

# Torsion of the Gallbladder

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## Abstract

**Introduction** A 77-year-old woman was seen with progressive abdominal pain.

**Cases** A CT scan was made and showed a large gallbladder extending into the right lower abdomen. Ultrasound was performed but demonstrated no gallstones. Laparoscopy showed a tordated, necrotic gallbladder that was attached to the liver only by the cystic artery and cystic duct. Cholecystectomy was performed.

**Conclusions** Torsion of the gallbladder is a rare but clinically important condition in which the diagnosis seldom is made preoperatively. In radiological and clinical signs of cholecystitis without gallstones, this condition should be considered.

**Keywords** Gallbladder · Torsion · Cholecystitis · CT

## Case Report

## Introduction

Torsion of the gallbladder is a rare condition and an indication for urgent cholecystectomy. The diagnosis is seldom made before surgery. We will present a case of a patient with a tordated gallbladder and an overview of the literature.

A 77-year-old lady presented with a distended abdomen with a constant tenderness in the right lower abdomen which worsened with movements. There was no rebound tenderness, defense, or palpable masses. There was no fever, nausea, or vomiting. Her medical history included osteoporotic fractures of T-7, T-9, and T-12, and L-1. She used pain-killers, medication indicated for osteoporosis, and acetylsalicylic acid for unclear reasons. Laboratory investigation showed a hemoglobin of 7.2 mmol/l (7.5–9.9), a leukocyte count of  $8.9 \times 10^9/l$  ( $4\text{--}10 \times 10^9/l$ ), a CRP of 50 mg/l (<5 mg/l), and a sodium of 127 mmol/l (135–145 mmol/l). Liver tests and bilirubin were normal. With the differential diagnosis of a colon tumor or acute appendicitis, she was admitted to the hospital. The next day she underwent a CT scan with oral and intravenous contrast agents. This showed fluid collection in the right side of the abdomen. The radiologist interpreted this as the gallbladder with an abnormal location and configuration. The appendix was normal. Around the gallbladder, there was fat induration and induration of the right abdominal wall (Fig. 1). For more certainty about the fluid collection, an ultrasound investigation was performed. This revealed that the fluid collection indeed was the gallbladder in which the cystic duct could be followed until the common bile duct. The gallbladder wall was thickened and layered. Gallstones

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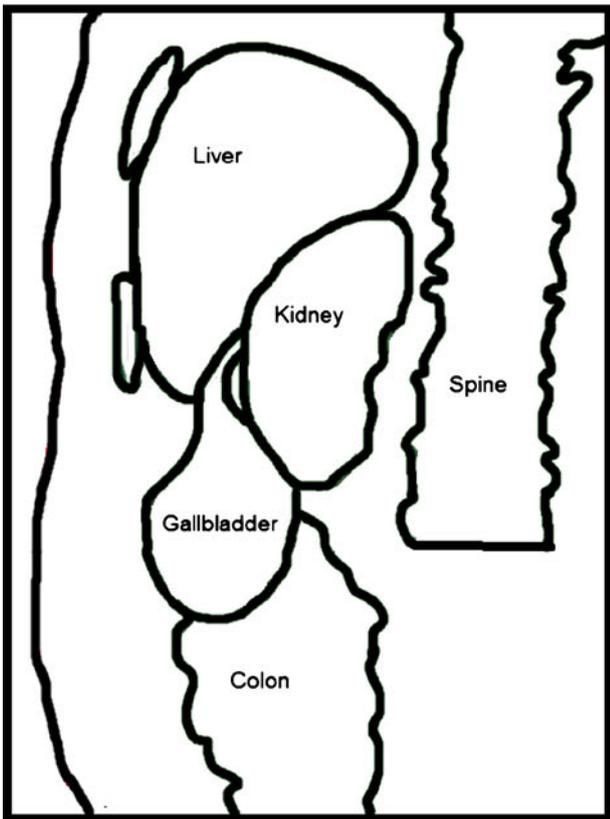


Fig. 1 CT image with the free-floating gallbladder

were not seen. The diagnosis of an acalculous cholecystitis was made, and a laparoscopic cholecystectomy was considered necessary. At laparoscopy, a gangrenous and much distended gallbladder was seen. The gallbladder was situated at the right side of the colon and reached the right lower quadrant of the abdomen. It was attached to the liver only by the cystic duct and artery. There was a 360° torsion around the cystic duct and artery (Fig. 2). Because of the location of the gallbladder, distended bowel, and the kyphoscoliosis of the patient, an open cholecystectomy was performed. When the gallbladder was opened after surgery, there were no gallstones. The postoperative course was uncomplicated. Histopathologic investigation of the gallbladder showed an acute cholecystitis with hematoma and necrosis of the gallbladder wall.

**Overview of the Literature**

Torsion of the gallbladder is a rare cause of cholecystitis. The incidence is estimated at 1 in every 365.520 hospital

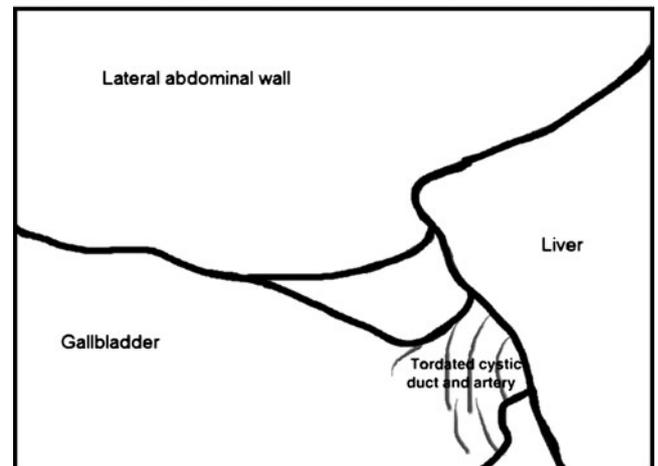


Fig. 2 The tordated cystic duct

admissions.<sup>1</sup> The first case was described by Wendel in 1898.<sup>2</sup> It is a condition mainly seen in elderly women, and the incidence appears to increase with increased life expectancy.<sup>3</sup> Torsion of the gallbladder can only occur in patients with anatomic variation of gallbladder fixation to the liver. This could be a complete, but too long and wide mesentery or an incomplete mesentery covering only the cystic duct and artery. In these anatomic variations, there is a free-floating gallbladder. Another possibility is that relaxation and atrophy of a previously normal mesentery in the elderly cause visceroptosis.<sup>4,5</sup> For the final torsion, a provocative moment is needed. In literature, kyphoscoliosis, forceful peristaltic movements, adhesions, atherosclerosis of the cystic artery, and sigmoid volvulus are reported as possible provocative factors.<sup>6</sup> Striking is that the patient in our case report had a kyphoscoliosis. Symptoms of gallbladder torsion are acute onset of abdominal pain, nausea, and vomiting. These symptoms can be intermittent in case of 180° torsion.<sup>6</sup> The often unusual location of a tordated gallbladder hampers making the right diagnosis and seldom is the diagnosis made before surgery. There are radiological signs that can indicate torsion of the gallbladder. Especially the presence of the gallbladder outside the normal anatomic fossa and a stretched cystic duct and gallbladder neck can indicate a free-floating gallbladder and are thereby risk factors for torsion of the gallbladder. Likewise, the absence of bile stones in a gallbladder with signs of cholecystitis can suggest a torsion of the gallbladder since an acalculous cholecystitis is very rare in otherwise healthy patients. A hypo-echogenic zone between the mucosa and serosa of the gallbladder is a sign of venous stasis and hematoma in the gallbladder wall.<sup>7</sup> Besides an abnormal location of the gallbladder, a swirl sign of the cystic duct can be seen on CT images. The gallbladder will be more distended in torsion than in a normal acute cholecystitis.<sup>8</sup> Treatment of a tordated gallbladder is acute (laparoscopic) cholecystectomy.

In conclusion, torsion of the gallbladder is a rare but clinical important condition in which the diagnosis is seldom made before surgery. At radiologic and clinical signs of acute cholecystitis in the absence of bile stones but with a free-floating gallbladder, this diagnosis must be considered.

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