

Case Report

## Gallbladder torsion: A Rare Cause of Acute Abdomen in A Young Man

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**Abstract** — Gallbladder torsion is a rare but life-threatening condition. It is commonly seen in the elderly population due to a lack of mesenteric fat, making the cystic duct more mobile and prone to torsion. We are presenting a case of gallbladder torsion in a healthy adult male presented with an acute abdomen. Abdomen ultrasound and CT abdomen showed findings of hydrops gallbladder with acute acalculous cholecystitis. The patient went for emergency cholecystectomy due to severe unresolved pain. Intraoperative findings revealed a gangrenous gallbladder with torsion around the cystic duct. He was discharged well post-operatively. Gallbladder torsion remains a challenge for both surgeons and radiologists to diagnose preoperatively. Therefore, having a high index of suspicion is crucial to come to a diagnosis correctly.

**Keywords** — gallbladder, torsion, acalculous cholecystitis

### I. INTRODUCTION

Gallbladder torsion is a very rare condition presenting with an acute abdomen. The incidence of gallbladder torsion is only one in 365,520 hospital admissions [1]. It was first reported in 1898 as a floating gallbladder by Wendel [2]. In recent years, there has been an increase in cases, with more than 500 published cases up until 2014 [3].

This rare, life-threatening condition can occur in any age group, but it is frequently encountered in the elderly, with 85% of cases reported between the ages of 60 to 80 years old [4]. Female is more predisposed to get this disease compared to male, with a female to male ratio of 3:1. [4].

Gallbladder torsion occurs when the gallbladder is twisted on its elongated mesentery along the axis of the cystic duct and cystic artery. The amount of fat in the mesentery is reduced in the elderly population, causing the pedicle to be freely hanging and thus predispose to torsion. In addition, the twisting causes a further reduction in the blood supply to the gallbladder resulting in ischemia and necrosis. Apart from that, the biliary drainage will also be obstructed and causes enlargement of the gallbladder.

The torsion can be complete or incomplete. When the rotation is more than 180 degrees, it is considered complete, and when the rotation is less than 180 degrees, it is considered incomplete. We are presenting a rare case of gallbladder torsion in an adult male with no comorbidities.

## II. CASE REPORT

A 32-year-old male with no known medical illness presented with acute right-sided abdominal pain for one day. The pain was more dominant in the right lumbar region. The patient described the pain as dull, aching, and continuous. The pain score was 9 over 10, and it was not relieved with medication. The patient denied fever, vomiting, chills or rigor. He also denied a history of urinary tract infection symptoms or loose stool. No jaundice, tea-coloured urine or pale stool. Other systems were unremarkable.

On examination, the patient was in pain, but he was still alert and conscious. He was not feverish and not tachypnoeic. The vital signs were stable. On abdominal examination, no abdominal distension or mass was felt. There was tenderness and guarding at the right lumbar region. Per rectal showed an empty rectum.

The abdominal radiograph was normal. Ultrasound abdomen showed grossly distended gallbladder with the fundus extending inferiorly until the right lumbar region. The gallbladder wall was thickened with pericholecystic fluid. No gallstone. (Figure 1).

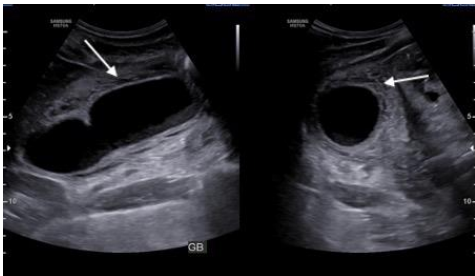


Figure 1. US Abdomen showed grossly distended gallbladder with thickened wall and presence of pericholecystic fluid (white arrow).

CT scan of the abdomen was done revealed a grossly distended gallbladder with pericholecystic fluid predominantly seen at the gallbladder neck. No calculus in the gallbladder or cystic duct (Figure 2).



Figure 2. Coronal view CT Abdomen showed grossly distended gallbladder (white arrow) with pericholecystic free fluid mainly around the neck (black arrow).

Diagnosis of acalculous cholecystitis or gallbladder mucocele was made. Due to non-resolving severe pain, the patient was sent for laparotomy. Intraoperatively, the gallbladder was grossly distended with the gangrenous and thickened wall. In addition, its neck and pedicle were twisted and adhered to the liver (Figure 3). Post-operatively, the patient recovered well and was discharged with no complications.



Figure 3. Gangrenous gallbladder with twisted pedicle (white arrow).

Retrospectively, upon further review of the CT images, the gallbladder wall was thickened with non-enhancing mucosa, in keeping with the gangrenous gallbladder. (Figure 4).



Figure 4. Axial CT abdomen showed a non-enhancing, thickened gallbladder wall (white arrow).

Commented [FA1]: YES  
Did you mean: cholecystitis?

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### III. DISCUSSION

This case illustrates an uncommon encounter of gallbladder torsion in an uncommon age group. It is commonly seen in the elderly population due to a reduction in the amount of mesenteric rendering hypermobility of the cystic duct. In the young population, as in this patient, it is postulated the cause of torsion could be attributed to an anatomical abnormality such as long gallbladder mesentery or lack of adhesion with the liver [5]. This may be aggravated by mechanical events like a sudden change in body position, blunt trauma or violent peristalsis of the adjacent organ.

Correct preoperative diagnosis of gallbladder torsion remains challenging to both surgeon and radiologist as it is usually found intraoperatively. Only 32 of 125 (26%) diagnosed with gallbladder torsion were made preoperatively in the last 20 years [6]. Combination of suggestive clinical signs and symptoms complemented with classical imaging findings, either ultrasound, CT scan or MRCP, lead to a correct preoperative diagnosis in those cases.

Based on a retrospective study of 245 cases of gallbladder torsion, acute abdominal pain is the most reported symptom (100%), followed by vomiting (53%) and palpable mass in the upper abdomen (32.6%) and fever (31.6%) [7]. Laboratory tests usually show nonspecific inflammatory signs with leucocytosis and raised CRP. Liver function tests are usually normal [8].

Ultrasound is the first line of imaging in the acute abdomen, with common findings including grossly distended gallbladder with diffuse gallbladder wall thickening and pericholecystic fluid, as seen in this case. These are important clues to point toward the correct diagnosis. Having a high index of suspicion is crucial to suspect mechanical obstruction at the gallbladder outlet causing such a sonographic appearance. The commonest would be impacted gallstone at the neck of the gallbladder, and the rare cause is gallbladder torsion.

CECT Abdomen are helpful for identifying the malposition of the gallbladder outside the anatomical location, identifying the twisted pedicle or swirl sign near the cystic duct and assessment of the enhancement or viability of the gallbladder mucosa [5]. These three features must be assessed thoroughly as gallbladder torsion usually mimic cholecystitis. In addition, the current use of multiplanar reconstruction and adjustment of window width is vital to a better assessment of the gallbladder.

Apart from CT scan, Magnetic resonance cholangiopancreatography (MRCP), to a lesser extent, may diagnose gallbladder torsion preoperatively. The findings suggest torsion includes V-shaped distortion of the extrahepatic ducts, tapering interruption of the cystic duct, a distended and enlarged gallbladder deviating to the midline, and a difference in intensity between the gallbladder and the extrahepatic and cystic ducts [9].

On nuclear imaging, gallbladder torsion has been reported to show as a 'bull's-eye' image on hydroxyiminodiacetic acid (HIDA) scans due to the accumulation of the radioisotope within the gallbladder [10].

Gallbladder torsion has a mortality rate of 6% [11] if promptly treated and 100% if left untreated [12]. Therefore, the definitive treatment is cholecystectomy, either open or laparoscopic. Laparoscopic cholecystectomy for gallbladder torsion was first performed by Schroder and Cusamano in

1994 [13], and since then, 28 cases have been treated laparoscopically [14].

### IV. CONCLUSIONS

Gallbladder torsion is a rare, life-threatening condition that may occur in any age group. Therefore, having a high index of suspicion is important to come to a correct diagnosis to prevent fatal sequelae.

### CONSENT TO PARTICIPATE

Written informed consent was obtained from the patient for the anonymized information to be published in this article.

### CONFLICT OF INTERESTS

The authors declared no conflict of interest and did not receive any funding for this article.

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