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Uterine artery embolization for arteriovenous malformation of the cervix

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INTRODUCTION

In women of reproductive age, vaginal bleeding is common but may indicate serious underlying pathologies, such as cervical arteriovenous malformation (AVM). AVM, defined by abnormal connections between arterial and venous systems in the cervix, can lead to severe hemorrhage, anemia, hemodynamic instability, and even life-threatening outcomes. According to the International Society for the Study of Vascular Diseases (ISSVA) 2018 classification, vascular malformations are categorized into simple and mixed types, including capillary, venous, lymphatic, and arteriovenous subtypes [1]. While these abnormalities can occur in various anatomical sites, pelvic AVMs are rare, with fewer than 150 reported uterine cases from 1926 to 2023 [2]. Uterine AVMs are either congenital or acquired, and the latter are often associated with gynecological interventions like delivery, cesarean section, gestational trophoblastic disease, diagnostic curettage, placement of intrauterine devices, or specific infections [2, 3].

This article presents a case of a 27-year-old woman with recurrent, heavy vaginal bleeding due to AVM, located in the cervix without prior risk factors. Considering her medical history, symptoms, and imaging findings, a congenital uterine AVM was likely. We detail her diagnosis and successful treatment with uterine artery embolization (UAE), which preserved her fertility, and discuss the causes, symptoms, diagnosis, and treatment options for AVM, as well as the advantages and disadvantages of UAE.

CASE PRESENTATION

Basic information

A 27-year-old woman with no history of abortion, delivery, or pelvic surgery was admitted repeatedly for severe vaginal bleeding episodes, often with shock symptoms (as depicted in Table 1). Initial ultrasounds showed no abnormal blood flow. After a fourth bleeding episode, a congenital vascular malformation was suspected. During the preparation for oocyte cryopreservation, an arteriogram revealed tortuous uterine arteries, and immediate bilateral UAE was performed.

Treatment

Under local anesthesia and sedation, a catheter was inserted through the femoral artery to the uterine arteries, where metal coils were placed to block blood flow to the AVM. The procedure was successful, with no complications.

Prognosis and follow-up

Nine days post-procedure, the patient was discharged without signs of abnormal vaginal bleeding. Her oocytes were cryopreserved to protect fertility. During follow-up, no abnormal bleeding occurred, and she successfully conceived.

DISCUSSION AND CONCLUSION

The patient was admitted after her third episode of vaginal bleeding. Urgent pelvic Doppler ultrasound showed no abnormal blood flow. Suspecting abnormal uterine bleeding due to anovulation or endometrial irregularity,

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we performed a curettage, which temporarily stopped the bleeding. However, another episode followed, highlighting the severity of her condition. Despite normal coagulation tests and pathology results, GnRH-a treatment was ineffective. Consequently, we investigated further and ultimately suspected cervical vascular malformations.

Vascular malformations, known for their progressive enlargement and potential for life-threatening hemorrhage, are complex to diagnose and treat. Under the PALM-COEIN classification, uterine AVMs are categorized as AUB-N [4], often presenting with sudden heavy bleeding. Doppler ultrasound is the preferred diagnostic tool, while MRI and CT serve as adjuncts for comprehensive assessment [5]. Treatment options include medications, UAE, and hysterectomy. UAE, a minimally invasive approach, effectively controls bleeding while preserving uterine function, offering reduced risks and faster recovery than hysterectomy. Studies show that UAE does not impact ovarian reserves and allows for future conception [6].

This case underscores the importance of considering pelvic vascular malformations in cases of recurrent, sudden vaginal bleeding, particularly when aiming to preserve reproductive function. Cervical artery malformations are seldom discussed in the literature, highlighting the necessity of clinical experience for accurate diagnosis. Furthermore, this case reinforces the value of prompt intervention in safeguarding the reproductive potential of affected women.

Article information and declarations

Ethics statement

The studies involving human participants were reviewed and approved by Affiliated Hospital of Guangdong Medical University, Zhanjiang, China. The patients/participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual for the publication of any potentially identifiable images or data included in this article.

Author contributions

Supervision: Ying Zhang; writing — original draft: Shangao Huang; writing — review & editing: Yueling Wu.

Conflict of interest

The authors declare that they have no competing interests.

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Supplementary material

Table S1, Figures S1–S3.

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