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Ovarian Torsion in A 20-Year-Old Virgin Female Due to an 11 Cm Hemorrhagic Cyst: A Case Report

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Abstract | **Case Report**

Introduction: Ovarian torsion is a gynecological emergency often associated with ovarian cysts. Prompt diagnosis is essential to preserve reproductive function, especially in young women. ***Case Presentation:*** We report the case of a 20-year-old unmarried and virgin female who presented with progressively worsening right lower abdominal pain for three days. Imaging revealed a large hemorrhagic ovarian cyst measuring 11 cm, with features suggestive of torsion. Laparoscopy revealed right adnexal torsion with four complete twists and cyanosis of the ovary and fallopian tube. A cystectomy and right oophorectomy were performed. After 20 minutes, the initially cyanosed tube revascularized spontaneously. The patient recovered uneventfully. ***Discussion:*** This case emphasizes the diagnostic and surgical challenges in managing ovarian torsion in virginal patients. The size and hemorrhagic nature of the cyst likely contributed to the torsion. Early intervention allowed fallopian tube preservation despite delayed presentation. ***Conclusion:*** Ovarian torsion should be suspected in young women with prolonged pelvic pain. Even after several days, surgical exploration may allow partial preservation of reproductive structures.

Keywords: Ovarian torsion, hemorrhagic cyst, virgin female, laparoscopy, adnexal torsion, fertility preservation.

INTRODUCTION

Ovarian torsion represents approximately 2.5%–7.4% of gynecologic emergencies and is most frequently seen in women of reproductive age. It involves partial or complete rotation of the ovarian pedicle, compromising venous and lymphatic drainage, and eventually arterial perfusion. Risk factors include large ovarian cysts, especially hemorrhagic or functional ones, which increase the ovary's weight and mobility.

In virginal patients, the diagnosis can be delayed due to limitations in physical examination and reluctance to perform transvaginal imaging. Delay in management can lead to necrosis, necessitating oophorectomy and potentially affecting future fertility.

CASE PRESENTATION

A 20-year-old nulligravid, unmarried, and virgin woman with no known medical or surgical history presented to the emergency department with acute right lower quadrant pain for three days. The pain was intermittent initially but became continuous, stabbing, and radiating to the right flank. She also reported mild nausea without vomiting or fever.

On clinical examination:

- Vitals: BP 112/70 mmHg, HR 98 bpm, T 37.3°C
- Abdominal examination: Right iliac fossa tenderness with mild guarding, no peritonism
- Pelvic examination: Not performed due to virgin status

Transabdominal ultrasound revealed a large right adnexal mass measuring 11 × 9 cm, consistent with a hemorrhagic cyst. The right ovary appeared enlarged and hypoechoic. Color Doppler showed reduced arterial and absent venous flow.

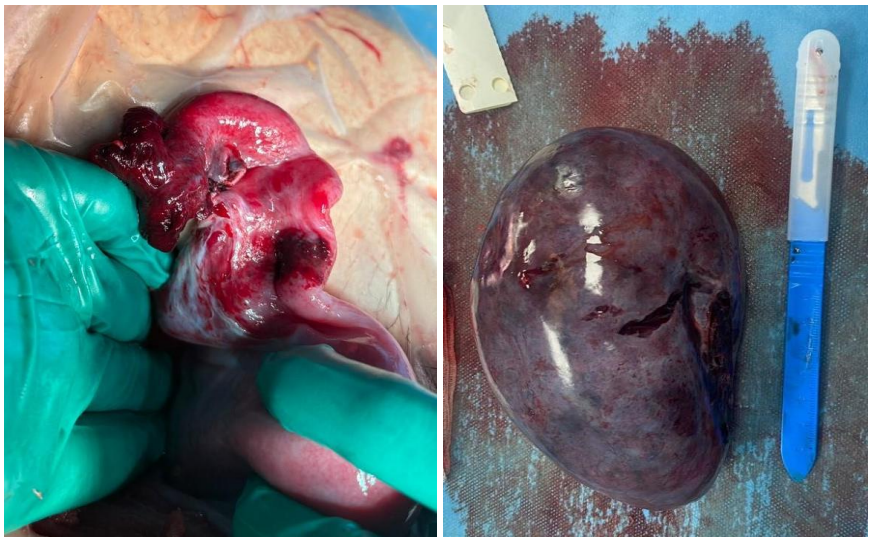
Laparoscopy was performed urgently. Intraoperative findings included:

- Right ovary enlarged and dark bluish-black, with a hemorrhagic cyst measuring 11 cm
- Four complete twists of the infundibulopelvic ligament
- The fallopian tube appeared cyanosed but intact
- No hemoperitoneum

Figure 1: Laparoscopic view of the pelvis showing the large torsed ovary and preserved contralateral adnexa

A detorsion was performed first, followed by cystectomy. Given the necrotic appearance of the ovary and absence of revascularization signs, a right oophorectomy was performed. The tube was left in place.

Surprisingly, after 20 minutes of observation, the fallopian tube began to regain its normal pinkish color, suggesting spontaneous revascularization.



A **B**

Fig. 2 A: fallopian tube began to regain its normal pinkish color
Fig. 2 B: Gross appearance of the excised hemorrhagic ovarian cyst measuring 11 cm

The post-operative course was uneventful, and the patient was discharged on postoperative day 2.

Histopathology confirmed a hemorrhagic corpus luteum cyst without malignancy.

DISCUSSION

Ovarian torsion is a gynecological emergency characterized by rotation of the ovary and/or fallopian tube around the vascular pedicle, leading to vascular

compromise. It accounts for approximately 3% of gynecological emergencies and is most common in women of reproductive age, particularly between 20 and 40 years old [1]. The condition is often associated with an underlying ovarian lesion, most commonly functional cysts or benign tumors, which act as a lead point for torsion [2].

In the present case, the ovarian torsion was precipitated by a large hemorrhagic cyst measuring 11 cm, which likely increased the ovary's weight and altered its mobility, contributing to torsion with four complete twists. Hemorrhagic cysts, particularly of the corpus luteum, are more prone to rupture or torsion due to their rapid growth and friability [3].

The patient presented with subacute right lower quadrant pain for 72 hours, a relatively long interval considering the risk of ischemic necrosis. However, several studies have shown that ovarian or tubal structures can occasionally regain viability even after prolonged torsion, especially if arterial flow is partially preserved or if detorsion is performed early [4,5].

This case also illustrates the challenge of diagnosis in virginal patients, where pelvic examination and transvaginal ultrasound are typically avoided. In such cases, transabdominal ultrasound with Doppler flow remains the initial imaging modality of choice, despite its lower sensitivity [6]. The presence of the "whirlpool sign" and reduced or absent blood flow are strongly suggestive of torsion [7]. In certain equivocal cases, pelvic MRI can provide more accurate anatomic detail without the invasiveness of transvaginal scanning [8].

The surgical approach to ovarian torsion has evolved significantly over the years. Historically, oophorectomy was routinely performed in cases of a dark, enlarged ovary, presumed to be necrotic. However, recent studies have shown that even ischemic-looking ovaries may recover function after detorsion and conservative management, and color appearance is not a reliable predictor of non-viability [9]. Therefore, conservative surgery is increasingly advocated, especially in young and nulligravid patients, to preserve hormonal function and fertility potential [10].

In our patient, the ovary failed to reperfuse after detorsion, prompting oophorectomy. However, the fallopian tube, which initially appeared cyanosed, regained normal color after 20 minutes, indicating spontaneous revascularization. Preservation of the tube may still allow for spontaneous conception via the contralateral ovary.

This case renforces several important principles:

- Ovarian torsion can present with variable symptoms and may be misdiagnosed or delayed, especially in young, virginal women.
- Early surgical intervention is critical to prevent irreversible damage, but even in delayed cases, organ preservation may still be possible.
- The decision to remove an ovary should be made cautiously, especially in women with future fertility considerations.
- Laparoscopy remains the gold standard for diagnosis and treatment, offering rapid intervention, minimal invasiveness, and a better cosmetic outcome.

CONCLUSION

Ovarian torsion can still allow for partial reproductive organ preservation even after delayed presentation. Hemorrhagic cysts >10 cm should be monitored closely. Virginal status should not delay imaging or surgical intervention when torsion is suspected. Early laparoscopy is both diagnostic and therapeutic.

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