A case report of Acalculous gall bladder perforation with huge abdominal cyst

Ahmed Siddique Ammar[1*], Zahra Sattar[1], Syed Asghar Naqi[2]

European Journal of Medical Case Reports
Volume 5(3):89–92
https://doi.org/10.24911/ejmcr/173-1603960035

ABSTRACT

Background: Gall bladder perforation presents in various forms with the most common being peritonitis. The most common causes include gall stones obstructing the cystic duct and necrosis of gall bladder due to ischemia.

Case Presentation: A 19-year-old female presented to the emergency department of East Surgical Ward of Mayo Hospital Lahore, Pakistan, with a history of abdominal distension for 4 months for which she was counseled because of pregnancy. She gave birth to healthy baby 1 month prior, but abdominal distension did not resolve. On examination, she had a distended and tender abdomen with visible striae. She was tachycardiac with a pulse rate of 124 per minute and blood pressure of 110/80 mmHg. Fluid cytology showed negative for malignant cells and total leukocyte count of 17 × 109 /l. Abdominal ultrasound showed a huge thick-walled cystic area with internal echoes measuring 31 × 19 × 19 cm with total amount of fluid volume in the cyst was approximately 5 l arising from the right hypochondrium. On opening the abdomen, a huge cyst was encountered extending from the epigastrium to the pelvis with dense adhesions. The cyst was opened and fluid aspirated. Communication between cyst was found with gall bladder in the epigastrium. The cyst wall was excised partially, and cholecystectomy carried out. The patient was discharged on 5th post-operative day.

Conclusion: The development of thick-walled huge cyst within abdominal cavity after gall bladder perforation is a rare entity, especially when the patient had gone through full-term pregnancy with the presence of the cyst.

Keywords: Case report, gall bladder, perforation, cyst, pregnancy, fistula.

Received: 29 October 2020 **Accepted:** 01 February 2021 **Type of Article:** CASE REPORT **Specialty:** General Surgery/Gastroenterology

Correspondence to: Dr Ahmed Siddique Ammar
*Senior Registrar General Surgery, East Surgery Ward, Mayo Hospital, Lahore, Pakistan.
Email: Asammar1912@gmail.com
Full list of author information is available at the end of the article.

Background

Gall bladder perforation is a rare presentation encountered in the surgical emergency floor [1]. The most common mode of presentation of gall bladder perforation is peritonitis but the pre-operative diagnosis of gall bladder perforation is difficult to make especially where there is no availability of advance imaging techniques like CT scan [2]. This delay can result in morbidity and even mortality of the patient with significant influences on the outcomes. The reported incidence of gall bladder perforation in patients with acute cholecystitis is 2%-18%, while the incidence of gall bladder perforation because of acute cholecystitis is about 10%-20%. The exact mechanism of gall bladder perforation in patients with acute cholecystitis is not understood [3]. In some patients with acute cholecystitis, the impacted stone in the cystic duct falls back into the gall bladder and this resolves the cholecystitis, whereas if this inflammation does not get resolved, then persistent inflammation causes the development of empyema which in turn leads to necrosis and eventually perforation [4]. In most of the cases where perforation occurs at fundus, omentum is least likely to cover the perforation so gross peritonitis occurs. On the other hand, if perforation occurs at the neck or the duct, it is most commonly get sealed by omentum or the intestines which results in either local inflammation. The duration of symptoms may extend from 1 week to several months [5].

In this case report, we present a case report of 19-year-old female presented to the surgical emergency department with signs and symptoms of a huge intra-abdominal cyst. The patient had a history of spontaneous vaginal delivery of a full-term healthy child 1 month back. On exploration, this huge intrabdominal cyst was in communication with the fundus of the gall bladder and no stones were found in the gall bladder or the cyst.

Case Presentation

A 19-year-old female presented to the emergency department of East Surgical ward of Mayo Hospital Lahore, Pakistan, in September 2020 with the chief complaint of abdominal distension and off and on vomiting and fever for 4 months. She was married 1 year back and 1 month back she gave birth to a healthy baby through spontaneous

vaginal delivery. On detailed history taking, she mentioned that she had experienced excruciating pain in the right hypochondrium 4 months back for which she was counseled because of pregnancy and pain killers were given at a local village hospital. She took symptomatic treatment for off and on pain, vomiting and fever, and gave birth to a baby 1 month back. After giving birth to the baby, the abdominal distension remained the same with fever and vomiting for which she now presented to Mayo Hospital.

On examination, she had a distended and tender abdomen with visible striae. She was tachycardiac with a pulse rate of 124 per minute and blood pressure of 110/80 mmHg, normal respiratory rate, fever of 100° Fahrenheit, and Glasgow Coma Scale of 15/15. She already had blood tests including complete blood count, liver function tests, and renal function tests which were all in normal range and cytology of the fluid aspirated from the abdominal cyst from another hospital. Fluid cytology showed negative for malignant cells, neutrophils 95%, lymphocytes 5%, total leukocyte count of 17 × 10^9/l. Chest x-ray and abdominal x-ray erect were carried out which showed normal lung fields and diffusely increased density of the abdomen, poor definition of the soft tissue shadows, such as the psoas muscles, liver, and spleen. Abdominal ultrasound showed a huge thick-walled cystic area with internal echoes measuring 31 × 19 × 19 cm with total amount of fluid volume in the cyst was approximately 5 l arising from the right hypochondrium. Because of the advantage of availability of CT scan in the emergency department, CT scan was carried out and it showed same findings as abdominal ultrasound with finding of superior part of the collection with the fundus of gall bladder, possibly secondary to the perforation of the gall bladder and causing mass effect on small intestines, urinary bladder, and ureters (Figure 1). After resuscitation and administering a broad spectrum of antibiotics, plan of exploratory laparotomy was made after taking informed and written consent from the patient for exploration under general anesthesia and after arranging two pints of blood.

On opening the abdomen, the cyst wall was encountered just after cutting the peritoneum with layer of omentum overlying the cyst wall. The peritoneum was adherent to the cyst wall. After separating the peritoneum from cyst on both lateral sides, all of the small intestine was found in the left flank and the large intestine on the right flank with dense adhesions. The cyst was occupying the whole abdomen form epigastrium to pelvis on both flanks. Lowers limit of the cyst was identified and the cyst was opened by creating a small opening in the anterior wall of the cyst and about 6 l of purulent fluid was sucked from the cyst. The cyst was then opened up to epigastrium where a small opening was observed which was communicating to the fundus of the gall bladder (Figure 2). The posterior surface of cyst was densely adhered to the aorta, and major vessels and uterus and the posterolateral surface were adhered to colon so the wall of the cyst was excised up to the adhesions and rest of the cyst wall was left behind because of chances of iatrogenic injury to major vessels.

Figure 1. *CT scan of the patient showing huge abdominal cyst. The arrow shows the communication between gall bladder and cyst.*

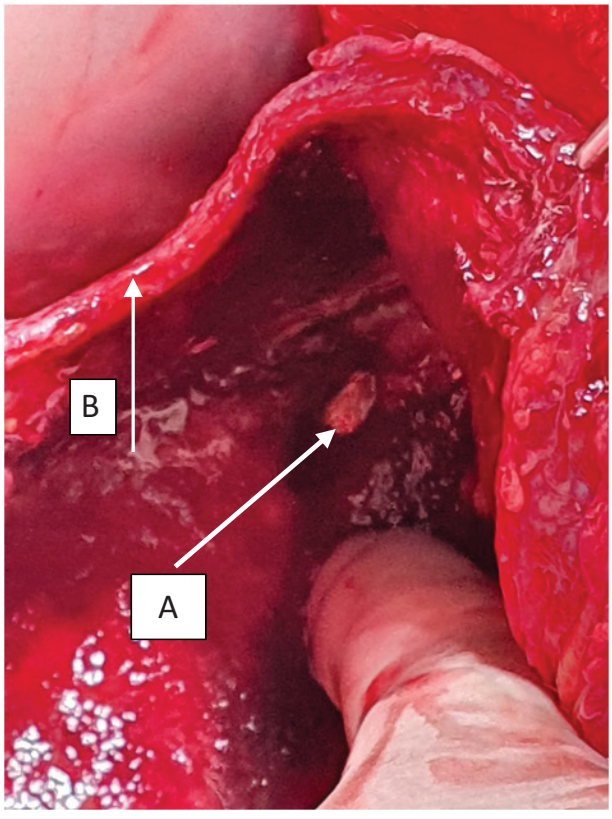

Figure 2. *Inside view of the cyst after opening, showing the thickness of the cyst wall and communication with the gall bladder fundus. (A) Communication of gall bladder with the cyst wall after opening the cyst. (B) The thickness of the cyst wall.*

Gross examination of Ascitic Fluid	4 ml of yellow colored fluid
Microscopic Description of Ascitic Fluid	Polymorphs +++ Macrophages ↑ No epithelial and malignant cell found
Diagnosis of Ascitic Fluid	Negative for malignant cells
Body Fluid Albumin	2.3
Body Fluid LDH	15332
Body Fluid Protein	5.54
Ascitic fluid Total leukocyte count	80582 /cmm
Ascitic fluid Red blood cell count	7505 / cmm
Ascitic fluid Differential leucocyte count	Neutrophils 95% Lymphocytes 5%

Fluid Analysis of Ascitic Fluid

Figure 3. *Fluid cytology report.*

Specimen	Gall bladder
Gross features	Specimen received fixed in formalin and consists of gallbladder in two pieces 8.2 x 2cm
Microscopic features	The section reveals wall of gallbladder. The surface epithelium is denuded. There is infiltration of the lamina propria by neutrophils, lymphocytes, plasma cells and histiocytes. there is a increased fibroblastic proliferation, edema and congestion of sub serosal blood vessels.no evidence of malignancy is seen in the section examined
Opinion	Gallbladder. Acute on Chronic Cholecystitis

Histopathalogical report of the specimen

Figure 4. *Histopathology report of the gall bladder.*

In the right hypochondrium, the gall bladder was identified with communication with the cyst and cholecystectomy was carried out. Single drain was placed in pelvis. Surgery and postoperative period remained uneventful and patient was discharged on 5th post-operative day and follow-up was made for 1 month which was uneventful. Histopathology of the cyst wall showed acute chronic cholecystitis (Figure 3) and fluid from the cyst showed no evidence of malignancy (Figure 4).

Discussion

Courvoisier first described 499 cases of gall bladder perforation in 1,890 out of which 169 developed cholecysto-cutaneous fistulae. However, in the past 50 years, less than 25 cases were reported in the literature and this decline is mostly due to the inventions in advanced imaging techniques, surgical treatments, and antibiotics [6]. Niemeier in 1934 classified gall bladder perforation into three types. Type 1 includes patients with free perforation into the peritoneum. Type II includes patients with localized perforation and type III includes patients with chole-cysto-biliary fistula and complex fistula formation [7].

Spontaneous gall bladder perforation or rupture is a well-documented complication of acute cholecystitis. The morbidity and mortality due to gall bladder perforation is estimated to be 57.7% and 9.5%, respectively [8]. The most common age group affected by gall bladder perforation is between 48 and 60 years. Free perforation of the gall bladder is rare and the most common site of gall bladder perforation is fundus. Many case reports about gall bladder perforation are available in the literature but still many controversies exist regarding the best tool for early diagnosis and the treatment modality [9]. Ultrasound abdomen is still the main investigation of choice in emergency and elective procedures but it cannot tell details about the perforation. For that, CT scan is the most sensitive tool to diagnose gall bladder perforation [10].

Perforation of the gall bladder can develop early in the course of acute cholecystitis or it may occur several weeks after the onset. Because of the poor blood supply fundus is the most common site of perforation [11]. Localized perforations can be found in literature but such a huge cyst with communication with the gall bladder is first of its kind [12].

This case is the first of its kind and much different from the literature of gall bladder perforation available, as in this case there is a history of about 4 months from the start of the symptoms and surprisingly no gross peritonitis occurred. Instead, a thick wall was formed which was communicating with the gall bladder fundus. The secretions of the gall bladder were poured in the cyst for the last 4 months increasing the size of the cyst with the passage of time. The most interesting thing is that the patient got pregnant and delivered a healthy baby in between this condition.

Conclusion

Localized collection of the gall bladder perforation is reported in the literature but a localized collection with a well-developed thick wall extending up to the pelvis is first of its kind. Moreover, in the presence of such huge cyst the patient also underwent pregnancy and delivered a healthy full-term baby. There were no sign and symptoms of peritonitis in 4 months of history. This case showed an unusual presentation of gall bladder perforation and this case report adds to the literature.

What is new?

Gall bladder perforation present with various scenarios. In this case presentation, gall bladder perforation presented with a huge abdominal cyst and the patient had this cyst when she was pregnant, and she gave birth to healthy male baby. This case report is the first of its kind.

Funding

None.

Conflict of interests

The authors declare that there is no conflict of interest regarding the publication of this article.

Consent for Publication

Written consent was taken from the patient.

Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

Author details

Ahmed Siddique Ammar[1], Zahra Sattar[1], Syed Asghar Naqi[2]

1. Senior Registrar General Surgery, East Surgery Ward Mayo Hospital, Lahore, Pakistan
2. Professor and Head of Surgical Department, Surgical Unit-I (East Surgical Ward) Mayo Hospital, Lahore, Pakistan

Rferences

1. Date RS, Thrumurthy SG, Whiteside S, Umer MA, Pursnani KG, Ward JB, et al. Gallbladder perforation: case series and systematic review. Int J Surg. 2012;10(2):63–8. https://doi.org/10.1016/j.ijsu.2011.12.004
2. Badru F, Litton T, Puckett Y, Bansal S, Guzman M, Vane D, et al. Spontaneous gallbladder perforation in a child secondary to a gallbladder cyst: a rare presentation and review of literature. Pediatr Surg Int. 2016;32(6):629–34. https://doi.org/10.1007/s00383-016-3891-4
3. Goel V, Kumar N, Soni N. Ruptured gallbladder containing stones following blunt trauma abdomen: a rare presentation of hemodynamic instability. JNMA J Nepal Med Assoc. 2015;53(197):34–6. https://doi.org/10.31729/jnma.2702
4. Hussain T, Adams M, Ahmed M, Arshad N, Solkar M. Intrahepatic perforation of the gallbladder causing liver abscesses: case studies and literature review of a rare complication. Ann R Coll Surg Engl. 2016;98(6):e88–91. https://doi.org/10.1308/rcsann.2016.0115
5. Imtiaz H, Somasundaram M, Dutton J, Hariharan D, Yip V, Hutchins RJH. Extrahepatic bile duct neuroendocrine tumour: a rare presentation in an 18-year-old female. HPB. 2020;22:S188–9. https://doi.org/10.1016/j.hpb.2020.04.756
6. Khan MR, Begum S. Isolated gallbladder injury from blunt abdominal trauma: a rare co-incidence. J Pak Med Assoc. 2020;70(2):S95–8.
7. Malik MN, Mahmood T, Din ATU, Aslam S, Imtiaz MJC. Gallbladder perforation secondary to enteric fever: an interesting case of acute abdomen. Cureus. 2019;11(4). https://doi.org/10.7759/cureus.4516
8. Mughal Z, Green J, Whatling P, Patel R, Holme T. Perfoation of the gallbladder:'bait'for the unsuspecting laparoscopic surgeon. Ann R Coll Surg Engl. 2017;99(1):e15–8. https://doi.org/10.1308/rcsann.2016.0274
9. Natarajan M, Specialities S. Gallbladder perforation, though a rare presentation of acute abdomen needs immediate intervention and utmost expertise in its management. Univ J Surg Surg Specialties. 2017;3(2).
10. Pun B, Karki B, Shrestha B, Pathak R, Shrestha P, Shrestha N. Diagnostic utility of ultrasonography and computerized tomography in gallbladder perforation: a case report. Radiol Case Rep. 2020;15(10):1905–8. https://doi.org/10.1016/j.radcr.2020.07.068
11. Ramesh A, Balakrishnan R, Sciences D. Gallbladder perforation-presenting as an acute abdomen. J Evolution Med Dent. 2017;6(80):5647–52. https://doi.org/10.14260/Jemds/2017/1224
12. Sen S, Parui U. Spontaneous gallbladder perforation: a rare clinical entity, a diagnostic and surgical challenge. Surg Med Open Acc J. 2018;1(1):1–4. https://doi.org/10.31031/SMOAJ.2017.01.000505

Summary of the case

1	**Patient (gender, age)**	19-year-old female
2	**Final diagnosis**	Gall bladder perforation
3	**Symptoms**	Abdominal distension and vomiting
4	**Medications**	Gram-positive and third generation cephalosporins
5	**Clinical procedure**	Exploratory laparotomy, excision of cyst, and cholecystectomy
6	**Specialty**	General surgery/gastroenterology