

Pregnant with Acute Abdomen, an Unexpected Turn: Gallbladder Volvulus Case Report

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ABSTRACT

Gallbladder volvulus, is a rare condition that occurs when the gallbladder twists on its elongated mesentery along the axis of the cystic duct and artery, it occurs in 1 in every 365,000 cases, the mortality of this condition is of 6%. Its clinical presentation is insidious and patients usually go to the emergency department with an acute abdomen. We present the clinical case of a pregnant patient who came with data of acute abdomen, protocolized and operated on by our service with an unexpected outcome: volvulated gallbladder.

KEYWORDS: Gallbladder volvulus, Gallbladder torsion, pregnant, acute abdomen, cholecystectomy.

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INTRODUCCION

Gallbladder volvulus is a rare condition, with a reported hospitalization rate of 1 in 365,520. It was first reported by Wendel in 1898 as a "floating gallbladder"; It usually presents with an acute abdomen that requires urgent surgical management, thus being the intraoperative diagnosis in the majority of cases.^{1,2,3}

It has two peaks of incidence, in elderly people aged 70-80 years, with a higher incidence in women than in men in a ratio of 3:1: to 5:13, and in pediatric age where men outnumber women. The mortality of this condition is 6%.^{4,5}

This rare condition occurs when the gallbladder twists on its elongated mesentery along the axis of the duct and cystic artery, although a rotation involving only the fundus of the gallbladder with the body as a fulcrum has been reported. The presence of gallstones is not a prerequisite since cholelithiasis has only been found in 24%-32% of cases⁶⁻⁷.

Depending on its degree, rotation can be classified as complete and incomplete. When the rotation is more than 180 degrees, it is considered complete but, if the rotation is less than 180 degrees, then it is considered incomplete.^{7,8}

Several theories have been postulated to explain its etiology. In 4% of the population, the gallbladder has a long fold or mesentery, which allows it to hang from the undersurface of the liver, allowing it to float freely. Other factors that are usually associated with its presentation are aging due to age-related atrophy of the surrounding tissues and the dissipation

of supporting fat, which causes the visceral organs to become more ptotic, peristaltic activity of the surrounding intestine, spinal deformities and atherosclerotic cystic artery⁹. When freely mobile, the gallbladder can twist on its pedicle; The cystic artery and vein become occluded, causing gallbladder infarction^{1,9,10}

Patients usually go to the emergency department with acute abdomen. Complete torsion causes an acute presentation and incomplete torsion is usually associated with recurrent episodes of slowly progressing pain.¹¹

CLINICAL CASE PRESENTATION

A 26-year-old female patient who was in a normal pregnancy of 26 weeks, she had a history of hypothyroidism under control with levothyroxine 150 mcg daily and no other pathological history. The patient presented abdominal pain for 3 days, initially the pain was colicky, located in the epigastrium and subsequently diffuse, but predominantly in the right upper quadrant, radiating to the ipsilateral shoulder and it was accompanied by nausea and vomiting on 4 occasions. She had de need to remain sitting, because when she lying down the pain increased. The patient remained under in-hospital surveillance, symptoms were partially controlled by analgesics and antispasmodics (ketorolac, butylthioscine and acetaminophen). Clinically, she had normal vital signs, she did not present jaundice, without signs of labor, obstetric emergency or acute abdomen. An

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ultrasound was performed, which reported a cystic image in the right hypochondrium without being conclusive, so it was decided to perform magnetic resonance imaging in which a

cystic lesion of the common bile duct of approximately 500 ml in volume was documented, the cystic lesion was causing a compressive phenomenon (Figure 1,2,3).

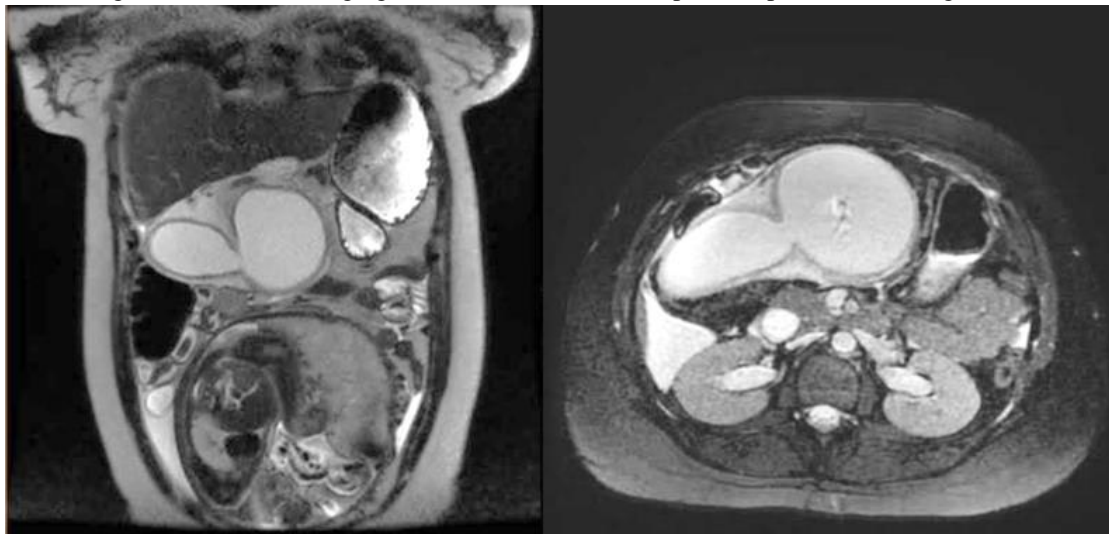


Figure 1. Coronal and axial section of magnetic resonance imaging showing: distended Gallbladder, enlarged and deviated towards the midline, V-Shaped torsion of the extrahepatic bilie ducts. A pregnant uterus can be seen in the pelvis.

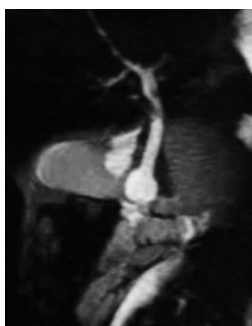


Figure 2. Lateral section of bile duct reconstruction using magnetic resonance imaging



Figure 3. Coronal section in green of the main bile duct . In blue choledochal cyst III. The gallbladder in red, locked in orange color the zone of vesicular torsion.

Given the inability to relieve the pain with analgesics, it was decided to perform a conventional cholecystectomy, finding an enlarged gallbladder, volvulated at the level of the body, distended and with total necrosis of the wall (figure 4,5).

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Figure 4 Gallbladder distended, edematous and with multiple necrotic patches.



Figure 5 Gallbladder with thickened walls, multiple necrotic patches, surgeon supports cystic artery and duct.

The patient remained under in-hospital post-surgical surveillance for 2 days, she was evaluated by Obstetrics and Gynecology who determined that there were no changes in the evolution of the pregnancy and the product was viable. Follow-up was carried out in the outpatient clinic with no reports of complications and achieving term pregnancy term.

DISCUSSION

Gallbladder volvulus is a condition in which the organ becomes twisted on its longitudinal axis to the point where its vascular supply is compromised. Anatomical abnormalities can result in a gallbladder suspended from an abnormally long mesentery that allows it to hang freely from the liver bed and, consequently¹¹, when freely mobile, the gallbladder can twist on its pedicle; the cystic artery and vein become

occluded, causing ischemia, necrosis, gangrene, and perforation of the gallbladder¹².

Patients usually report nonspecific symptoms, such as abdominal pain (100%), nausea and vomiting (52.7%), palpable lump (32.6%), fever (31.8%) and jaundice (31.8%), according to a study of 245 cases⁷.

The symptoms usually vary depending on the degree of rotation. When the torsion is incomplete, the symptoms are similar to those of recurrent biliary colic, but in complete torsion, there is a sudden appearance of intense pain in the right upper quadrant accompanied by vomiting⁸. A minority of patients present jaundice, which differs from cases of acute cholecystitis.

Lau et al. first described the triad of triads used to identify possible gallbladder volvulus, as shown in Table 1¹³.

Table 1 The triad of triads used to identify potential gallbladder volvulus

Appearance	Symptom	Physical examination
Elderly (usually female)	Sudden onset	Nontoxic presentation
Thin habitus	Right upper quadrant pain	Palpable right upper quadrant mass
Spinal deformity	Early emesis	Pulse-temperature discrepancy

However, abdominal pain and emesis are nonspecific symptoms and physical signs may be inconsistent¹⁴.

Serologic tests might be imprecise and typically mimic an acute inflammatory illness. Imaging has shown to be essential in identifying gallbladder volvulus prior to surgery.¹⁵⁻¹⁶

Common imaging modalities such as ultrasound and CT remain the primary diagnostic strategies. Plain abdominal x-rays are not generally helpful. Ultrasonography allows for detecting a gallbladder located outside its anatomical fossa, usually massively distended with a thickened wall and

pericholecystic fluid. More specific pathognomonic features have been proposed, such as finding a continuous hypoechoic line in the wall, thought to be secondary to oedema from a combination of venous and lymphatic obstruction. The twisted pedicle of a torqued gallbladder can manifest as a stretched conical-shaped structure found at the gallbladder neck with several linear echoes converging towards its tip. Doppler ultrasound can be used to assess for lack of blood flow indicating obstruction of the cystic artery^{1,5,7,14,17}.

Kitagawa et al proposed 4 diagnostic criteria when performing CT scan: presence of fluid between the

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gallbladder and the gallbladder fossa, horizontal lie of the gallbladder, presence of an enhancing cystic duct situated on the gallbladder's right, and evidence of gallbladder inflammation or ischemia such as oedema or wall thickening.¹⁸

On T1-weighted images, magnetic resonance imaging may show a high signal intensity within the gallbladder wall, indicating necrosis and hemorrhage.¹⁹

Moser et al. prefer magnetic resonance cholangiopancreatography in diagnosing gallbladder Volvulus because of its advantage in revealing the cystic duct; is an excellent tool for detecting gallbladder Volvulus.¹⁴ There are four imaging characteristics associated with gallbladder volvulus: 1. v-shaped distortion of the extrahepatic bile ducts caused by cystic duct traction; 2. tapering and twisting interruption of the cystic duct; 3. distended, enlarged gallbladder deviated toward the midline; and 4. the gallbladder, extrahepatic bile ducts, and cystic duct may show different intensities.²⁰

Urgent surgery should be performed before gallbladder gangrene and perforation occur. Open cholecystectomy was previously favored, although laparoscopic cholecystectomy is now preferred for patients who can tolerate pneumoperitoneum. Robotic cholecystectomy has been reported.^{14,21,22}

Preoperative diagnosis can be challenging; differential diagnoses include a left-sided gallbladder due to the similar radiological features such as dislocation and twisting of the cystic duct.^{14,22}

CONCLUSIONS

In culmination, the exhaustive scrutiny of the clinical case pertaining to Gallbladder Volvulus not only underscores the rarity of this pathological entity but also illuminates the intricate diagnostic challenges and therapeutic considerations associated with its manifestation. The nuanced interplay of predisposing factors, encompassing anatomical variations and underlying pathophysiological conditions, contributes to the genesis of this seldom-encountered ailment.

The meticulous delineation of the patient's medical history, coupled with an intricate analysis of radiological imaging, has allowed for a comprehensive understanding of the intricacies involved in the diagnostic odyssey of Gallbladder Volvulus. The emergence of ultrasonography as a pivotal diagnostic modality, supplemented by its high sensitivity in detecting gallbladder pathology, has significantly advanced the precision of early diagnosis, thereby facilitating prompt intervention.

Furthermore, the elucidation of predisposing factors, such as anatomical anomalies like a floating gallbladder or an elongated mesentery, serves as a crucial cornerstone in the identification of at-risk individuals. The recognition of these predispositions not only informs the diagnostic approach but also prompts a heightened clinical suspicion, enabling

healthcare practitioners to navigate the diagnostic labyrinth with increased acuity.

In the therapeutic realm, the case review accentuates the paramount importance of expeditious intervention in the setting of Gallbladder Volvulus. The emergent nature of this condition mandates a judicious amalgamation of surgical expertise and clinical acumen. Cholecystectomy, whether laparoscopic or open, remains the sine qua non of treatment, with the choice guided by the acuteness of the clinical presentation, the patient's overall health status, and the surgeon's proficiency.

Additionally, the postoperative management intricacies, including analgesia, antimicrobial therapy, and vigilant monitoring for potential complications, underscore the multifaceted nature of care required post-cholecystectomy. A judicious balance between pain control and avoidance of adverse effects is imperative, as is the meticulous surveillance for signs of postoperative infections, bleeding, or other unforeseen sequelae.

In conclusion, the clinical case review of Gallbladder Volvulus not only contributes to the expanding compendium of medical knowledge surrounding this infrequently encountered condition but also serves as a poignant reminder of the imperative need for heightened clinical vigilance, comprehensive diagnostic approaches, and expeditious therapeutic interventions in the face of such rare and potentially life-threatening entities within the realm of abdominal pathology. As the medical community continues to grapple with evolving challenges, the lessons gleaned from this case stand as a testament to the perpetual pursuit of excellence in patient care and the relentless quest for knowledge within the ever-evolving landscape of clinical medicine.

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