Endovascular treatment of ovarian hemorrhage with extravasation: a case report

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Introduction

Ovarian hemorrhage, including both follicular hemorrhage and corpus luteum hemorrhage (CLH), is a common occurrence in women of reproductive age. CLH, which results from bleeding into the corpus luteum following ovulation, is more common and can be more severe[1,2], especially in young women[3].

Patients for whom conservative management of ovarian hemorrhage has been unsuccessful are typically selected for surgical hemostasis.

We herein present a case of ovarian hemorrhage successfully managed using endovascular treatment.

Case report

Present Illness

A woman in her 20s presented with lower abdominal pain. Computed tomography (CT) revealed hemoperitoneum and extravasation (Fig. 1A), suggesting ovarian hemorrhage. Despite stable vital signs, her hemoglobin dropped from 12.0 to 10.4 g/dL in 3 hours, leading us to initiate transcatheter arterial embolization (TAE).

TAE

After obtaining arterial access via the left femoral artery, a 4-Fr shepherd hook catheter (Terumo Clinical Supply, Tokyo, Japan) was advanced into the right internal iliac artery. A 1.9-Fr/2.6-Fr coaxial system (Carnelian Marvel/Carnelian HF; Tokai Medical Products, Kasugai, Japan) was navigated into the ovarian branch of the right uterine artery.

Angiography revealed extravasation (Fig. 1B), indicative of active bleeding.

The ovarian branch was embolized using a gelatin sponge. A post-embolization angiogram confirmed resolution of the extravasation (Fig. 1C). The right ovarian artery was not identified by CT, so we did not canulate the catheter after embolization of the ovarian branch of the uterine artery.

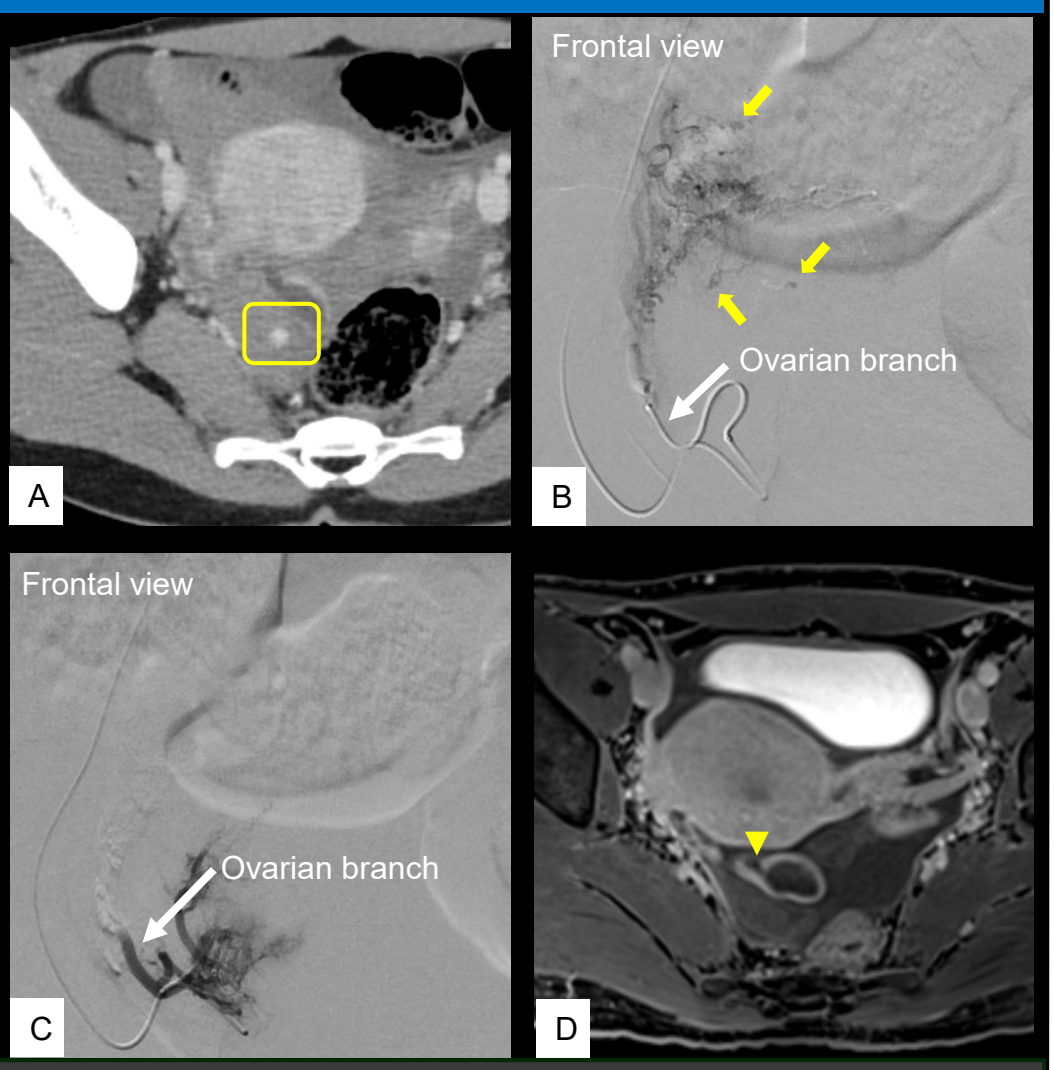

Fig. 1. (A) Enhanced axial CT image shows extravasation (yellow square). (B) Angiogram of the ovarian branch of the right uterine artery shows extravasation (yellow arrows). (C) Angiogram after embolization shows disappearance of extravasation. (D) Enhanced magnetic resonance imaging 2 days after the procedure reveals findings suggestive of a ruptured corpus luteum cyst (yellow arrowhead).

Clinical Course

Following endovascular treatment, the patient recovered without complications. Enhanced magnetic resonance imaging (Fig. 1D) on post-procedural day 2 confirmed CLH as the cause. The patient was discharged on post-procedural day 3.

Discussion

Ovarian hemorrhage is often self-limiting, but in rare cases, it can become life-threatening, requiring rapid intervention. The blood supply to the ovaries comes primarily from the ovarian artery branching from the abdominal aorta, with collateral support from the uterine artery (Fig. 2).

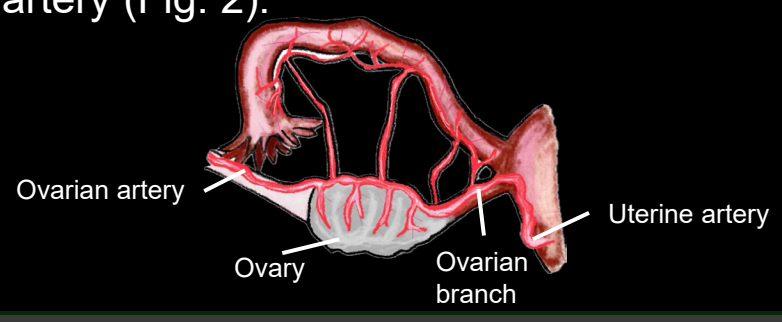

Fig. 2. Schematic diagram of the arterial supply to the ovary

This dual blood supply must be considered when planning vascular interventions.

The severity of hemorrhage and the patient's status dictate treatment. Conservative management is usually recommended for stable patients, while surgery, often laparoscopic, is preferred for those with instability or significant hemoperitoneum[4] .

Lee et al.[5] reviewed 106 cases of CLH with hemoperitoneum and found that a hemoperitoneum depth of >5.8 cm, measured at the deepest pocket in the pelvic cavity on an axial CT scan, had a sensitivity of 75.0% and a specificity of 58.6% for predicting the need for surgery. Furthermore, active bleeding increased the likelihood of surgery to 45.5%[5]. TAE should be considered, especially in patients with significant hemoperitoneum and extravasation on imaging. While TAE offers a non-surgical option, concerns have been raised regarding complications such as intraperitoneal adhesions and their impact on ovarian function. However, a study of 116 CLH cases found no evidence of intraperitoneal adhesions in patients who later underwent laparotomy after conservative management of ovarian bleeding[6]. Additionally, concerns about ovarian function are minimal because the ovarian blood supply is maintained by both ovarian and uterine arteries.

In most cases, the gelatin sponge in TAE recanalizes within 2 weeks, and menstruation typically resumes in 93%–100% of patients after uterine artery embolization for postpartum hemorrhage[7]. Therefore, the risk of TAE leading to complete ovarian function loss is low.

In our case, CT imaging revealed a hemoperitoneum depth of 10 cm with active extravasation. Although the patient remained hemodynamically stable, a rapid drop in hemoglobin was observed. Given the significant hemoperitoneum and ongoing bleeding, TAE was performed, successfully achieving hemostasis.

Conclusion

Ovarian hemorrhage is a common disease that usually responds well to conservative treatment, although it can rarely become severe.

Endovascular treatment is effective for ovarian hemorrhage, especially for CLH, and is less invasive than surgical intervention.

References

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