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Torsion of a Wandering Gallbladder: An Extremely Rare Cause of Acute Abdomen Diagnosed on Multidetector Computed Tomography: Case Report with Pathognomonic Imaging Findings

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Abstract: ***Background**: Torsion (volvulus) of a wandering or floating gallbladder is an exceptionally rare surgical emergency caused by the absence or extreme attenuation of the normal peritoneal attachments of the gallbladder to the liver bed. The organ is suspended only by a long mesentery containing the cystic duct and artery, predisposing it to rotation about its vascular pedicle. Because the clinical presentation closely mimics acute cholecystitis or biliary colic, the diagnosis is almost never made clinically and rests entirely upon cross-sectional imaging. **Case Presentation**: We report the case of an elderly woman who presented with sudden-onset severe right upper quadrant pain, nausea and low-grade fever. Ultrasonography showed a markedly distended, thick-walled gallbladder lying unusually low in the abdomen with absent Doppler flow in the wall. Contrast-enhanced multidetector CT demonstrated complete absence of the gallbladder from its normal fossa, a massively distended and poorly enhancing gallbladder in the mid-abdomen, a "beak sign" at the twisted cystic duct, and a whirl of the cystic artery and duct. These findings were diagnostic of gallbladder torsion with ischaemia. **Management and Outcome**: Emergency laparoscopic exploration confirmed a 360-degree anticlockwise torsion of a completely free-floating gallbladder. Detorsion revealed a gangrenous organ; cholecystectomy was performed. Histopathology confirmed transmural haemorrhagic necrosis. The postoperative course was uneventful. **Conclusion**: Recognition of an empty gallbladder fossa together with an ectopic, non-enhancing or poorly enhancing gallbladder and a twisted cystic pedicle on CT allows confident preoperative diagnosis of this life-threatening but curable condition. Early imaging diagnosis enables prompt surgical intervention before irreversible gangrene or perforation occurs.*

Keywords: Gallbladder Torsion, Gallbladder Volvulus, Wandering Gallbladder, Floating Gallbladder, Acute Abdomen, Multidetector Computed Tomography

1. Introduction

Gallbladder torsion, also termed gallbladder volvulus, is a rare acute abdominal emergency in which the gallbladder rotates around the axis of the cystic duct and cystic artery, producing vascular compromise and rapid progression to ischaemia, gangrene and perforation. The condition was first described by Wendel in 1898. True wandering (floating) gallbladder, in which the organ lacks any peritoneal attachment to the liver and is suspended solely by a long mesentery, is even rarer and predisposes strongly to torsion.

Fewer than 500 cases of gallbladder torsion have been reported in the world literature, and true wandering gallbladder with torsion accounts for only a small fraction of these. The majority of patients are elderly women; the female-to-male ratio is approximately 3–4 : 1 and the peak incidence is in the seventh and eighth decades. The clinical picture is non-specific and is almost invariably mistaken for acute calculous cholecystitis. Consequently, the diagnosis is established preoperatively in fewer than 10 % of cases and is usually made only at laparotomy or laparoscopy.

Multidetector computed tomography has become the key diagnostic modality. The cardinal imaging findings are an empty gallbladder fossa, an ectopic and often horizontally oriented gallbladder, a "beak-like" tapering of the cystic duct at the point of torsion, and a whirl of the cystic vascular pedicle. When these features are recognised, emergency surgery can be undertaken without delay, potentially allowing organ-preserving detorsion in the rare cases that present before irreversible ischaemia has occurred.

2. Case Report

An elderly female patient presented to the emergency department with a six-hour history of sudden-onset, severe, constant right upper quadrant and epigastric pain associated with nausea, two episodes of non-bilious vomiting and low-grade fever. She had no prior history of biliary colic, gallstones or abdominal surgery. On examination she was febrile (38.2 °C), tachycardic and had marked tenderness with guarding in the right upper quadrant; Murphy's sign was positive. Laboratory investigations showed leucocytosis with neutrophilia and mildly elevated C-reactive protein; liver enzymes, bilirubin and serum amylase were within normal limits.

Abdominal ultrasonography demonstrated a markedly distended gallbladder measuring 12 cm in length with diffuse wall thickening (6–7 mm) and pericholecystic fluid. The gallbladder was located unusually low, extending into the mid-abdomen rather than occupying the normal subhepatic fossa. Colour Doppler interrogation revealed absent mural vascularity. No gallstones were identified.

Contrast-enhanced multidetector CT of the abdomen was performed. The gallbladder fossa was empty; the liver parenchyma in this region showed only a small amount of residual fat. A massively distended, ovoid, fluid-filled structure consistent with the gallbladder was located in the mid-abdomen to the right of the midline. The gallbladder wall showed only minimal, incomplete enhancement. At the expected location of the cystic duct a sharp "beak" tapering was visible, and the cystic artery and duct formed a tight spiral (whirl sign). Free fluid was present in the right subhepatic space and Morrison's pouch. No radiopaque calculi were seen.



Figure 1: Axial contrast-enhanced CT image of the upper abdomen demonstrating an empty gallbladder fossa and a distended, poorly enhancing ectopic gallbladder with surrounding inflammatory changes, consistent with torsion of a wandering gallbladder.

The combination of an empty gallbladder fossa, an ectopic non-enhancing gallbladder and a whirled cystic pedicle was considered diagnostic of gallbladder torsion with established ischaemia. The patient was taken for emergency laparoscopic surgery. At laparoscopy the gallbladder was found completely free of hepatic attachments, suspended only by a long mesentery that was twisted 360 degrees in an anticlockwise direction. The organ was dusky and distended. After detorsion the wall remained non-viable; laparoscopic cholecystectomy was therefore completed. Histopathological examination confirmed transmural haemorrhagic necrosis without evidence of cholelithiasis or malignancy. The patient recovered uneventfully and was discharged on the fourth postoperative day.

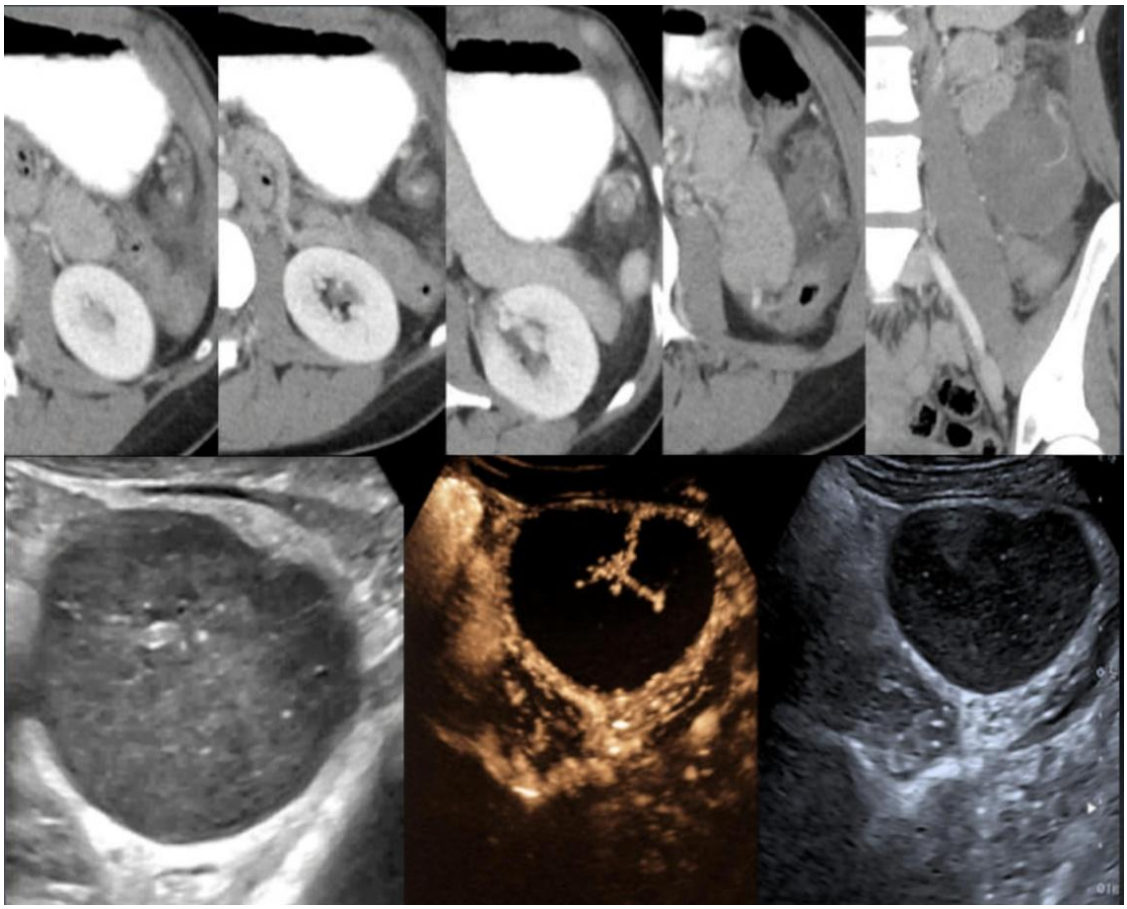


Figure 2: Multiplanar CT and ultrasound images illustrating the spectrum of findings in visceral torsion, including wall thickening, absent perfusion and ectopic position of the affected organ (representative of the imaging features seen in gallbladder torsion)

3. Discussion

Torsion of a wandering gallbladder remains one of the rarest causes of an acute abdomen. The essential anatomical prerequisite is the presence of a long mesentery that allows the gallbladder to float freely and rotate about the cystic duct and artery. Two anatomical types are recognised: incomplete torsion (rotation <180°) that may reduce spontaneously, and complete torsion (≥180°) that rapidly produces ischaemia.

The clinical diagnosis is almost never made before imaging or surgery because the symptoms and signs are indistinguishable from ordinary acute cholecystitis. The absence of gallstones on ultrasound in an elderly patient with an unusually mobile or low-lying gallbladder should raise suspicion. CT provides the definitive preoperative diagnosis when the three cardinal signs are present: empty gallbladder fossa, ectopic gallbladder, and whirl or beak sign of the cystic pedicle.

Once the diagnosis is established, emergency cholecystectomy is the treatment of choice. Laparoscopic approach is feasible and preferred in stable patients. Early recognition on CT can prevent the progression from ischaemia to perforation and biliary peritonitis, which carries a significantly higher morbidity.

4. Conclusion

Torsion of a wandering gallbladder is an extremely rare but important differential diagnosis of acute right upper quadrant pain, particularly in elderly women without gallstones. The combination of an empty gallbladder fossa, an ectopic poorly enhancing gallbladder and a twisted cystic pedicle on multidetector CT is diagnostic. Prompt recognition allows timely surgical intervention and may be life-saving.

References

[1] Reilly DJ, et al. Gallbladder torsion: a systematic review of case reports. ANZ J Surg. 2019.
[2] Garciavilla PC, et al. Gallbladder volvulus: diagnostic features and management. Surgery. 2010.
[3] Nakao A, et al. Gallbladder torsion: review of recent literature. Hepatogastroenterology. 2000.
[4] Quinn SF, et al. CT diagnosis of gallbladder torsion. J Comput Assist Tomogr. 1987.
[5] Kitagawa H, et al. Preoperative diagnosis of gallbladder torsion by CT. Pediatr Surg Int. 1997.

[6] Boonstra EA, et al. Torsion of the gallbladder: a systematic review. Surg Endosc. 2012.
[7] Losanoff JE, et al. Torsion of the gallbladder: a review. Dig Surg. 2002.
[8] Wendel AV. A case of floating gall-bladder and kidney complicated by cholelithiasis with perforation of the gall-bladder. Ann Surg. 1898.