

# Gallbladder Torsion: A Rare and Very Interesting Entity – A Surgical Challenge

Efstratios Kouskos<sup>1</sup>, Panagiotis Eirineos Kouskos<sup>2</sup>, Georgios Galeos<sup>1</sup>, Georgios Dospras<sup>1</sup>, Vasillios Petrellis<sup>3</sup>, Panagiota Dalla<sup>1</sup>

1. Surgical Department, Vostanio Hospital of Mytilene, Lesvos Island, Greece, 2. Medical Student, European University Cyprus, 3. Radiology Department, Vostanio Hospital of Mytilene, Lesvos Island, Greece

Corr. Author: Efstratios Kouskos, MD, PhD, FEBS  
Consultant Surgeon  
General Hospital of Mytilene, Lesvos Island, Greece  
e-mail: skouskos@hotmail.com



## Introduction

Gallbladder torsion, also known as gallbladder volvulus, is a rare clinical condition with a few hundreds cases reported in the literature <sup>(1)</sup>. It primarily affects elderly women and is characterized by the twisting of the gallbladder around the cystic duct and artery, leading to compromised blood flow, necrosis, and potential perforation <sup>(2)</sup>. Due to its rarity and nonspecific presentation, it often poses a diagnostic dilemma, typically being identified only during surgery <sup>(3)</sup>. This report describes a case of gallbladder torsion in a non-communicative elderly woman, underscoring the critical role of clinical suspicion and timely surgical intervention.

## Case Presentation

A 90-year-old anoxic woman residing in an elderly care facility was transferred by ambulance to the emergency department due to a 3-day history of vomiting, anorexia and abdominal discomfort. Her mental status precluded meaningful communication and hindered accurate history taking and clinical examination. On arrival, her temperature was 37°C, heart rate was 90 bpm, and blood pressure was 105/55 mmHg. Abdominal palpation elicited fascial discomfort, predominantly in the right upper quadrant.

Laboratory investigations revealed leukocytosis with 10,500 white blood cells and 95% neutrophils, C-reactive protein of 310 mg/L, urea 132 mg/dL, and creatinine 1.8 mg/dL.

An abdominal Computed Tomography (CT) scan demonstrated a large fluid collection (approximately 10 x 5 cm) in the right upper quadrant, but the origin of the lesion was unclear (Fig. 1).

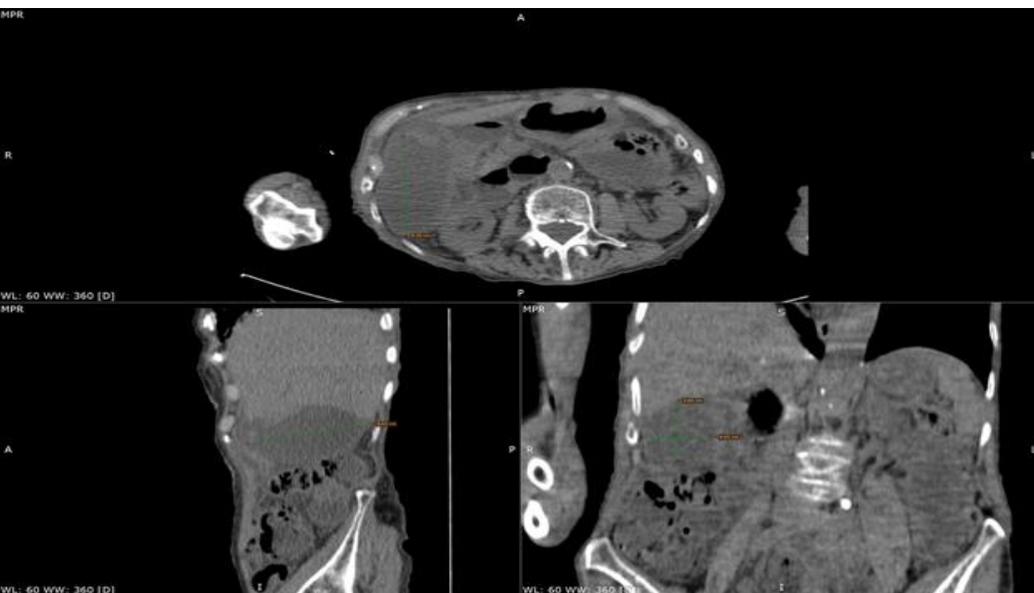


Figure 1. Abdominal CT scan

Due to the severity of her condition and inconclusive imaging findings, the patient was taken for urgent exploratory laparotomy through a midline supraumbilical incision. Intraoperatively, extensive pseudomembranes and a large volume of contaminated peritoneal fluid were observed. A necrotized, thick-walled gallbladder was identified (Fig. 2), which had undergone clockwise torsion around its pedicle, consisting of the cystic duct and artery. The gallbladder had minimal attachments to the liver bed. Decompression via needle aspiration yielded dirty, bloody fluid that was sent for culture. Detorsion was performed followed by cholecystectomy, which was technically straightforward using two forceps, one on the pedicle and one on the liver attachments. The patient recovered well postoperatively and was discharged on the fourth day without complications.



Figure 2. The excised gallbladder

## Discussion

Gallbladder torsion remains a diagnostic challenge due to its nonspecific symptoms and resemblance to acute cholecystitis <sup>(1)</sup>. Most of cases are reported between 60-80 years and there is a female to male ratio of 3:1. Mortality rate is reported up to 6%. Predisposing factors include advanced age, female sex, kyphoscoliosis, and anatomical variations such as a) long mesentery or a very short mesentery allowing gallbladder mobility along its vertical axis, b) in the elderly loss of viscera fat and elastic tissue, atrophy of liver and visceroptosis contributing in acquired long mesentery and nonfixation of the gallbladder to the inferior liver surface, c) increased peristalsis of the stomach, duodenum and colon, d) arterosclerosis of cystic artery <sup>(4,5)</sup>.

The presence of gallstones is reported in 25-40% of torsion cases and it is not considered as a significant risk factor. The torsion may be complete when is more than 180 degree resulting in strangulation of gallbladder blood supply and gangrenous cholecystitis or incomplete then is less than 180 degree causing episodes of biliary colic. The direction of torsion could be clockwise or anticlockwise in equal reported frequency <sup>(4)</sup>.

In this patient, the inability to communicate further complicated the clinical picture, highlighting the importance of considering rare diagnoses in elderly, high-risk populations <sup>(6)</sup>.

Imaging studies, including ultrasound, CT (most reliable one) and Magnetic Resonance Imaging could be helpful. CT criteria for gallbladder torsion include: a) fluid between gallbladder and its liver fossa, b) horizontal rather than vertical axis of the gallbladder, c) severe inflammation signs as oedema and wall thickening, d) well enhanced cystic duct on the right side of the gallbladder, e) thumb printing of gallbladder, f) Whirl sign and cystic knot sign due to free floating organ, g) distended organ. CT scan of our patient (the only imaging test used) revealed a big fluid collection in the right upper abdomen, that could represent a distended inflamed gallbladder <sup>(3,4)</sup>.

However, definitive diagnosis is frequently made intraoperatively <sup>(6)</sup>. Prompt surgical intervention is essential to prevent complications such as perforation and sepsis. In this case, early surgery and the absence of significant adhesions allowed for a successful and uneventful recovery <sup>(3,5)</sup>.

## References:

1. Matias-García B, Sainz-Azara C, Mendoza-Moreno F, Diez-Alonso M, Gutierrez-Calvo A. 2023. Gallbladder volvulus in an elderly patient: A case report and review of literature. *Cureus* 2023, 15(9): e45167. DOI 10.7759/cureus.45167.
2. Sato O, Kotani T, Kanayama T, Tokuda B, Yamada K. 2023. Utility of hyperdense whirl sign for the diagnosis of gallbladder torsion. *Acta Radiologica Open* 2023, 12(11), 1-4.
3. Beatty AS, Kulendran K, Iswariah H, Chandrasegaram MD. Gallbladder volvulus with preoperative and intraoperative imaging. *Journal of Surgical Case Reports*, 2023(2), 1-3.
4. Reilly DJ, Kalogeropoulos G, Thiruchelvam D. Torsion of the gallbladder: a systematic review. *HPB* 2012, 14, 669-72.
5. Wuheb A., Ismaiel M, Abdulrahman H, Gada P, Ragavoodoo A et al. Twist of fate: Diagnosing and managing gallbladder volvulus in an elderly patient. *Cureus*, 2025 17(3), e78813. DOI 10.7759/cureus.78813.
6. Ali HM, Abdul Wahab ER, Damaj A, Moussawi B. Intraoperative diagnosis of gallbladder volvulus. *Case Reports in Surgery* 2023, p.1194077. DOI 10.1155/2023/1194077

**Conflict of interest:** None