



Gallbladder volvulus: “Putting a spin on” acute cholecystitis

*Corresponding Author: **Dawson G**

Email: gemma.dawson9@nhs.net

Abstract

First reported in 1898, gallbladder volvulus is rare. It occurs when the gallbladder twists on its longitudinal axis greater than 180 degrees, resulting in occlusion of the cystic vessels and duct. Herein, we describe the case of a 73-year old woman who was diagnosed with acalculus gallbladder volvulus, with the aid of computerised tomography. This was managed by urgent laparoscopic cholecystectomy and the patient continues to do well 15 months postoperatively. Although rare, a high index of suspicion of the condition must remain and a low threshold for imaging is needed to prevent the complications of gallbladder necrosis, perforation and biliary peritonitis.

Keywords: Gallbladder; Volvulus; Torsion.

Dawson G^{1*}; Shah V²; Bhardwaj N²

¹Department of HPB Surgery, University Hospitals of Leicester, Leicester, United Kingdom.

²Department of Radiology, University Hospitals of Leicester, Leicester, United Kingdom.

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Background

Gallbladder volvulus, or torsion, is rare and occurs when the gallbladder twists on its longitudinal axis by more than 180 degrees, causing occlusion of the cystic vessels and duct. The first report of gallbladder volvulus was described in 1898 by Wendel and was associated with cholelithiasis [1]. Although the exact aetiology of gallbladder volvulus is unknown, it is likely to be precipitated by anatomical variation of the gallbladder mesentery and changes to the surrounding tissues with advancing age [2]. Contrary to Wendel’s case, there does not seem to be a correlation with cholelithiasis as only 32% of patients with the condition have gallstones at the time of presentation [2].

We present a case of gallbladder volvulus in a 73-year old woman who was rapidly diagnosed with the aid of Computed Tomography (CT) and underwent successful early surgical intervention.



Figure 1: Portal venous phase computed tomography (CT) images.

A: Axial image of the upper abdomen, with swirling of vascular structures near the neck of the gallbladder (white arrows).
B: Coronal image of the upper abdomen, with swirling of vascular structures near the neck of the gallbladder (black arrow), and medial orientation of the thick-walled and distended gallbladder (white arrow), consistent with volvulus.

Case presentation

A 73-year old woman presented to the Emergency Department with a seven-hour history of sudden onset, severe upper abdominal pain, waking her from sleep and associated with vomiting. There were no historical symptoms suggestive of gallstone disease and an ultrasound scan four years previously demonstrated a normal gallbladder. The patient had a past medical history of polymyalgia rheumatica, on low dose prednisolone, and was a living kidney donor having undergone left nephrectomy 14 years previously. The patient had also experienced a one stone weight loss over the preceding few months, which was attributed to a recent bereavement; she had a body mass index of 19.93 kg/m². On arrival to the Emergency Department, the patient was systemically well and routine observations were within normal parameters. On examination, there was mild tenderness in the epigastrium without signs of peritonitis.

Blood tests demonstrated a slightly elevated C-Reactive Protein (CRP) of 20 mg/L, but were otherwise unremarkable, including liver function tests and amylase. A CT abdomen and pelvis with intravenous contrast was performed in the Emergency Department, which revealed mural thickening and oedema of the gallbladder along with poor enhancement. In addition, the gallbladder had a relatively horizontal lie, with the fundus pointing medially and associated swirling of the vessels just outside the hilum of the liver (Figure 1); a diagnosis of gallbladder volvulus was made.

The patient was admitted under the care of the Hepatopancreatobiliary team and managed conservatively overnight. The following morning, the patient underwent an urgent laparoscopic cholecystectomy. The operative findings were of a thick-walled gallbladder with a transverse lie (Figure 2a). The cystic duct and artery were torted and within a long gallbladder mesentery (Figure 2b). The gallbladder was corrected into its usual anatomical position before proceeding to a conventional laparoscopic cholecystectomy, beginning with fundal dissection.

The patient made an uncomplicated recovery and was discharged the following day. She remains well at 15 months post procedure. Postoperative histology of the gallbladder reported a congested gallbladder wall with haemorrhage. There was no evidence of dysplasia or malignancy, and no reported cholelithiasis.

Discussion

The difficulty in diagnosing gallbladder volvulus preoperatively comes from the lack of specific symptoms, which may mimic those of alternative gallbladder disease. However, with a high level of suspicion, the clinician may elicit some important details to aid diagnosis. The condition usually occurs in elderly women, with a female: male ratio of 3:1 and median age of 77 years [2]. As demonstrated in the above case, the patient is likely to report sudden onset pain rather than an insidious onset as with typical acute cholecystitis or intermittent pain as with biliary colic. Early vomiting and remaining systemically well at presentation are also common features [3]. Another patient characteristic is a thin body habitus as loss of visceral fat may precipitate gallbladder torsion in those with anatomical predispositions by elongating the gallbladder mesentery and reducing supporting surrounding tissues [3]. Interestingly, the patient above demonstrates the common demographics and had recently experienced a sudden weight loss.

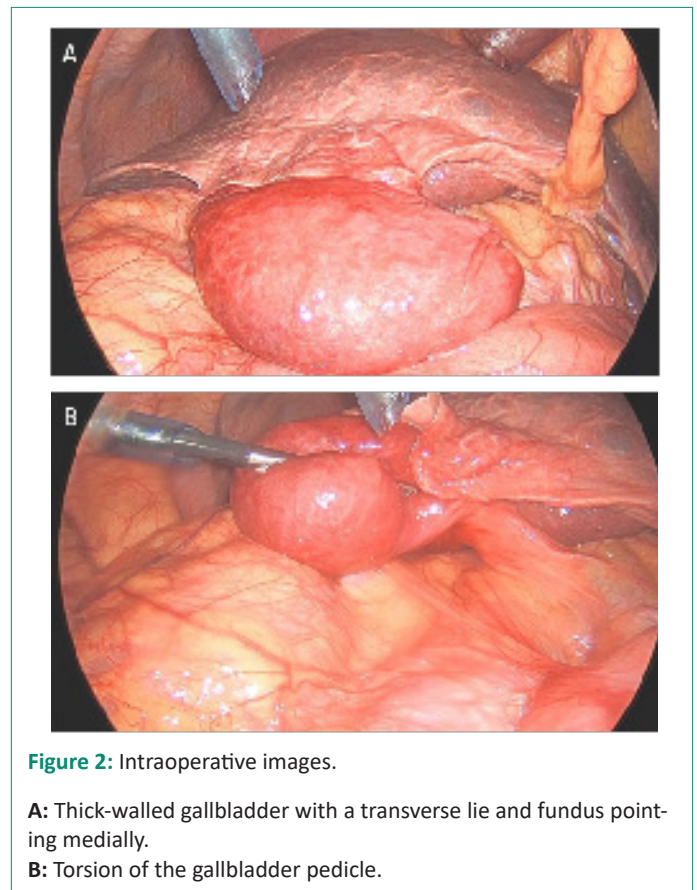


Figure 2: Intraoperative images.

A: Thick-walled gallbladder with a transverse lie and fundus pointing medially.

B: Torsion of the gallbladder pedicle.

Mortality in this condition is quoted at around six percent and is higher in those with delayed diagnosis and treatment [2]. Unlike acute cholecystitis, gallbladder volvulus is not amenable to conservative management as twisting of the cystic artery will lead to gallbladder ischaemia with eventual necrosis, perforation and biliary peritonitis. It is not uncommon for elderly patients with acute cholecystitis to be managed conservatively, owing to higher perioperative risks, however, in the case of gallbladder volvulus conservative management is likely to lead to a poorer prognosis, so early surgical intervention should be mandated if the patient is fit to undergo the procedure.

Prompt CT scanning of patients in whom gallbladder volvulus is suspected should be facilitated. Whilst some features seen on CT may also be seen in acute cholecystitis, three features have been proposed as a strong indicator for underlying volvulus when seen in combination: gallbladder distension; the presence of a twist along the gallbladder vascular pedicle; and an abnormal lie of the gallbladder from vertical to horizontal [4]. Where possible, comparison to previous imaging is also of crucial importance to demonstrate a change in anatomy.

Conclusion

Gallbladder volvulus is an important differential diagnosis to consider in patients presenting with upper abdominal pain. Many of the differential diagnoses may be conservatively managed, thus the clinician must have a high level of suspicion for gallbladder volvulus to facilitate early operative management and therefore avoid the complications of gallbladder necrosis, perforation and biliary peritonitis. The authors would advocate a low threshold for imaging with CT, as an adjunct to diagnosis, in order to limit delays in definitive treatment and reduce mortality.

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