

Ruptured Corpus Luteal Cyst Masquerading as Torsion of Ovarian or Dermoid Cyst in a Young Female: A Case Report

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INTRODUCTION

One of the most frequent cause of spontaneous hemoperitoneum in women of reproductive age is ruptured corpus luteal cyst. The clinical presentation varies, ranging from complete absence of symptoms to excruciating pain in the abdomen as a result of peritoneal irritation.¹While woman's corpus luteum can rupture at any point during her reproductive years, younger women between the ages of 16 and 30 are more likely to experience it.²Depending on the symptoms and laboratory results, care of a ruptured corpus luteum may involve solely on observation or may require an immediate laparotomy or laparoscopy.³We present a case of ruptured corpus luteal cyst masquerading as torsion of ovarian or dermoid cyst and overseen by exploratory laparotomy.

CASE PRESENTATION

A 16-year-old unmarried female presented to the emergency department with chief complaints of lower abdominal pain and per-vaginal bleeding for 1 day. Abdominal pain was acute in onset, continuous, moderate to severe in intensity, non-radiating without aggravating and relieving factor. The patient also had per-vaginal bleeding 1 day back, soaking a full blanket with blood on 1st day of her cycle. She had her menarche at the age of 13. Her cycles were irregular for 1 and a half years with polymenorrhagia cycles repeating in 15-20 days with a flow of 5-6 days with 3 pads soaked per day but no history of dysmenorrhea. There was no history of nausea, vomiting, fever, trauma to the abdomen, abdominal distension, fatiguability, or easy bruising.

At the presentation to the hospital, she was ill-looking pale with a pulse rate of 86 bpm, regularly regular with a blood pressure of 110/60 mmHg. Her respiratory rate was 22 bpm with SpO₂ of 96% and temperature of 97.2°F (36.2°C). She had a Glasgow Coma Scale of 15/15 (i.e., E4M5V6). All systemic examinations were normal. The per-vaginal examination was not performed for the unmarried lady.

Investigation and work-up

Initial laboratory investigations revealed normal total leukocyte count (10,300/ mm³, normal range: 4000-11000/mm³), low hemoglobin concentration (6.2 g/dl; normal range: 12-18), decreased packed cell volume (19.5%, normal range: 36-54%). All other blood investigations were within normal limits. Her urine pregnancy test done was negative. Her beta-HCG (Human Chorionic Gonadotropins) levels were normal. Ultrasonography showed twisted, enlarged, oedematous, thickened right ovary with reduced blood flow. The patient's left ovary was normal.

Based on clinical history, physical examinations, laboratory investigations, and imaging, the pre-operative diagnosis of the torsion of right dermoid cyst was made and she was planned for exploratory laparotomy and right ovary reconstruction.

Procedure Note

A midline vertical incision extending 5 cm above the umbilicus was made. There was minimal fluid in the peritoneum. A dent of 1 cm x 1 cm was noted in the right ovary. The uterus was normal. A cystectomy was done. Bilateral tubes and left ovary were normal. A 500-gm-old blood clot was evacuated from the abdomen. The cut section revealed hemorrhagic fluid and the specimen was sent for histopathological examination. The post-op diagnosis of a ruptured corpus luteal cyst was made. (Figure 1)

Follow-up and outcomes

She was then observed postoperatively for a few days. Her post-operative hemoglobin was 7.6 g/dl and two pints of blood were transfused. Her vitals were monitored continuously and intravenous antibiotics and proton pump inhibitors were administered. There were no post-operative complications. She was then discharged on her fourth post-operative day.

DISCUSSION

Ovarian cysts are fluid-filled structures that are commonly discovered incidentally on physical examination or imaging. Ovarian cysts can cause complications like rupture, hemorrhage, and torsion, which are considered gynecological emergencies.⁸ Ovarian torsion may potentially resemble an ovarian rupture cyst. On ultrasonography, both may also have free fluid in the pelvis. Lower pelvic pain, fever, nausea, vomiting and right sided pelvic discomfort can be a symptom of a tubo-ovarian abscess and appendicitis.⁴ This case had a diagnostic dilemma misleading as ovarian torsion.

Corpus luteal cysts are a functional ovarian cyst that results when a corpus luteum fails to regress after an ovum's release and it is the most frequent pelvic mass seen in the first trimester when linked to pregnancy.⁵ The corpus luteum is a thick-walled cystic structure that is prone to internal hemorrhage, and sometimes peritoneal rupture.² Follicular collapse and luteinization of the blood vessel-free granulosa layer occur after ovulation which is the Hyperaemic stage. The next step is vascularization, in which blood vessels pierce the granulosa layer and fill the cavity with blood. Intra-peritoneal hemorrhage could happen if the corpus luteal hematoma bursts, particularly if a woman has congenital bleeding issues or anticoagulant medication that inhibits her clotting processes.⁶

A dermoid cyst is a benign cutaneous developmental anomaly that arises from the entrapment of ectodermal elements along the lines of embryonic closure and are considered to be congenital, but not all of them are diagnosed at birth. Only about 40% of dermoid cysts are diagnosed at birth, while about 60% of dermoid cysts are diagnosed by five years of age. Dermoid cyst on histology shows a well-defined wall lined by stratified squamous epithelium and a lumen that may be filled with mature adnexal structures of mesodermal origin, such as hair follicles and shafts, sebaceous and eccrine glands. A small, asymptomatic dermoid cyst may not necessitate immediate excision as it can be stable for years or even regress. However, because most dermoid cysts grow over time, complete surgical excision without disruption of the cyst wall by an experienced surgeon is recommended before the development of such complications.⁷

The emergency department practitioner has to ascertain the patient's menopausal status when a female patient arrives with symptoms resembling those of a ruptured ovarian cyst, such as abrupt and severe abdominal pain, nausea, and vomiting, as well as weakness. A urine pregnancy test or a serum beta-HCG (Human Chorionic Gonadotropins) test is performed if the patient is premenopausal.⁸ Then, as diagnostic tools, abdominal and pelvic exams together with medical imaging enable the medical professional to diagnose the patient for an ovarian cyst rupture or any abdominal ailment.⁹

In ultrasonography of the abdomen and pelvis, an adnexal thick-walled cystic lesion with lace-like strands, an adnexal thick-walled cystic lesion with low-level echoes within, and peripheral vascularity "a ring of fire sign" are among the frequently reported findings. In about two menstrual cycles or six weeks, a follow-up ultrasound is advised, particularly to rule out endometriosis. Computed Tomography reveals a hematocrit effect with fluid-fluid level, a thick-walled peripherally enhancing cystic lesion, and a significant attenuation component (45-100 HU).¹⁰

In previous case reports many were reported among pregnant women or in early pregnancy.³In a recent case, A 22-year-old female patient arrived at the emergency room complaining of lower left abdominal quadrant suprapubic pain. A burst hemorrhagic corpus luteum cyst of the left ovary and subsequent hemoperitoneum were seen on computed tomography and ultrasonography of the abdomen and pelvis. Laparoscopic surgery was needed to remove the patient's left ovarian cyst wall and remove the hemoperitoneum.⁸ In a different case, an adolescent female who had hemoperitoneum from hemorrhagic corpus luteum underwent urgent laparoscopy after her condition was appropriately diagnosed by transabdominal ultrasound and contrast-enhanced computed tomography.¹¹ Similarly, transabdominal sonography and magnetic resonance imaging of the pelvis revealed a 10 cm * 5 cm sized cystic with a diagnosis of retroperitoneal undescended ovary with corpus luteum hemorrhage managed with diagnostic laparoscopy in a Chinese adolescent lady who presented with right lower quadrant pain, nausea, and vomiting.¹² In this case diagnosis was made post-operative and only ultrasonography was used as an imaging modality. In our case, an emergency laparotomy was done.

There is no established standard of care for ruptured corpus luteum. When a patient is hemodynamically stable, does not have acute abdominal pain, and has just a small amount of pelvic fluid detected on ultrasound, observation is all that is needed.¹³ On admission, laparoscopy should be carried out if there is a lot of pelvic fluid or severe pain in the abdomen. Laparoscopy is seen to be better than laparotomy in hemodynamically stable patients for both diagnosis and treatment. It offers several advantages over laparotomy, including as faster operating times, better wound care, reduced postoperative discomfort, and shorter hospital stays without increasing the risk of adverse events.¹⁴ When there is a circulatory collapse, a direct laparotomy is required.¹³

CONCLUSIONS

Ruptured Corpus luteal cyst can present with features of acute abdomen and can mimic torsion of ovarian and dermoid cyst. Even clinical signs and routine imaging (like ultrasound) can mislead the diagnosis. The surgeon must be prepared to all possibilities intraoperatively.

DECLARATIONS

Data availability statement

The data is available on reasonable request.

Author contributions

Shasank chitrakar: Writing – original draft, Conceptualization; investigation, Writing – review and editing

Saroj babu aryal: Project administration, Resources

Guddu sah: Resources

Akriti Panthi: Review and editing

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Disclosure of conflict of interest

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Ethics approval statement

Not needed

Patient consent statement

Written informed consent was obtained from her guardian for the publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

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FIGURE

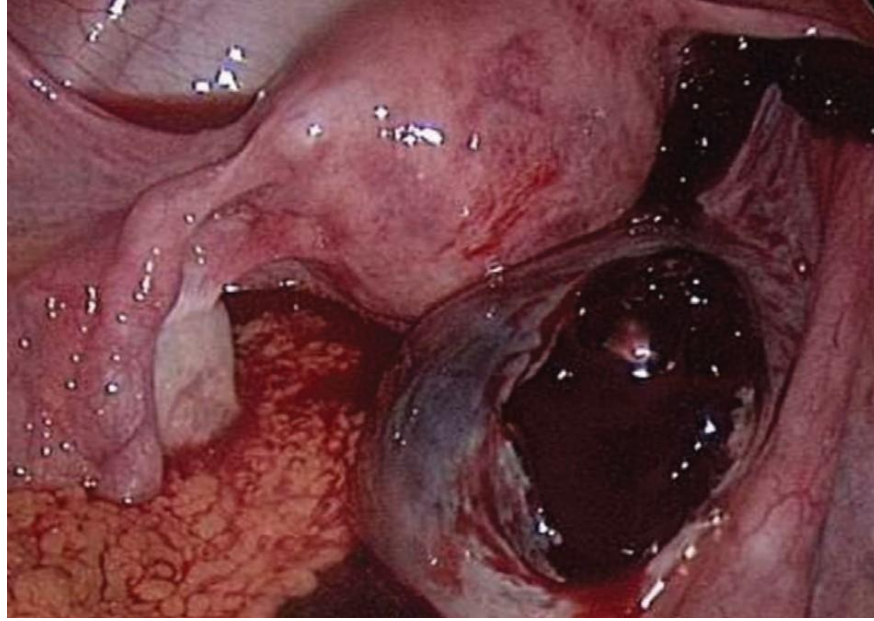


Figure 1: Intraoperative finding of ruptured corpus luteum cyst (with an arrow pointing to it) showing a dark fluid-filled area indicative of a cyst and surrounding blood. There is a visible hemorrhage, suggesting a recent rupture of active bleeding.