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Sheikh, L., Broughton, K., Lauti, M., Moss, D., & Poole, G. (2016). Gallbladder torsion: a rare indication for acute laparoscopic cholecystectomy. *New Zealand Medical Journal*, 129(1438), 60-63. Retrieved from <http://www.nzma.org.nz/journal/read-the-journal/all-issues/2010-2019/2016/vol-129-no-1437-15-july-2016/6850>

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# Gallbladder torsion: a rare indication for acute laparoscopic cholecystectomy

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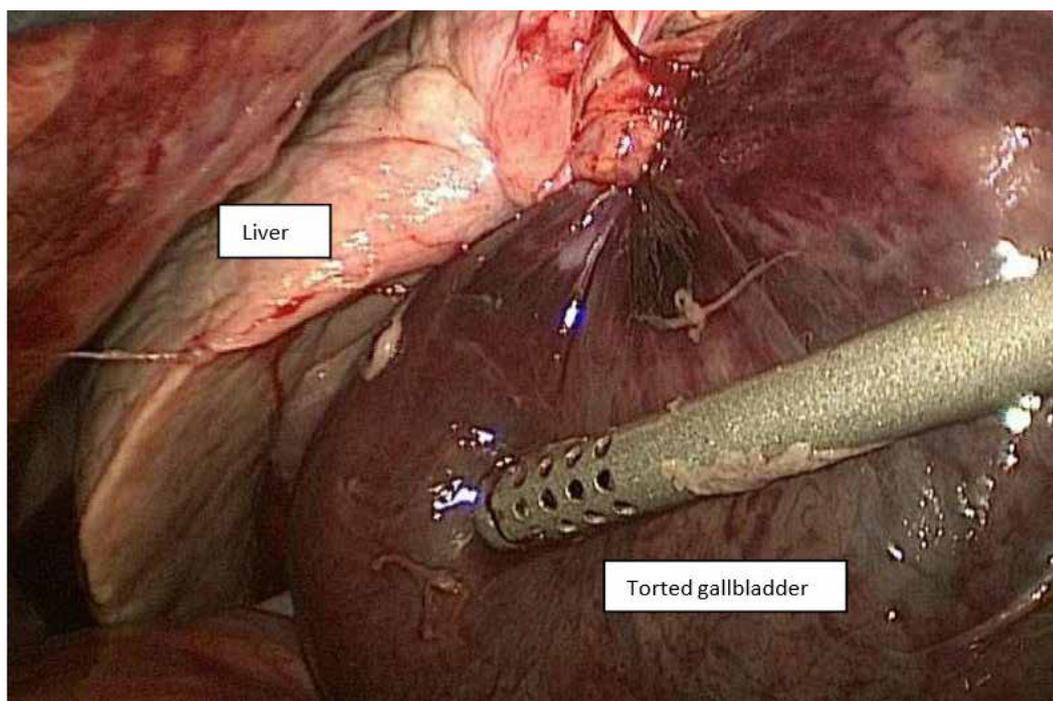
The most common indications for acute laparoscopic cholecystectomy (ALC) are biliary colic, cholecystitis, cholangitis and gallstone pancreatitis. ALC is now the standard of care in established acute care general surgery units.<sup>1</sup> Gallbladder torsion represents a much rarer indication for ALC. Since first described in 1898,<sup>2</sup> there have only been approximately 500 cases of gallbladder torsion reported in the literature. A total of 105 cases have been reported since the first successful ALC was performed for a case of gallbladder torsion in 1994. Of these, 29 (28%) were treated laparoscopically, and eight (8%) patients were converted from a laparoscopic approach to open surgery.<sup>3</sup> ALC in the 10<sup>th</sup>

decade remains a rare event. Not only is surgical intervention for this age group itself rare, but patients are also more likely to have an open procedure.<sup>4</sup> Pre-operative diagnosis of gallbladder torsion remains challenging, with the majority of torsion cases diagnosed intraoperatively.<sup>5</sup> We present a further case of acute gallbladder torsion with a view to expanding upon the current literature.

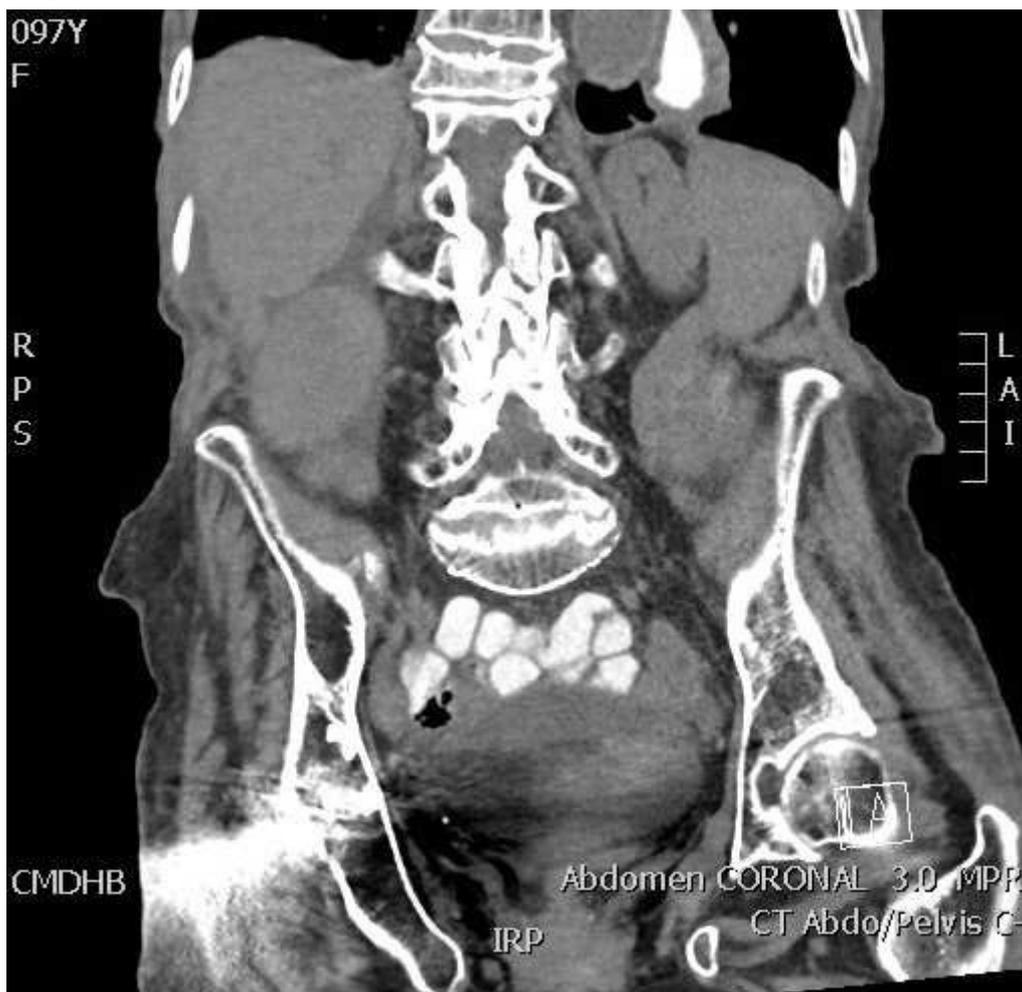
## Case:

A 97-year-old woman presented to the emergency department with 2 days of right-lower quadrant pain, fevers and vomiting. Her comorbidities included chronic renal

**Figure 1:** Intraoperative findings of a torqued gall bladder with necrosis.



**Figure 2:** Coronal slice of computerised tomographic image showing the posterior-inferior lie of the gallbladder.



impairment, a large complex hiatus hernia, osteoporosis and hypothyroidism. She had had no previous abdominal operations. Her laboratory investigations demonstrated a mildly raised C-reactive protein (CRP) of 49mg/L, but were otherwise unremarkable. Specifically, her bilirubin and liver enzymes were normal, and she had no disturbance of hepatic synthetic function. She went on to have a non-contrast computerised tomography scan that demonstrated a thick walled, distended gallbladder, with a soft tissue density projecting into its lumen. Further ultrasonographic evaluation showed a thin walled (2mm) gallbladder with sludge and a 2cm avascular polypoid lesion. There was no evidence for the presence of calculi in either imaging modality.

She continued to have significant pain over the next 24 hours associated with worsening inflammatory markers (CRP 259). The clinical impression was that of necrotic acalculous cholecystitis. She was prepared for a diagnostic laparoscopy with cholecystectomy, if appropriate. Intraoperative findings were consistent with a

gallbladder torted around its mesentery resulting in gangrenous cholecystitis (Figure 1). The gallbladder was untorted and a routine cholecystectomy performed. She recovered without complication and was discharged home on Day 5. Histology was consistent with gangrenous cholecystitis.

## Discussion

Gallbladder torsion remains a rare cause for acute upper abdominal pain. While the incidence is low, with increasing life expectancy we would expect this to be on the increase.<sup>6</sup> Demographically, it is more common in older females with a recent review showing a 3:1 female-to-male predominance, with a median age at presentation of 77 years.<sup>3</sup> The pathophysiology remains poorly understood, although an anatomical variant of the gallbladder attachment to the liver, with either a longer mesentery or an incomplete mesentery attached to the cystic duct, and artery alone facilitates torsion.<sup>7</sup> Further predisposing factors like liver atrophy, spinal deformities, and chronic airway disease have been postulated.

Clinical diagnosis of a torqued gallbladder remains challenging. History (right upper quadrant pain and nausea), examination (right upper quadrant tenderness) and laboratory investigations (raised inflammatory markers, occasionally deranged liver function tests) do not help distinguish this from the more common biliary presentations.<sup>3</sup> Recent advances in radiology have meant that rates of preoperative diagnosis have improved. An older review reported pre-operative diagnosis in 9%<sup>3</sup> of their cases, compared with 26% more recently.<sup>5</sup> However, overall preoperative diagnosis remains challenging. In our case, the diagnosis was very much an intraoperative one. On retrospective review of the radiology, the gallbladder was lying more inferiorly and posteriorly than normal (Figure 2). However, a definitive diagnosis of torsion could not be made.

When managed effectively with timely cholecystectomy, the prognosis remains good with a mortality rate of 4–6%.<sup>3,5</sup> However, delayed diagnosis and attempted non-operative management could lead to necrosis and poor outcomes. Given the diagnostic challenges of this condition, it is imperative that clinicians remain wary of gallbladder torsion as a potential

diagnosis. This is particularly important in the elderly population. As discussed previously, torsion is much more common in the elderly population. However, the elderly, particularly the comorbid elderly, are more likely to be managed non-operatively for presumed cholecystitis.<sup>8</sup> While percutaneous drainage has had good results for high-risk patients with acute gallstone cholecystitis,<sup>9</sup> it would not be appropriate for patients with torsion. With our aging population clinicians will inevitably be faced more frequently with elderly patients with gallbladder disease. Operative management of gallbladder disease has been shown to be effective and safe in the elderly population and should be considered early.<sup>4</sup>

Gallbladder torsion is a rare condition which remains difficult to diagnose clinically and radiologically. While outcomes are good when managed effectively, delayed diagnosis can lead to gallbladder necrosis and peritonitis. With our aging population clinicians need to remain wary of this as a potential diagnosis for elderly patients with gallbladder pathology. Furthermore, early operative management should be considered even in the elderly.

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**Competing interests:**

Nil

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