

The simple gallbladder with a twist?

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Gallbladder volvulus (GV) is a rare phenomenon with fewer than 1,000 documented cases since it was first described by Wendel in 1898.^{1,2} Clinical and physical manifestations of GV mimic acute cholecystitis, making diagnosis difficult. Radiological features such as a “beak and whirl” sign indicating cystic duct torsion and a horizontally oriented gallbladder support the diagnosis (Figure 1).³ Given the low clinical incidence (one in 365,000 hospital admissions), diagnosis and treatment can be delayed, which can lead to peritonitis and septicaemia.⁴ A falsely reassuring benign abdominal examination with only mild biochemical inflammatory changes has not been previously reported in literature with GV.

Case report

A 78-year-old female presented acutely to a rural hospital with 3 days of progressive periumbilical pain, nausea and reduced appetite. She denied fevers, melaena or vomiting.

Her medical history included breast cancer, osteoarthritis and multi-nodular goitre.

Her examination was relatively unremarkable. Her abdomen was soft, with a palpable fullness in the periumbilical region.

White cell count (14.7x10⁹/L) and C-reactive protein (CRP; 21mg/L) were elevated on admission. Computed tomography (CT) scan demonstrated a grossly distended horizontal gall bladder (13cm) with adjacent free fluid (Figure 2). The torted appearance of the gallbladder neck suggested volvulus (Figure 1).

The patient was transferred to a major tertiary centre for definitive management. Acute laparoscopic cholecystectomy and intra-operative cholangiography (IOC) was performed. Intra-operative findings included gallbladder mucocele, distended down towards the umbilicus due to chronic cystic duct occlusion. There was a 360-degree clockwise volvulus with partial gallbladder necrosis on the inferior aspect (Figure 3). The gallbladder was suspended from the base of the liver by a mesentery. IOC demonstrated no filling defects. An uncomplicated cholecystectomy was completed within 100 minutes. The patient

recovered well and was discharged home on day 4.

A 115x65x23mm dusky gallbladder containing calculi with a wall thickness of 8mm was seen. Microscopically, there were areas of mucosal ulceration, necrosis and congested vessels with reactive fibroblastic proliferation. There was no dysplasia.

Discussion

GV presentation can mimic other biliary and gallbladder pathologies, including biliary colic and calculous cholecystitis. Examination and laboratory investigation are often unable to distinguish between these respective pathologies. Conservative and antibiotic treatment can be explored in some biliary pathology. However, conservative treatment is less likely to be effective in GV due to progressive ischaemia and risk of perforation. Mortality associated with delayed recognition of GV is around 5% and is greatly reduced with prompt surgical intervention, preventing biliary peritonitis.¹ To avoid iatrogenic injury, careful intra-operative dissection is required as the common bile duct may be at the anterior margin of the liver when twisted.

A mobile mesentery between the liver and gallbladder is a prerequisite for organo-axial rotation. This anatomic variation is described in 1.3% of gallbladders.⁵ Embryologically, the “floating gallbladder” has been hypothesised to be due to mismatched movement between the caudal bud and cranial bud, resulting in the gallbladder being suspended from the liver by its mesentery.⁶ Risk factors include advanced age (seventh to eighth decade), excessive weight loss reducing the fat pad, and liver shrinkage, with the common feature being cholecystic visceroptosis.⁷ Kyphoscoliosis increases the risk due to the more horizontal orientation of the gallbladder. Female:male ratio is 3:1. The rotation of the gallbladder leads to compromised blood flow, leading to infarction and gangrene of the gallbladder. A prompt cholecystectomy is indicated.⁸

In this rare presentation, the enlarged, torted gallbladder was not tender on examination, and only a mild inflammatory biochemical response was present. Delayed recognition of gallbladder

torsion can lead to gallbladder necrosis, rupture and biliary peritonitis. Clinicians should remain

vigilant for the possibility of GV despite a reassuring clinical examination.

Figure 1: CT axial view showing “beak and whirl” sign indicative of cystic duct torsion.



Figure 2: CT coronal view showing an enlarged gallbladder sitting outside of the gallbladder fossa. (A) Hartmann’s pouch; (B) gallbladder fundus.

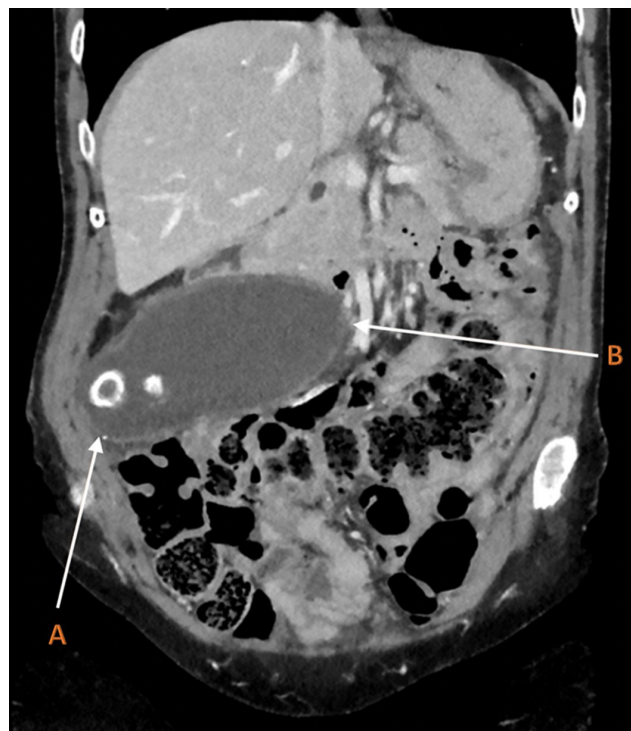
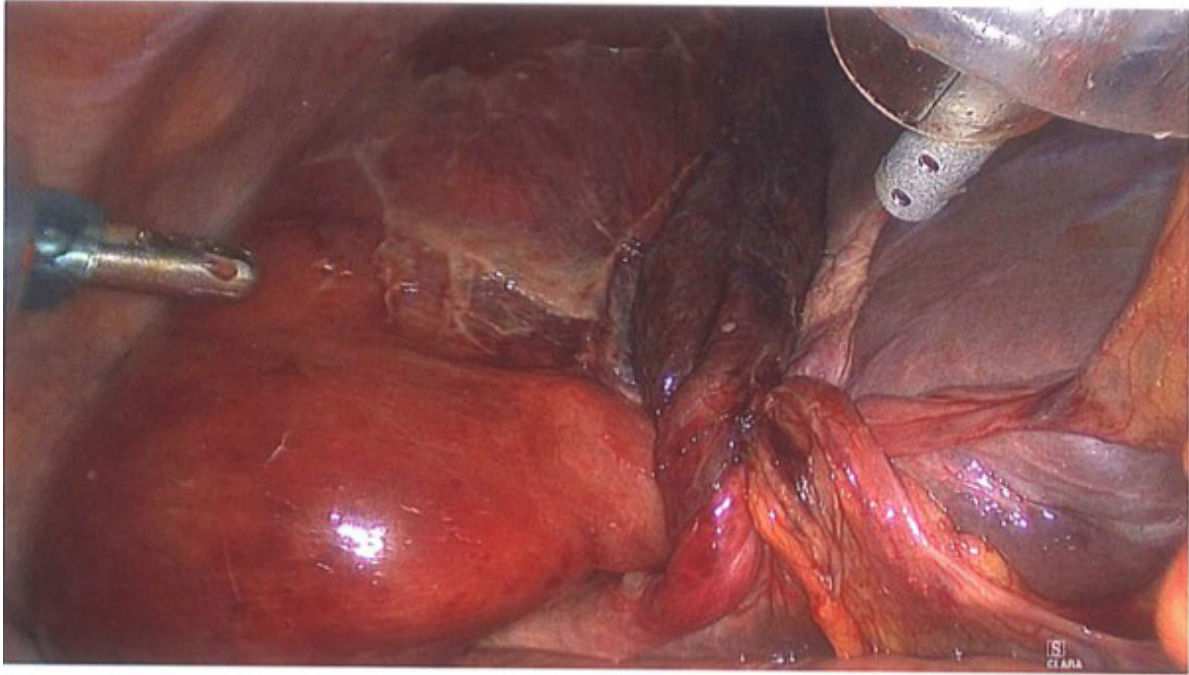


Figure 3: Intra-operative laparoscopy photography of torted gallbladder mesentery.



COMPETING INTERESTS

Nil.

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