

Postmenopausal Uterine Torsion with Hemorrhagic Shock Mimicking a Giant Ovarian Tumor: A Case Report

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Background: Postmenopausal uterine torsion is an extremely rare gynecological emergency that is often challenging to diagnose preoperatively because of its atypical presentation. This case is particularly noteworthy for a 10-year history of an untreated abdominal mass that rapidly evolved into a life-threatening condition, along with a striking discrepancy between the initial imaging suspicion and the final pathological diagnosis.

Case Presentation: A 75-year-old Asian woman presented with chronic abdominal distension for 10 years and acutely worsening severe generalized abdominal pain for 1 day. Contrast-enhanced computed tomography (CT) revealed a huge pelvic mass initially misinterpreted as a giant ovarian tumor. The patient's condition deteriorated rapidly into hemorrhagic shock. Emergency exploratory laparotomy confirmed a 720° clockwise uterine torsion. Total hysterectomy with bilateral salpingo-oophorectomy was performed without detorsion. Postoperative histopathology confirmed multiple uterine leiomyomas (lipoleiomyoma with extensive hemorrhagic necrosis). The patient recovered uneventfully.

Conclusion: Although rare, postmenopausal uterine torsion should be considered in the differential diagnosis of acute abdomen in elderly women with known pelvic masses. Timely emergency surgery is life-saving, especially in those presenting with hemorrhagic shock. This case underscores the importance of regular clinical and ultrasound follow-up for postmenopausal women with known giant uterine masses, even when asymptomatic.

Keywords: postmenopause, uterine torsion, acute abdomen, leiomyoma

Introduction

Uterine torsion, defined as rotation of the uterus around its longitudinal axis exceeding 45°, is a rare but potentially life-threatening gynecological emergency.^{1,2} It occurs most frequently during pregnancy, especially in the second trimester, primarily related to rapid uterine enlargement and ligamentous laxity.^{3–7} In contrast, postmenopausal uterine torsion is exceptionally uncommon, with fewer than 100 cases reported to date. The atrophic postmenopausal uterus typically requires a substantial predisposing factor to undergo torsion, most commonly a large pelvic mass such as a leiomyoma.^{8–11}

Owing to its rarity and nonspecific clinical presentation, accurate preoperative diagnosis is often delayed or missed. We report a case of postmenopausal uterine torsion that was initially misdiagnosed as a giant ovarian tumor on contrast-enhanced CT but was successfully managed through emergency surgery due to rapid clinical deterioration. This report aims to add to the limited literature on this rare condition in elderly women.

Case Presentation

A 75-year-old Asian woman (gravida 3, para 2; body mass index 21.5 kg/m²) presented to our emergency department on September 4, 2025. She had reached menopause at age 48, with no history of hormone replacement therapy or hormonal contraceptive use, and no prior surgeries. She worked as a farmer and had no family history of gynecological

malignancies. The patient reported progressive abdominal distension for 10 years but had never sought medical attention or treatment. She also described an acute exacerbation over the preceding day, with severe generalized abdominal pain. She denied nausea, vomiting, or fever.

On admission, the patient's vital signs were stable. Gynecological examination revealed atrophic vulva and vagina, and an atrophic, smooth cervix. An abdominal mass measuring approximately 20×18×10 cm was palpable, extending two fingerbreadths above the umbilicus. The mass was firm, irregular, mobile, and mildly tender. Initial laboratory tests showed leukocytosis ($12.74 \times 10^9/\text{L}$) with neutrophilia (90.7%), and a hemoglobin level of 117 g/L. Tumor marker testing revealed elevated HE4 (472 pmol/L; postmenopausal normal <140 pmol/L) but normal CA125 (25.5 U/mL; normal <35 U/mL). The calculated ROMA index (postmenopausal algorithm) was 66.4%. However, the patient's serum creatinine was 160.9 $\mu\text{mol/L}$ (normal 44–104 $\mu\text{mol/L}$), with an eGFR of 22 mL/min/1.73 m² (normal >60 mL/min/1.73 m²), indicating severe renal impairment. Given that HE4 is primarily cleared by the kidneys and its levels can rise significantly in the setting of reduced renal function, the markedly elevated HE4 (472 pmol/L) and the resulting high ROMA index (66.4%) in this case likely reflect a false elevation attributable to renal dysfunction rather than evidence of ovarian malignancy.

Contrast-enhanced whole-abdomen CT revealed a large, heterogeneous soft-tissue mass in the right abdominal cavity (maximum dimensions approximately 19.4×12.2×21.3 cm), containing calcifications and areas of fatty density, with no or only mild post-contrast enhancement, suggestive of a teratoma (Figures 1–3). A filling defect was noted in the left ovarian vein, and an incidental small intestinal lipoma (approximately 1.9 cm in diameter) was observed in the left mid-abdomen.

On September 5, 2025, the patient's condition deteriorated abruptly. Abdominal pain intensified markedly, accompanied by dizziness and weakness. Physical examination revealed a temperature of 37.0°C, heart rate 114 beats/min, respiratory rate 21 breaths/min, and hypotension (83/43 mmHg). The patient appeared pale with conjunctival pallor. The abdomen was distended, and the palpable mass had enlarged significantly compared with admission, with its upper border reaching the xiphoid process. Scattered petechiae were noted on the abdominal skin. Repeat hemoglobin measurement dropped to 48 g/L, a critical value. Arterial blood gas analysis showed lactate 4.2 mmol/L (normal <2.0), base excess −8.5 mmol/L, and pH 7.28. Coagulation parameters were within normal limits (PT 12.8 s, aPTT 31.5 s, INR 1.02). Urine output over the 2 hours prior to surgery was 25 mL. The time from acute deterioration to skin



Figure 1 Coronal reconstruction demonstrating the extent of the mass and its relationship to adjacent structures. The image also shows calcifications and fat-density areas within the mass, with no post-contrast enhancement.



Figure 2 Sagittal view showing the mass occupying the pelvic and abdominal cavities. The axial CT image shows weak enhancement after contrast administration.



Figure 3 Axial contrast-enhanced CT image showing a large pelvic mass with heterogeneous density.

incision was 45 minutes. Given the clinical signs of acute intra-abdominal hemorrhage and hemorrhagic shock, emergency exploratory laparotomy was performed.

Intraoperatively, approximately 100 mL of hemoperitoneum was found. The uterus was enlarged to the size of approximately an 8-month pregnancy, markedly irregular in shape, purplish-blue in color, and firm in consistency. A 720° clockwise torsion was identified at the cervicocorporeal junction. Both adnexa were twisted together with the uterus, appearing ischemic and black-purple. The ovarian suspensory ligaments and round ligaments were extremely thin and tightly twisted. Because the uterus was completely necrotic and the patient was hemodynamically unstable, we chose to

Table 1 Clinical Timeline

Date	Event
September 4, 2025	Patient admitted; CT examination revealed a pelvic mass
September 5, 2025	Clinical deterioration with hemorrhagic shock; emergency exploratory laparotomy performed
September 5, 2025	Intraoperative diagnosis of uterine torsion; total hysterectomy with bilateral salpingo-oophorectomy performed
November 30, 2025	Follow-up visit; complete resolution of symptoms

proceed directly with hysterectomy without prior detorsion. (Detorsion may be considered in select cases with viable tissue, but carries risks of thromboembolism and reperfusion injury).

After clamping and transecting the severely twisted ovarian suspensory and round ligaments bilaterally, double ligation was performed for hemostasis. The anterior leaf of the broad ligament was incised, the vesicouterine peritoneal reflection was pushed down, and the peritoneum was opened at the pelvic inlet. Both ureters were identified and protected. The paracervical vessels were clamped, cut, and double-ligated to ensure secure hemostasis. After transecting the cardinal and uterosacral ligaments bilaterally, the uterus was removed along the vaginal fornix. Clinical timeline is shown in [Table 1](#).

The patient’s recovery was uneventful. No adverse events occurred. At her follow-up visit on November 30, 2025, she reported complete resolution of symptoms, expressed satisfaction with the course of diagnosis and treatment, and supported sharing her case to contribute to medical education.

Discussion

This case highlights several critical aspects of postmenopausal uterine torsion, a rare but life-threatening surgical emergency. The patient’s presentation—acute abdominal pain superimposed on chronic abdominal distension, with rapid progression to hemorrhagic shock—underscores the importance of timely diagnosis and intervention.

The pathophysiology of uterine torsion in postmenopausal women typically involves predisposing factors that alter the uterine axis and weight distribution, most commonly large leiomyomas.^{12–15} These tumors lead to asymmetrical uterine enlargement and a shift in the center of gravity, rendering the uterus susceptible to torsion during postural changes, intestinal peristalsis, or sudden fluctuations in intra-abdominal pressure. In the present case, the massive leiomyomatous uterus likely served as a pivot point, while the chronic laxity of the uterosacral ligaments, broad ligaments, and suspensory ligaments of the ovaries in the postmenopausal state permitted an extreme 720° rotation. Subsequent ischemia, infarction, and venous congestion culminated in vascular rupture, resulting in the observed acute hemoperitoneum and shock.

Of note, this patient’s uterine fibroids had been present for 10 years without incident until this acute event. The likely mechanism involves a combination of factors: progressive growth of the fibroids gradually shifting the uterine center of gravity, age-related relaxation of the pelvic support structures (eg, uterosacral and broad ligaments) increasing uterine mobility, and an abrupt change in intra-abdominal pressure (eg, straining during defecation, postural changes, or enhanced intestinal peristalsis) that finally triggered the acute torsion. These factors collectively led to this catastrophic event, reminding us that even long-standing stable fibroids carry a risk of torsion.

The clinical presentation of postmenopausal uterine torsion is nonspecific and can easily be mistaken for other acute abdominal conditions, such as ovarian tumor torsion, acute appendicitis, or intestinal obstruction. Characteristic features include sudden onset of severe lower abdominal pain, often accompanied by nausea and vomiting. Physical examination may reveal peritoneal irritation signs, and a pelvic or abdominal mass may be palpable if sufficiently large. Imaging plays a pivotal role in diagnosis:

Ultrasound serves as the initial screening modality and can identify uterine leiomyomas or adnexal masses. However, its utility is limited in postmenopausal women due to poor visualization of the atrophic uterus and difficulty in determining the origin of a large mass.

Contrast-enhanced computed tomography (CT) offers the greatest value for preoperative diagnosis. Characteristic findings include abnormal uterine position and morphology, and absent or weak enhancement of the uterus or tumor,

indicating compromised blood supply. Nevertheless, CT has notable limitations. In extreme torsion with severe pelvic anatomical distortion, the uterus and adnexa become displaced, and the uterine blood supply and endometrial cavity may be unrecognizable, making the image resemble an ovarian neoplasm. In our case, the 720° torsion deviated the uterus from its normal position; in addition, the giant leiomyoma showed degenerative changes (fatty metaplasia, calcification, and necrosis), resulting in areas of fat density and calcifications that were misinterpreted as ovarian teratoma. This experience reminds us that even though CT is the most practical emergency tool, clinicians must be alert to its pitfalls in complex torsion.

Magnetic resonance imaging (MRI) provides high soft-tissue resolution and can clearly depict the torsion angle and extent of ischemia, though its application in emergency settings is limited.

Preoperative diagnosis of postmenopausal uterine torsion presents significant challenges due to its extreme rarity and the similarity of CT findings to those of ovarian tumors, as exemplified by the present case. Fortunately, the patient experienced no language or financial barriers that could have impeded the diagnostic process.

The key to differential diagnosis lies in identifying through imaging that the torsion center is uterine rather than adnexal. However, giant leiomyomas—particularly when degenerative changes occur—can closely mimic ovarian teratomas on imaging. Leiomyomas may undergo fatty metaplasia, calcification, hemorrhage, and necrosis, leading to CT appearances of fat density, calcifications, or cystic changes that are easily mistaken for teratoma or other ovarian tumors.^{16,17} Therefore, when a postmenopausal woman presents with acute abdomen and a pelvic mass, uterine torsion should be considered alongside ovarian neoplasms in the differential diagnosis. Careful identification of the uterine vascular course and the uterine cavity structure—with multi-planar reconstruction when necessary—is essential to clarify the origin of the mass.

The final pathological examination provided the definitive diagnosis and excluded malignancy. Gross examination (Figure 4) revealed a large necrotic uterus with multiple (more than 20) fibroids and extensive myometrial hemorrhage. The fibroids ranged from 1 to 12 cm in diameter, predominantly subserosal and intramural, with the largest located on the right lateral wall. The adnexa were not involved. Microscopically, the tumor was composed of interlacing bundles of smooth muscle cells with abundant hyalinized vessels, consistent with leiomyoma with extensive hemorrhagic necrosis. Some areas were rich in vascular and adipose tissue. Immunohistochemistry showed strong positivity for desmin and caldesmon, and negativity for cytokeratin, CD117, and DOG-1. No cytological atypia was observed; the mitotic count was <1 per 10 high-power fields; no coagulative tumor cell necrosis was present; and the surgical margins were clear. These findings robustly excluded leiomyosarcoma and smooth muscle tumor of uncertain malignant potential (STUMP), providing strong support for the final diagnosis.

Once postmenopausal uterine torsion is diagnosed or highly suspected, emergency surgical exploration is indicated. Surgical principles include:

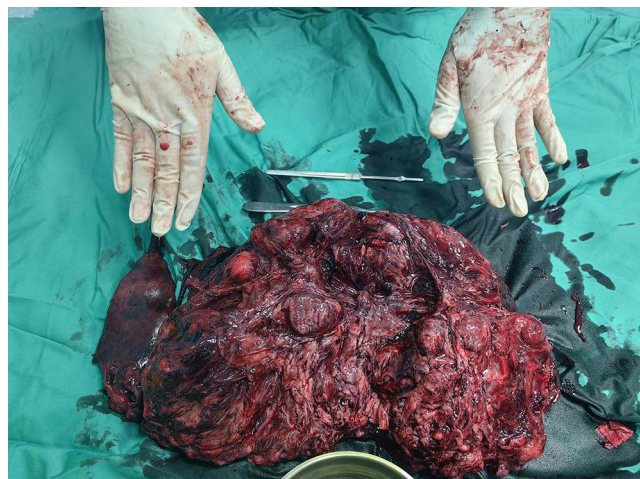


Figure 4 Intraoperative view of the sectioned uterus, revealing the cut surface of the specimen.

Surgical approach: Given that patients have no fertility requirements and torsion often leads to ischemic necrosis of the uterus and adnexa, total hysterectomy with bilateral salpingo-oophorectomy is the standard procedure. This definitively removes the diseased tissue, prevents complications such as infection and thromboembolism, and eliminates the risk of underlying malignancy.¹⁸

Detorsion and organ preservation: This approach is reserved for cases with a short duration of torsion, viable tissue, and strong patient desire for uterine preservation. It requires careful evaluation, as detorsion carries risks of thromboembolism and reperfusion injury.

Surgical route: Laparoscopic surgery is suitable for hemodynamically stable patients with relatively small masses. Laparotomy is preferred for critically ill patients, those with massive masses, or those with hemodynamic instability. In this case, laparotomy was chosen due to the massive uterine size and severe ischemia.

Intraoperative considerations include assessing uterine and adnexal vascularity upon entry; avoiding detorsion to prevent embolus dislodgment; performing direct resection if tissues are already necrotic; and clamping below the torsion site before resection to prevent thrombus migration. In this patient, we proceeded directly with hysterectomy without detorsion, consistent with standard practice and similar reported cases.¹⁸

The primary strengths of this report are its detailed clinical timeline, comprehensive diagnostic imaging, and clear documentation of classic radiographic signs in a rare condition. The limitation, inherent to case reports, is its singular nature, which precludes generalizability.

This case also carries important clinical implications: even asymptomatic postmenopausal women with known giant uterine fibroids should receive regular clinical and ultrasound follow-up, because progressive enlargement may trigger catastrophic torsion. If such patients develop acute abdominal pain, emergency imaging and gynecological or surgical consultation should be obtained immediately to avoid delayed surgery.

Conclusion

Although rare, postmenopausal uterine torsion should be an important differential diagnosis in elderly women presenting with acute abdomen and a pelvic mass. Clinicians should maintain a high index of suspicion for sudden-onset lower abdominal pain in postmenopausal women, obtain a thorough history, and utilize imaging modalities such as CT, while recognizing that CT can be misleading in extreme torsion. For postmenopausal women with large uterine fibroids, regular follow-up to monitor volume changes is recommended. In the setting of hemodynamic instability, emergency hysterectomy without detorsion is the definitive, life-saving treatment.

Data Sharing Statement

All data generated or analyzed during this study are included in this published article.

Ethics Approval and Consent to Participate

This study was a non-interventional case report and did not involve any experimental interventions. The study was reviewed and granted an exemption by the Ethics Committee of The People's Hospital of Leshan. The permit number is LYLL-【2026】-KY 076. The study was conducted in accordance with the principles of the Declaration of Helsinki. Informed consent was obtained from the patient for publication of this case report and any accompanying images.

Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the consent form is available for review by the Editor-in-Chief of this journal.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests in this work.

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