

## Gallbladder volvulus: a case report and review of literature

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### Abstract

Gallbladder volvulus is a rare clinical entity, often misdiagnosed due to its similarity to acute cholecystitis. This report details the case of a 57-year-old female presenting with acute right upper quadrant pain, nausea, and vomiting, initially treated for acute cholecystitis. Intraoperative findings confirmed gallbladder volvulus, and the patient underwent cholecystectomy. This case highlights the diagnostic challenge posed by this condition and emphasizes the need for a high index of suspicion, particularly in elderly patients with atypical presentations of cholecystitis.

**Key words:** gallbladder volvulus, cholecystic volvulus, elderly patient.

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### Introduction

Gallbladder volvulus is an uncommon surgical emergency caused by the twisting of the gallbladder along its mesentery. First described by Wendel in 1898, fewer than 500 cases have been reported in the literature.<sup>1</sup> The condition primarily affects elderly women and mimics acute cholecystitis, making preoperative diagnosis challenging. Gallbladder volvulus can lead to ischemia, necrosis, and perforation if not treated promptly, necessitating early surgical intervention.<sup>2</sup> This report presents a case of gallbladder volvulus in an elderly patient, reviewing the diagnostic challenges and the importance of surgical management.

### Case Report

A 57-year-old woman with a history of hypertension and prior cholelithiasis presented to the emergency department with severe right upper quadrant pain, nausea, and vomiting lasting for 24 hours. Physical examination revealed tenderness in the right upper quadrant with a positive Murphy's sign. Laboratory investigations showed mild leukocytosis and elevated C-reactive protein, but liver function tests were normal.

Ultrasound examination suggested acute acalculous cholecystitis, with a distended gallbladder but no visible stones. CT imaging confirmed gallbladder distension with a thickened wall, and no intrahepatic or extrahepatic bile duct dilation was noted (Figure 1).

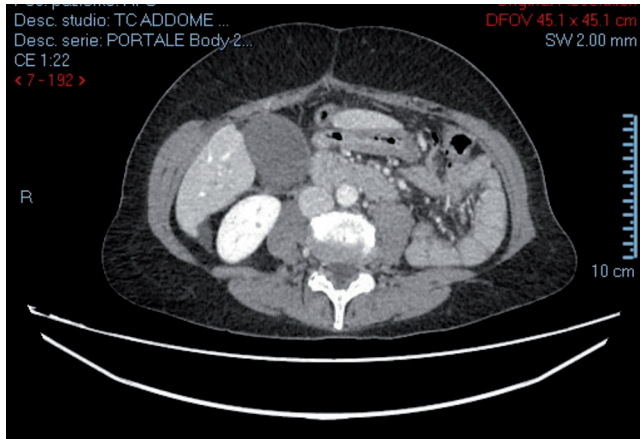
Due to worsening symptoms and the risk of gallbladder perforation, the patient was taken to surgery. Intraoperatively, a gangrenous, twisted gallbladder was identified, confirming a 360° volvulus (Figure 2).

A cholecystectomy was performed without complications, and the patient was discharged on postoperative day five (Figure 3). Histopathological examination revealed hemorrhagic necrosis without malignancy.

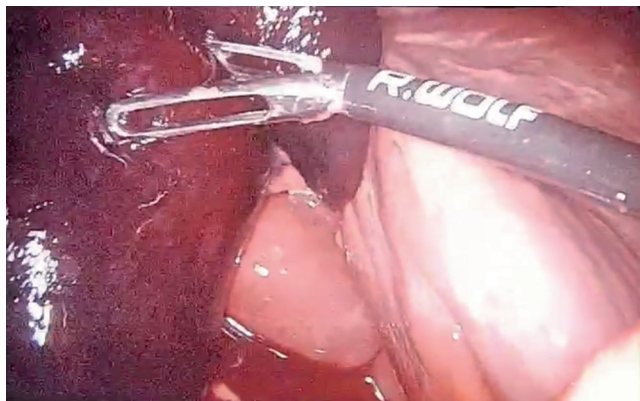
### Discussion

Gallbladder volvulus is a rare but potentially fatal condition, accounting for less than 1% of acute cholecystitis cases. It is most common in elderly women, likely due to age-related anatomical changes, such as the elongation of the gallbladder mesentery, which predisposes the organ to torsion.<sup>1,2</sup> Additional factors like kyphosis, loss of visceral fat, and changes in vascular elasticity further increase susceptibility to volvulus in elderly patients.<sup>3</sup> A high index of suspicion is crucial for early diagnosis since the clinical presentation is often indistinguishable from acute cholecystitis. Common symptoms include acute right upper quadrant pain, nausea, vomiting, and tenderness.<sup>4</sup>

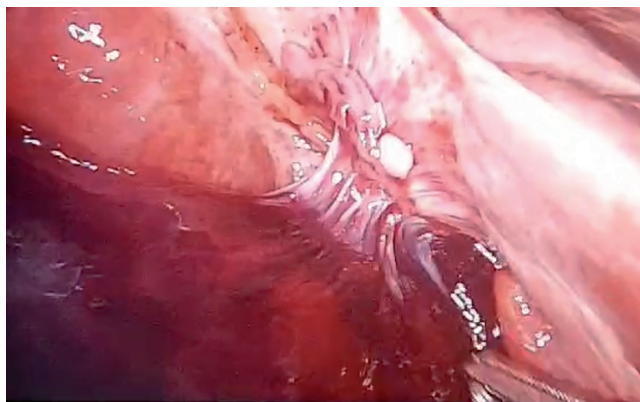
Imaging studies are essential for diagnosis but are often nonspecific. Ultrasound, the initial imaging modality for suspected cholecystitis, may reveal a distended gallbladder with wall thickening, though it rarely distinguishes between cholecystitis and volvulus.<sup>5,6</sup> CT imaging may provide



**Figure 1.** CT scan in the emergency department.



**Figure 2.** Twisted gallbladder with ischemic wall.



**Figure 3.** Gallbladder without a peritoneal connection with the liver surface.

more definitive information, such as a displaced gallbladder or the “whirl sign” of a twisted cystic duct and artery, which were observed in this case.<sup>6,7</sup> However, even with imaging, many instances of gallbladder volvulus are diagnosed intraoperatively due to the overlapping clinical features of acute cholecystitis, which complicates preoperative differentiation.<sup>8</sup>

The exact pathogenesis of gallbladder volvulus remains unclear, though anatomical variations, such as a long mesentery or a “floating” gallbladder, are recognized as significant risk factors. Contributory factors also include atherosclerosis of the cystic artery, visceral ptosis, and a history of abdominal surgery, which may impact gallbladder mobility.<sup>1,2,7,8</sup> These risk factors underscore the importance of considering gallbladder volvulus in elderly patients presenting with acute abdomen, especially when initial imaging is inconclusive.<sup>7</sup> Prompt surgical intervention is critical to prevent complications such as gallbladder necrosis, perforation, and subsequent biliary peritonitis, which carry substantial morbidity and mortality risks.<sup>1,8</sup>

Surgical management is the definitive treatment for gallbladder volvulus, with laparoscopic cholecystectomy preferred where feasible. In elderly patients with significant comorbidities, minimally invasive approaches may reduce postoperative morbidity and improve recovery times.<sup>2</sup> Given the high mortality associated with delayed treatment, timely diagnosis and intervention are essential to optimize patient outcomes.

## Conclusions

Gallbladder volvulus is a rare but serious condition that should be considered in elderly patients presenting with symptoms of acute cholecystitis. Due to its nonspecific clinical presentation, a high index of suspicion and the use of advanced imaging techniques are necessary for early diagnosis. Surgical intervention remains the definitive treatment, and prompt cholecystectomy can significantly reduce the risk of complications and mortality.

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Ethics approval and consent to participate: this case report does not include any interaction or intervention with human subjects and does not include any access to identifiable private information. For this reason, no ethical approval was requested. Informed consent was obtained from the patient included in this study.

Consent for publication: the patient gave her written consent to use her personal data for the publication of this case report and any accompanying images.

Availability of data and materials: data that support the findings of this study are available on request from the corresponding author.

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