Rahwan K, Hira K, Aoiki N, Itani KMF, et al. Prognostic factors for the

development of gangrenous cholecystitis. Am J Surg. 2003;186(5):481-5.
2. Mehrzad M, Jehle CC, Roussel LO, Mehrzad R. Gangrenous cholecystitis: A silent but potential fatal disease in patients with diabetic neuropathy. A case report. World J Clin Cases. 2018;6(15):1007-11.
3. Rustagi T, Rai M, Menon M. Ruptured adenosquamous cell carcinoma of the gallbladder: case report and review of literature. Gastrointest Cancer Res. 2011;4(1):29-32.
4. Amarnath S, Polavarapu A, Gumaste V. Spontaneous Perforation of an Acalculous Hydropic Gallbladder in a Diabetic Patient With Neuropathy: An Underdiagnosed Entity. Gastroenterol Res 2019;12(6):315-9.
5. Hosaka A, Nagayoshi M, Sugizaki K, Masaki Y. Gallbladder perforation associated with carcinoma of the duodenal papilla: a case report. World J Surg Oncol. 2010;8:41.
6. Sun Y, Song W, Hou Q, Gua H. Gallbladder perforation: a rare complication of postoperative chemotherapy of gastric cancer. World J Surg Onc. 2015;13:245.
7. Stefanidis D, Sirinek KR, Bingener J. Gallbladder perforation: risk factors and outcome. J Surg Res. 2006;131(2):204-8.
8. Watanabe Y, Nagayama M, Okumura A, Amoh Y, Katsube T, Suga T, et al. MR imaging of acute biliary disorders. Radiographics. 2007;27(2):477-95.
9. Ausania F, Guzman Suarez S, Alvarez Garcia H, Senra del Rio P, Casal Nuñez E. Gallbladder perforation: morbidity, mortality and preoperative risk prediction. Surg Endosc. 2015;29(4):955-60.
10. Zhang J, Shen G, Shi Y, Zhang C, Hong D, Jin L, et al. Spontaneous acalculous gallbladder perforation in a man secondary to chemotherapy and radiation: A rare case report. Medicine (Baltimore). 2018;97(19):e0674.
11. Morosin T, De Robles M B, Putnis S. Gallstone Ileus: An Unusual Cause of Intestinal Obstruction. Cureus. 2020;12(3):e7284.
12. Sahsamanis G, Maltezos K, Dimas P, Tassos A, Mouchasiris C. Bowel obstruction and perforation due to a large gallstone. A case report. Int J Surg Case Rep. 2016;26:193-6.
13. Ramesh D, Apoorva G. Gangrenous Cholecystitis Masquerading as Intestinal Obstruction, A Silent Killer. Int J Sci Res. 2023;12(4):860-63.
14. Croley GG 2nd. Gangrenous cholecystitis: five patients with intestinal obstruction. Am Surg.1992;58(5):284-92.

Cite this article as: Gopal VR, Rai P, Singh SK, Singh A, Bhargav M, Gulfran M. Gangrenous cholecystitis as an incidental finding during emergency laparotomies for acute abdomen at a tertiary centre: a case series. Int J Res Med Sci 2024;12:2083-8.