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Fatal Bilateral Ovarian Cyst Torsion with rupture and Hemoperitoneum: An Autopsy- based Case Report with Clinical and Forensic Significance

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Case Report

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Abstract

Background:

Haemorrhagic ovarian cysts are a common gynaecological condition, but bilateral torsion with rupture leading to fatal hemoperitoneum is extremely rare. Such cases are often clinically challenging due to nonspecific presentation and rapid deterioration. This case highlights a rare and fatal presentation with significant diagnostic implications.

Case presentation:

A 35-year-old premenopausal woman presented with a 3-day history of abdominal pain and increased vaginal bleeding. On examination, she was pale, hypotensive, and tachycardic, with abdominal guarding and rigidity. Despite resuscitative measures, her condition rapidly deteriorated, and she died before radiological evaluation could be performed. Postmortem examination revealed 220 ml of hemoperitoneum, a uterus showing haemorrhagic changes, and bilaterally enlarged ovaries containing cysts filled with fluid and clotted blood. A rupture was noted in the right ovary, along with torsion of both ovaries. Histopathological examination confirmed haemorrhage and necrosis consistent with ovarian torsion and organizing cystic hematoma.

Conclusions:

This case underscores the rare but life-threatening potential of bilateral haemorrhagic ovarian cyst torsion and rupture. Early recognition and prompt intervention are critical to prevent fatal outcomes. Clinicians should maintain a high index of suspicion in women presenting with acute abdominal pain and hemodynamic instability, as delayed diagnosis can lead to severe complications including hypovolemic shock and death. This case also highlights the importance of postmortem examination in identifying rare causes of sudden death and contributes to forensic understanding of unexplained female mortality.

Background

Haemorrhagic ovarian cysts are common functional ovarian lesions occurring in women of reproductive age and are among the important causes of acute pelvic pain presenting to emergency departments (1–3). Most haemorrhagic cysts resolve spontaneously; however, complications such as torsion, rupture, and massive hemoperitoneum may rarely result in severe morbidity or death. Ovarian torsion accounts for approximately 2–3% of all gynaecological emergencies and most commonly affects women of reproductive age with underlying ovarian enlargement or cystic lesions (4, 5).

Bilateral ovarian torsion associated with haemorrhagic cyst rupture is exceptionally rare, particularly when complicated by fatal hemoperitoneum. Delayed diagnosis remains a major challenge because the

presenting symptoms—including abdominal pain, vomiting, tachycardia, vaginal bleeding, and hypotension—are often nonspecific and mimic other surgical or gynaecological emergencies such as ectopic pregnancy, pelvic inflammatory disease, appendicitis, or intestinal obstruction (6, 7).

Several risk factors have been associated with haemorrhagic ovarian cyst formation and torsion, including enlarged ovarian cysts, reproductive age, pregnancy, ovulation induction therapy, bleeding disorders, and anticoagulant use (8–10). Rapid progression to hypovolemic shock may occur following cyst rupture with significant intraperitoneal bleeding.

Ultrasonography with Doppler evaluation is considered the primary imaging modality for suspected ovarian torsion and haemorrhagic cysts. Findings such as ovarian enlargement, peripheral displacement of follicles, free pelvic fluid, haemorrhagic internal echoes, and the characteristic “whirlpool sign” support the diagnosis (8). Early surgical intervention remains essential to prevent ovarian necrosis, irreversible ischemic injury, and fatal outcomes.

The present report describes a rare autopsy-confirmed case of fatal bilateral haemorrhagic ovarian cyst torsion with rupture leading to secondary hemoperitoneum and hypovolemic shock in a premenopausal woman. The case highlights the diagnostic difficulties, rapid clinical deterioration, and medico-legal significance of this uncommon entity.

Case Presentation

A 35-year-old premenopausal woman presented with a 3-day history of increased vaginal bleeding and abdominal pain. On examination at Government Coimbatore Medical College and Hospital, she was found to be pale, with guarding and rigidity of the abdomen. She was hypotensive and tachycardic. Despite fluid resuscitation, her condition rapidly deteriorated, and she died before radiological investigations could be performed. There was no history of bleeding issues, anticoagulant medication, recent trauma, or comparable incidents in the past. The body was subsequently sent for medico-legal autopsy to ascertain the cause of death.

According to the available history obtained from relatives, the deceased had no known prior medical illnesses such as hypertension, diabetes mellitus, coagulation disorders, or cardiac disease. There was no history of previous abdominal or pelvic surgeries, infertility treatment, anticoagulant therapy, or recent trauma. Her menstrual cycles were reportedly regular, and there was no documented history of ovarian cysts, pelvic inflammatory disease, or similar previous episodes of acute abdominal pain. Obstetric and detailed gynaecological records were unavailable at the time of presentation because of the rapidly deteriorating clinical condition. Pregnancy status could not be confirmed prior to death as radiological and laboratory investigations were not completed.

On external examination, the deceased was a moderately built and nourished female. Bluish discoloration was observed on the fingernails and toenails. Both eyes showed corneal haziness, with subconjunctival haemorrhage noted in the right eye; the left eye appeared normal. Early decomposition

changes were evident, including greenish discoloration of the skin over the anterior abdominal wall and postmortem purging around the nostrils and mouth. Hyperpigmented skin lesions were noted over the anterior and lateral aspects of the abdomen. The abdomen was distended (Fig. 1).

Blood clots were present in the vaginal introitus, with no visible external injuries (Fig. 2). No antemortem injuries were identified.

On internal examination, the peritoneal cavity contained approximately 220 ml of fluid blood (Fig. 3).

The uterus measured 7 × 6 × 1.5 cm and had a haemorrhagic surface. On sectioning, the uterine cavity contained a small amount of blood clots. Both ovaries were enlarged with haemorrhagic surfaces and cystic changes. The right ovarian cyst measured 10 × 6 × 4 cm, and the left ovarian cyst measured 12 × 8 × 5 cm (Fig. 4).

Both ovaries contained fluid and clotted blood. A rupture measuring 1 × 0.7 cm was observed on the posterior surface of the right ovary. Torsion of both ovaries was noted (Fig. 5).

The pericardial cavity contained 20 ml of straw-coloured fluid. The heart was soft and flabby in consistency, with a normal appearance on cut section, and the coronary vessels were patent. The lungs appeared pale and oedematous, with blood-stained froth oozing on cut section. Neck structures were intact. The stomach contained 20 ml of brown-coloured fluid with no specific Odour. Other internal organs showed decomposition changes but were otherwise unremarkable.

Histopathological examination of both ovaries revealed areas of haemorrhage and necrosis indicative of ovarian torsion (Figs. 6 and 7).

The findings were consistent with an organizing cystic hematoma secondary to ovarian torsion (6). Histopathological examination of the lungs showed thickened alveolar septa, pulmonary oedema, and focal haemorrhages into the alveoli

Discussion

Haemorrhagic ovarian cysts typically develop as a result of ovulation. Following a hormonal response, the stromal cells surrounding a maturing Graafian follicle become more vascular. After ovulation, the Graafian follicle transforms into a corpus luteum, which has a highly vascular and fragile granulosa layer that can rupture easily, leading to the formation of a haemorrhagic ovarian cyst (3). Rupture of the cyst can result in bleeding into the pelvis, and in severe cases, hemoperitoneum may occur, with blood accumulating in the Morrison pouch.

The differential diagnosis for this condition includes strangulated intestinal obstruction, ectopic pregnancy, tubo-ovarian mass associated with PID (Pelvic Inflammatory Disease), endometrioma, and solid ovarian neoplasm (7, 8). Notably, the appearance of a ruptured ovarian cyst can be similar to that of

an ectopic pregnancy. Key distinguishing features include the “ring of fire” sign on colour Doppler imaging, characteristic of ectopic pregnancy, and a positive beta human chorionic gonadotropin test (9).

From a clinical perspective, this case emphasizes the importance of maintaining a high index of suspicion for ovarian torsion and ruptured haemorrhagic ovarian cyst in reproductive-age women presenting with acute abdomen and hemodynamic instability (15). Initial evaluation should include rapid assessment of vital signs, serum beta-human chorionic gonadotropin testing to exclude ectopic pregnancy, complete blood count, coagulation profile, and urgent pelvic ultrasonography with Doppler assessment. Contrast-enhanced computed tomography may assist in unstable or diagnostically uncertain cases where hemoperitoneum is suspected (16). Early gynaecological consultation and prompt surgical intervention remain the cornerstone of management, particularly in patients with ongoing bleeding, torsion, or circulatory compromise. Delay in diagnosis may rapidly progress to ovarian necrosis, disseminated intravascular coagulation, hypovolemic shock, multi-organ dysfunction, and death.

The “whirlpool” sign is a definitive indicator of adnexal torsion and appears as a clockwise or counterclockwise wrapping of vessels around the central axis (8). Hemoperitoneum is characterized by free hypoechoic fluid in the peritoneal cavity, often accompanied by focal hyperechoic collections suggesting the presence of blood clots. Ruptured haemorrhagic ovarian cysts can lead to secondary hemoperitoneum, which poses a risk of adverse outcomes, including hypovolemic shock. Therefore, accurate identification and timely management are critical (9).

Patients with ruptured haemorrhagic ovarian cysts may require further evaluation due to associations with underlying conditions, including rare bleeding disorders such as Factor VIII deficiency, the most common form of Von Willebrand disease type 3 (10). Additionally, bilateral haemorrhagic ovarian cysts have been reported in patients receiving anticoagulant therapy for mechanical heart valves and in those undergoing haemodialysis (11, 12).

The conventional treatment for haemorrhage and acute abdominal pain resulting from ruptured gynaecologic cysts is surgical intervention (13). In addition to standard abdominal laparoscopy, vaginal laparoscopy through NOTE (Natural Orifice Transluminal Endoscopic) Surgery procedures allows for cyst drainage, ovarian detorsion, and bilateral salpingectomy, with the potential benefit of reduced postoperative pain (14).

This case highlights a rare presentation of bilateral haemorrhagic ovarian cyst torsion with rupture leading to secondary hemoperitoneum and death. The rapid clinical deterioration and absence of preoperative imaging emphasize the diagnostic challenges associated with such presentations and underscore the importance of early recognition and intervention. From a forensic perspective, this case assumes significance as bilateral ovarian torsion with rupture is a rare and often unsuspected cause of sudden death in women of reproductive age. In the absence of definitive clinical diagnosis, such cases may be misinterpreted without thorough postmortem evaluation. Careful examination of the adnexa and

recognition of hemoperitoneum are essential in establishing the cause of death in medico-legal autopsies.

The present case contributes important educational value because fatal bilateral ovarian torsion with rupture is exceedingly uncommon and may clinically mimic several acute surgical emergencies. Awareness among emergency physicians, gynaecologists, radiologists, and forensic pathologists is essential for early diagnosis and accurate determination of cause of death.

Conclusions

A premenopausal woman was diagnosed with bilateral haemorrhagic ovarian cyst torsion, resulting in rupture and secondary hemoperitoneum, ultimately leading to hypovolemic shock and death. This case highlights the rarity and severity of bilateral ovarian cyst torsion with rupture and its potentially fatal outcome.

In women presenting with severe abdominal pain, the possibility of ovarian cyst torsion should be considered. Awareness of the clinical presentation, along with meticulous evaluation and early diagnosis, can significantly improve patient outcomes. Delay in diagnosis and treatment may result in ischemic damage, ovarian gangrene, multi-organ dysfunction, and death. Surgical intervention remains the most reliable approach for both diagnosis and timely management. In addition, this case emphasizes the crucial role of autopsy in identifying rare gynaecological causes of sudden death, thereby aiding accurate medico-legal diagnosis.

Abbreviations

PID
Pelvic inflammatory disease
NOTES
Natural Orifice Transluminal Endoscopic Surgery

Declarations

Ethics approval and consent to participate:

The procedure was over seen and approved by the Institutional Human Ethics Committee of Coimbatore Medical College Hospital, Trichy Road, Coimbatore – 641018.

Clinical trial number

Not applicable.

Consent for publication

Written informed consent for publication was obtained from the legally authorized representative of the deceased. A copy of the consent is available for review by the Editor upon request.

Competing interests

The authors declare that they have no competing interests.

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Author Contribution

APKS and UR supervised the case, guided the analysis and critically reviewed the manuscript. BR and NJ carried out the pathological examination and interpretation. All authors read and approved the final manuscript.

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Data Availability

All data generated or analysed during this study are included in this article

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Figures



Figure 1

Abdomen found to be distended

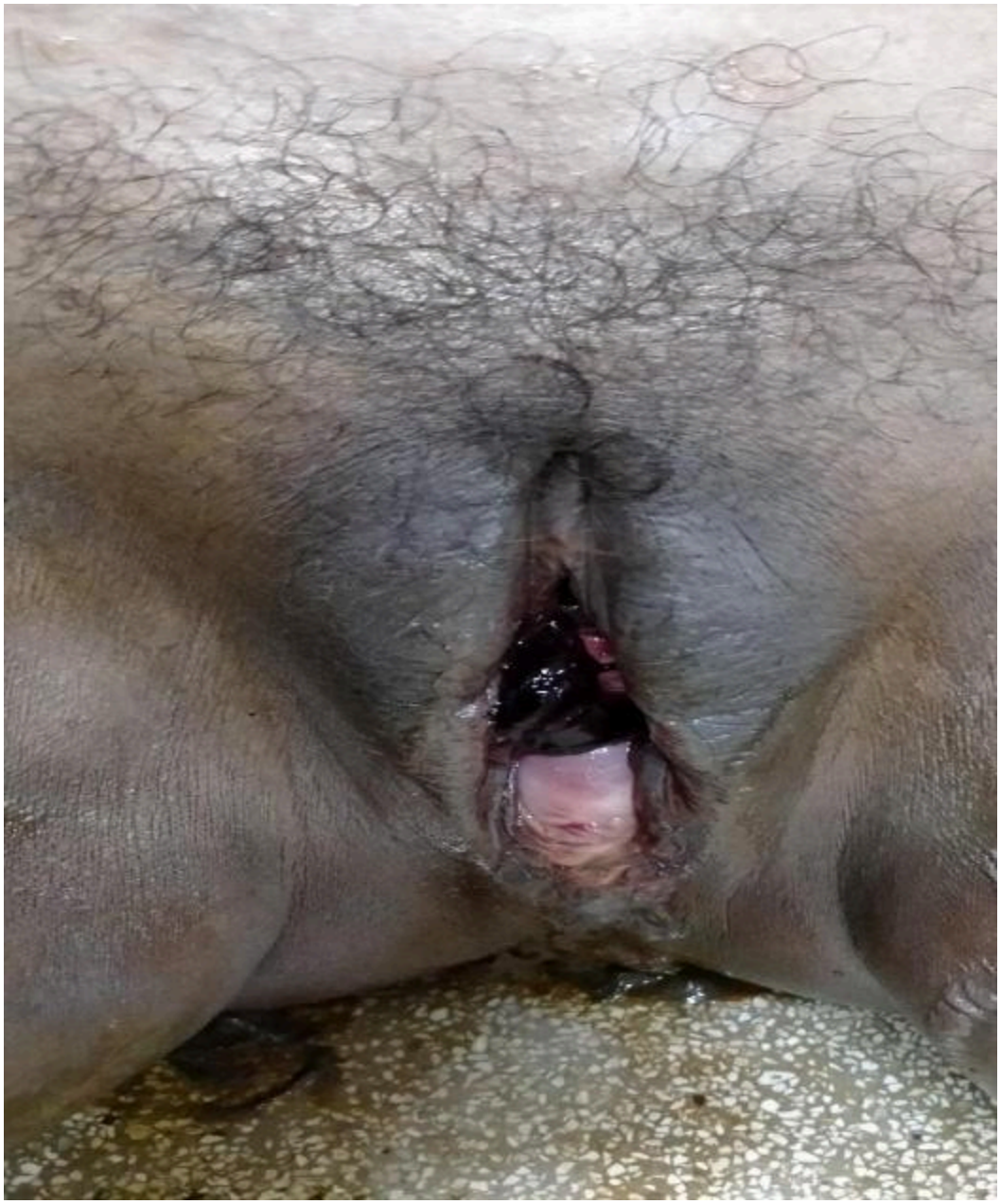


Figure 2

Blood clots seen in the vaginal introitus



Figure 3

Dissection of the pelvic cavity



Figure 4

Enlarged and haemorrhagic ovarian cysts in the pelvic cavity



Figure 5

Bilateral haemorrhagic ovarian cysts with bilateral torsion

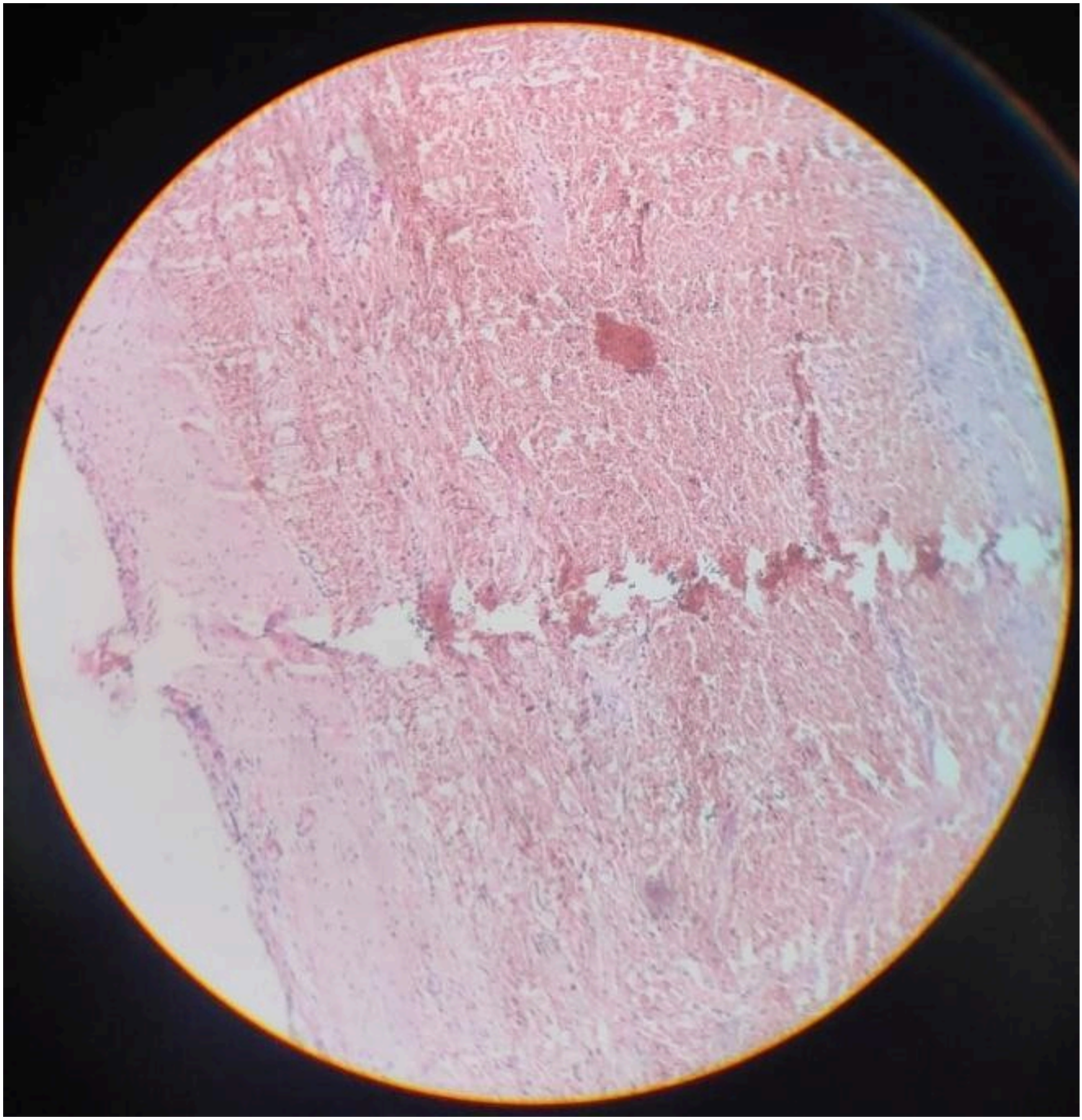


Figure 6

Histopathological sections of ovary showing areas of haemorrhage and necrosis

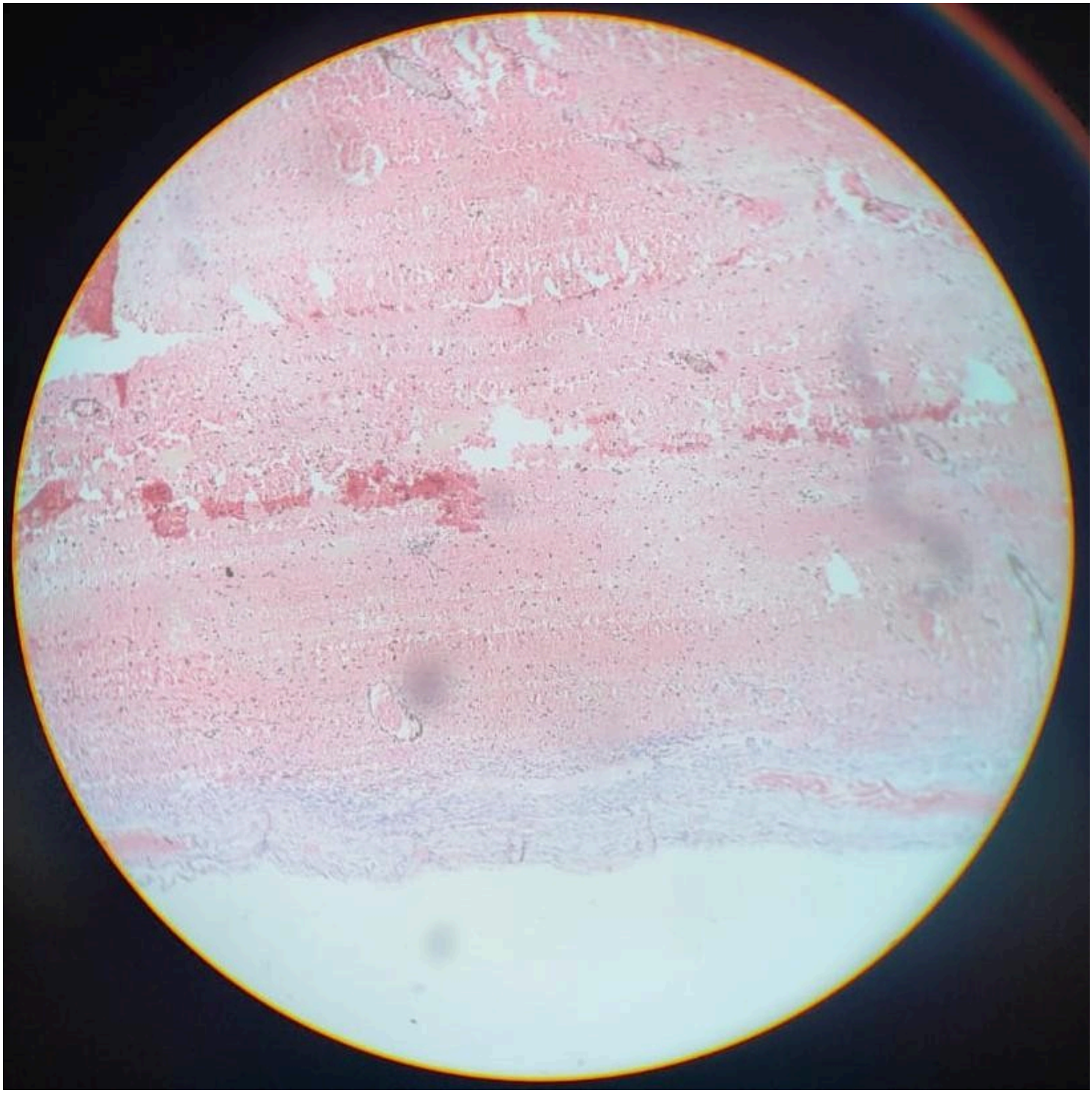


Figure 7

Histopathological sections of ovary showing areas of haemorrhage and necrosis