

## Introduction

- Spontaneous haemoperitoneum is blood within peritoneal cavity from non-traumatic cause.
- Younger patients have greater physiologic reserve and compensatory ability, thus, initial clinical responses to haemorrhage may be subtle with preserved haemodynamics.
- Ovarian cyst rupture is usually managed conservatively unless there is haemodynamic instability or significant haemoperitoneum.

## Case Presentation

A 31-year-old nulligravida presented to the Emergency Department of a secondary hospital with abdominal pain in the context of a 3.8 cm right ovarian cyst diagnosed on a pelvic ultrasound two years prior.

On examination in the Emergency Department, her heart rate was 108 beats per minute, respiratory rate was 20 breaths per minute, blood pressure was 101/59 mmHg and her temperature was 36.8C. Her abdomen was soft and there was mild tenderness in the suprapubic region and in her right iliac fossa with no rebound tenderness or guarding. Speculum examination revealed bleeding through the cervix and bimanual examination revealed cervical excitation and right pouch of Douglas fullness and tenderness. She was given regular analgesia for pain relief.

Laboratory investigations revealed a haemoglobin of 140 g/L, haematocrit of 0.42 L/L, white cell count of  $20 \times 10^9/L$ , creatinine of 80 umol/L, and C-reactive protein of 6 mg/L. Urine b-hCG was negative for pregnancy. FAST examination noted fluid in Morrison's pouch. A full blood count was repeated later that evening and revealed a haemoglobin level of 132 g/L and haematocrit of 0.38 L/L. Venous blood sampling demonstrated an elevated lactate level of 3.3 mmol/L but no indication of acidosis.

## Progress in Hospital

Overnight, her heart rate increased to 120 beats per minute. On review the next morning, she reported that her pain had improved. However, she remained tachycardic with a heart rate of 140 beats per minute; her blood pressure was 145/100 mmHg. Examination revealed a distended abdomen with no peritonism or tenderness. Investigations collected in the morning revealed a haemoglobin of 129 g/L, haematocrit of 0.38 L/L, lactate level of 2.0 mmol/L, an elevated creatinine of 96 umol/L, eGFR of 68 mL/min/1.73m<sup>2</sup>, and new mild liver function derangement with AST 50 units/L and GGT 42 units/L. Formal pelvic ultrasound, which had been requested on admission, showed a large 18 cm complex right adnexal mass with large amounts of free fluid.

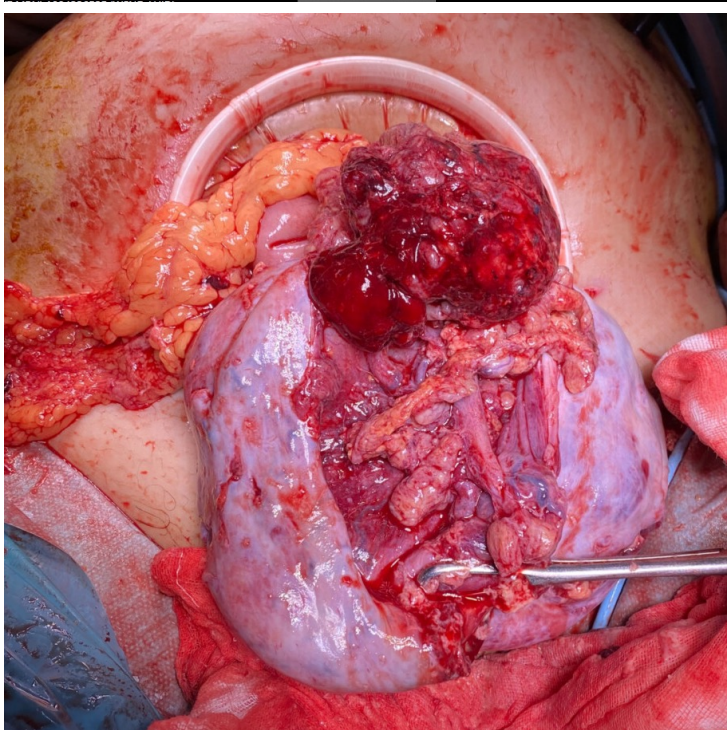


## Management

Decision was made for diagnostic surgery 18 hours after presentation due to worsening haemodynamic status and evidence of end organ dysfunction. A significant haemoperitoneum of 4.5 L and bleeding from a 20 cm complex right adnexal mass, with features suspicious for malignancy, were observed intraoperatively.

Her intraoperative haemoglobin was 59 g/L and blood gas demonstrated metabolic acidosis. A massive transfusion protocol was activated intraoperatively and she received 12 units of blood products. Due to ongoing haemodynamic instability, she was commenced on a noradrenaline infusion and decision was made for direct transfer to the Intensive Care Unit of a major tertiary referral hospital.

Histopathological analysis showed a moderately differentiated ovarian adenocarcinoma exhibiting intestinal phenotype. Upper endoscopy and colonoscopy were unremarkable. She was treated for an ovarian primary with 6 cycles of adjuvant chemotherapy.



## Discussion

When managing young patients, a high index of caution should be maintained due to physiologic compensatory mechanisms despite significant blood loss. Initial laboratory investigations should be carefully interpreted. Research has demonstrated that the minimum volume of fluid detectable in Morrison's pouch is 619 mL and, thus, ultrasound has the capacity to make a qualitative assessment of haemoperitoneum.

Vital signs, point-of-care ultrasonography and laboratory investigations should all be considered for holistic patient care.

Ovarian tumours may present with haemorrhage after rupture. Rupture of the ovarian capsule in the presence of ovarian cancer can lead to tumour seeding of the abdominal cavity, upstaging of cancer and increased mortality.

## References

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