



Three natural pregnancies following embolization of both uterine arteries due to pseudoaneurysms associated with the gestational trophoblastic disease — long-term follow-up

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INTRODUCTION

Uterine artery pseudoaneurysm (UAP) is an abnormal single-layer outpouching of the arterial wall [1]. Its reported frequency rate is 0.2% [2]. UAP mainly forms following invasive uterine procedures, like cesarean section, and presents as vaginal bleeding [1]. Doppler ultrasonography is the universal early diagnostic tool, but computer tomography angiography remains a gold standard. Nevertheless, magnetic resonance imaging is a radiation-free alternative. Treatment options include arterial embolization and hysterectomy, depending on the clinical status. Endovascular occlusion is considered a method of choice, especially in patients wishing to preserve fertility [1].

CASE REPORT

A twenty-six years old female gravida 1, para 0, with a history of successful gestational trophoblastic disease treatment, was admitted in March 2009 due to asymptomatic pseudoaneurysms. In February 2009, a UAP embolization attempt in another institution resulted in the left uterine artery occlusion, with no decrease in pseudoaneurysms sizes.

Upon admission, the Duplex ultrasound and MRI confirmed the diagnosis of pseudoaneurysms. Digital subtraction angiography revealed the right uterine artery supplying three UAPs in the uterine corpus measuring: 50 × 45 mm, 12 mm, and 8 mm, which were embolized using glue (N-butyl-2-cyanoacrylate). Final arteriography confirmed successful embolization with the closure of most right uterine artery branches. Aortography visualized ovarian arteries as the only remaining arterial supply to the area, both enlarged to 3 mm. Post-procedure ultrasound and MRI showed a mass of the pseudoaneurysms with no perfusion. A follow-up MRI 12 months post-treatment showed a small fibrotic lesion (17 mm) in the place of previous pseudoaneurysms. Following the embolization, the patient achieved three healthy pregnancies (2010, 2012, and 2017). The infants were delivered vaginally in physiological time, with birth weights of 2800 g, 3150 g, and 3200 g, respectively. As of June 2023, the patient had no procedure-related complications. All children are meeting the expected developmental milestones.

DISCUSSION

Embolization of the uterine arteries is a standard treatment method for extravaginal bleeding that allows for precise determination of the bleeding site. Moreover, it shows lower morbidity compared to surgery and has a potential for fertility

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Received: 23.07.2023 Accepted: 30.07.2023 Early publication date: 4.10.2023

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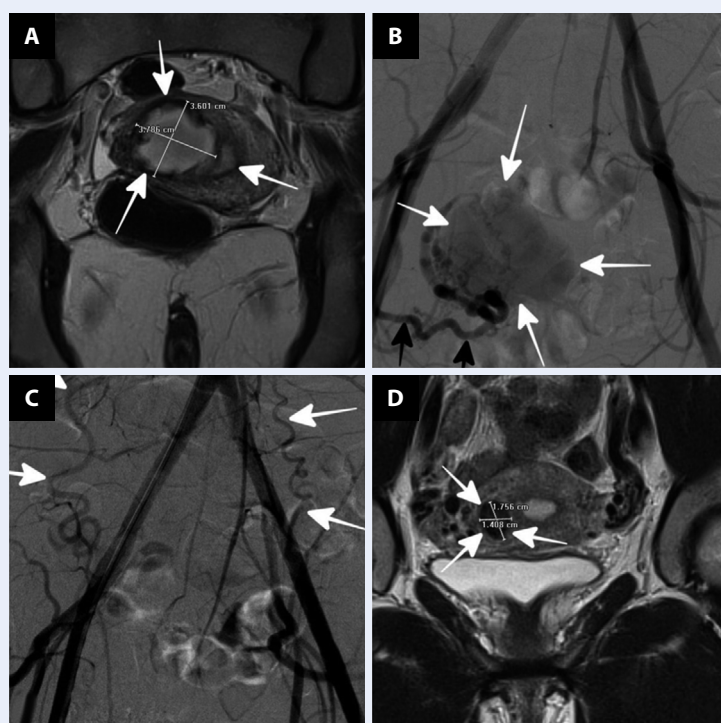


Figure 1. **A.** Coronal magnetic resonance imaging (MRI) with visible uterine aneurysm (arrows); **B.** Digital subtraction angiography of the pelvis before embolization. Contrast agent in the iliac and right uterine arteries (black arrows) and uterine aneurysm (white arrow); **C.** Digital subtraction angiography of the pelvis after embolization. Invisible uterine arteries and aneurysms. Arrows indicate bilaterally dilated ovarian arteries; **D.** Sagittal MRI of the pelvis 12 months after embolization. Arrows indicate fibrotic uterine aneurysm

preservation [3]. Available research suggests bilateral internal iliac artery ligation is more effective than unilateral ligation in controlling extravaginal bleeding [4], perhaps due to contralateral neovascularization [5]. However, in the case of non-bleeding pseudoaneurysms, a selective closure of uterine arteries seems more advantageous. The decision of glue use was based on the high number of pseudoaneurysms and multiple inflow arterial branches. Post-procedurally, the patient's uterus and ovaries were perfused solely by the ovarian arteries, which supplied sufficient blood for the proper development of three normal pregnancies. This suggests that the compensation capability of the pelvic arterial system is underestimated in daily routine practice.

CONCLUSIONS

Selective embolization of the uterine arteries can be a successful treatment method for UAP, providing efficient hemostasis and preserving uterine function. The ovarian arteries alone are sufficient to supply the uterus during pregnancy without adversely impacting child development.

Article information and declarations

Ethics statement

It was a retrospective clinical vignette, which is why no bioethics committee approval was required. The patient agreed to publish the outcomes of her treatment.

Author contributions

Radoslaw Pietura — concept, assumptions, acquisition of data, analysis and interpretation of data, critical revision of the article.

Slawomir Wozniak — concept, assumptions, critical revision of the article.

Michal Toborek — assumptions, acquisition of data, analysis and interpretation of data, article draft.

Kinga Kwolek — analysis and interpretation of data, article draft and editing.

Natalia Pietron — analysis and interpretation of data, article draft and editing.

Acknowledgments

We would like to thank the patient for staying in touch for such a long time and appreciating our work.

Conflict of interest

The authors declare no conflict of interest.

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