Interstitial Ectopic Pregnancy with Enhanced Myometrial Vascularity: A Rare Case Successfully Treated with Uterine Artery Embolization

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J Clin Interv Radiol ISVIR 2023;7:197–199.

Abstract

Enhanced myometrial vascularity (EMV) is a rare disorder associated with various obstetrical and gynecological pathologies. We describe a unique case of interstitial ectopic pregnancy associated with EMV successfully managed with bilateral uterine artery embolization.

Keywords

- uterine artery embolization
- enhanced myometrial vascularity
- ectopic pregnancy

Introduction

Enhanced myometrial vascularity (EMV) is an uncommon entity that has been described in association with uterine surgical interventions, retained products of conception (RPOC), placental invasion abnormalities, gestational trophoblastic disease (GTD), gynecological carcinomas, and cesarean scar pregnancy (CSP).[1] We describe a case of interstitial ectopic pregnancy complicated with uterine EMV successfully managed with bilateral uterine arterial embolization (UAE). Interstitial ectopic pregnancy is a rare occurrence and makes up only 2% of total ectopic pregnancies. To the best of our literature search, this is a unique obstetric application of UAE.

Case Report

A 29-year-old nulliparous woman presented to the gynecology department with lower abdominal pain. The pain was dull, below the umbilicus, moderate in intensity with no signs of peritonitis. The patient had unprotected sexual intercourse in the last 2 months with a history of using levonorgestrel emergency contraceptive (LNG-EC). She had no history of pelvic inflammatory disease, abortion, genital

article published online February 2, 2023

DOI https://doi.org/10.1055/s-0043-1761621.
ISSN 2457-0214.

Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

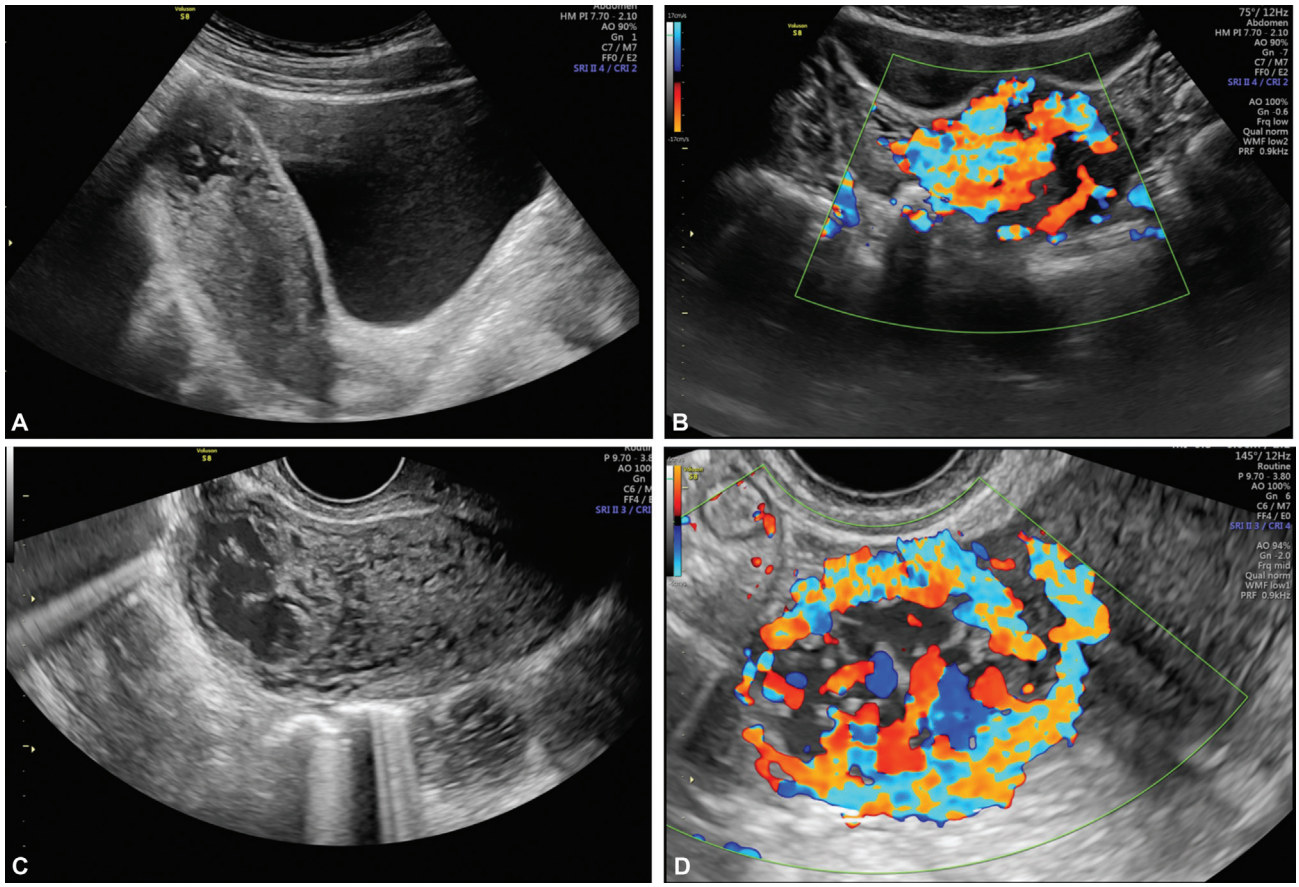

Fig. 1 (**A**) Transabdominal ultrasound (right parasagittal view) reveals a round heterogeneous isoechoic lesion with a central anechoic sac in the fundus region near the right interstitial end. (**B**) Color Doppler revealed avid vascularity within the lesion. (**C**) Transvaginal sonography confirmed the predominant anechoic central areas within the lesion in the right interstitial end with (**D**) avid vascularity in most of the lesion and adjacent myometrium on Doppler mode.

infections, or surgical procedures. Transabdominal (TAS) and transvaginal (TVS) ultrasound (US) were suggestive of a 4.2×4 cm eccentric, round, heterogeneous lesion with a central anechoic area located in the right interstitial aspect of the myometrium (►**Fig. 1A, C**). On Doppler US, the lesion demonstrated profusely high vascularity (►**Fig. 1B, D**). Magnetic resonance imaging (MRI) revealed similar findings. Beta-human chorionic gonadotropin (beta-HCG) was 2,400 mIU/mL. The diagnosis of interstitial ectopic pregnancy with EMV was made.

Owing to the highly vascular interstitial lesion with a risk of ectopic rupture, difficult surgical resection due to location and vascularity, and the patient's wish to preserve fertility, a referral was made to interventional radiology and UAE was planned.

Right transradial access was gained to perform angiography, followed by UAE. ►**Figs. 2** and **3** demonstrate bilateral hypertrophied uterine arteries and their tortuous branches perfusing the hypervascular lesion (►**Figs. 2A, B** and **3A, B**). UAE was performed bilaterally using 300- to 500µm embospheres. Postembolization angiograms demonstrated complete occlusion of the perfusing arteries and subsequent resolution of the EMV (►**Figs. 2C, D** and **3C, D**). Follow-up TVS demonstrated a thrombosed lesion. Beta-HCG on days 2 and 7 postembolization reduced to 627 and 423.7 mIU/mL, respectively. The patient resumed menstruation at 6 weeks with a negative beta-HCG and maintained regular menstruation at the 6 month follow-up examination with no reported complications.

Discussion

Diagnosis of interstitial pregnancy requires high clinical suspicion as the patient can be asymptomatic or present with vague abdominal pain, nausea, vomiting, or vaginal bleeding. Tubal pregnancies in hemodynamically stable patients with no risk of rupture are managed medically with intramuscular (IM) methotrexate or with laparoscopic surgery.[2] However, medical management of EMV is not recommended due to the increased risk of life-threatening bleeding in unresolved lesions.[3] Studies have reported decreased complication rates and subsequent pregnancies after selective UAE for interstitial pregnancies.[4]

RPOC are reported to be the most common cause of uterine EMVs. The clinical symptoms of acquired uterine EMVs vary in severity and the progression can be sudden, which may increase the need for invasive management due to the risk of development of hemodynamic instability. Dilatation and curettage is commonly performed in unstable patients and those refractory to medical management. UAE for

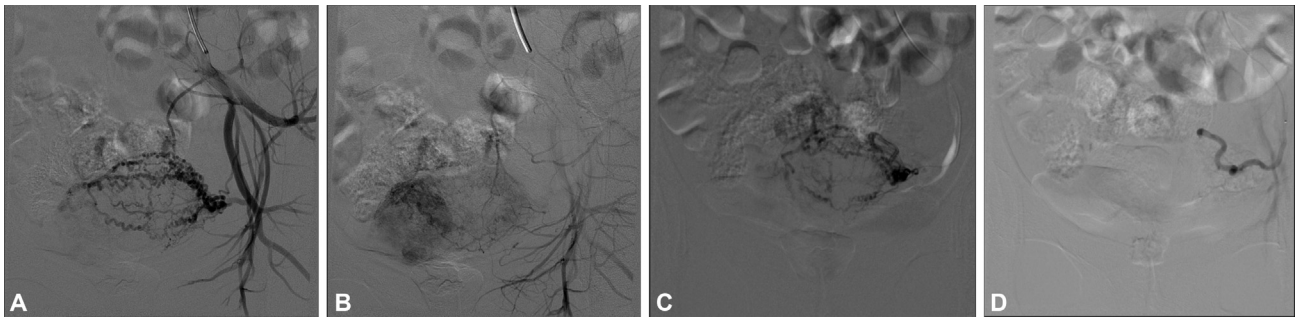

Fig. 2 Selective left internal iliac angiogram suggestive of (**A**) prominent hypertrophied spiral uterine arterial feeders terminating toward the right hemipelvis (correlating with the lesion location). (**B**) The delayed angiogram phase reveals a round area of vascular blush. (**C**) Super-selective angiogram of the left uterine artery with a microcatheter placed in the distal uterine artery confirmed the findings and was used for injecting embolic particles. (**D**) Postembolization super-selective left uterine angiogram suggestive of absent blush and hypertrophied arteries with stasis in the proximal uterine artery.

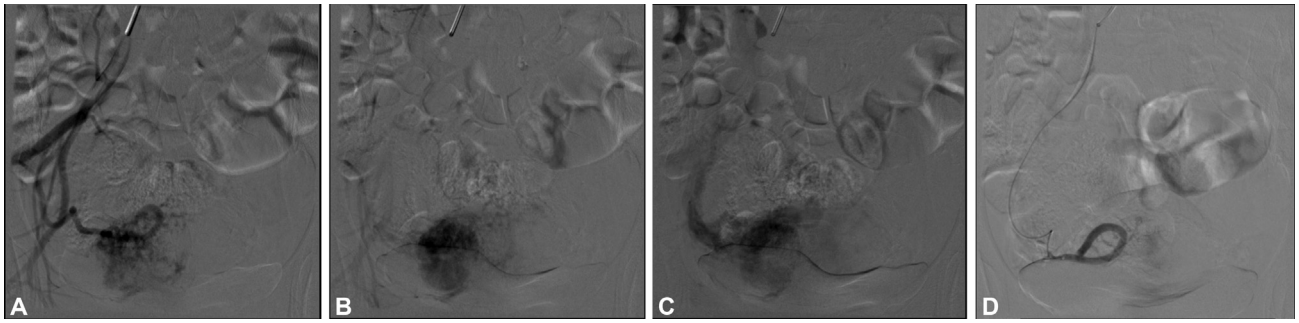

Fig. 3 Selective right internal iliac angiogram suggestive of (**A**) prominent hypertrophied spiral uterine arterial feeders terminating also toward the right hemipelvis (correlating with the lesion location). (**B**) The delayed angiogram phase reveals a round area of vascular blush. (**C**) The serial delayed phase revealed opacification of draining right iliac veins. (**D**) Postembolization super-selective right uterine angiogram suggestive of absent blush and hypertrophied arteries with stasis in the proximal uterine artery.

acquired uterine EMV is described in patients with underlying pathologies that are high risk and prone to rupture.

Our case was unique in presentation as the patient had no vaginal bleeding and no history of previous abortions or surgery, excluding the risk factors generally associated with the development of acquired uterine EMV. The history of LNG-EC use is a rare cause of ectopic pregnancy. Despite the management challenges that come with interstitial ectopic pregnancies due to the risk of significant complications, UAE proved to be effective in treating ectopic pregnancy with EMV. Thus, UAE can be a safe, minimally invasive, and fertility-preserving procedure for patients with high-risk underlying pathologies.

Conclusion

Acquired uterine EMVs remain a rare entity possibly being underreported and underrecognized.

UAE is a successful fertility-preserving treatment option for hemodynamically stable patients with underlying pathologies that are associated with a high risk of complications following expectant or surgical management.

Author's Note
Case performed at Bhaktivedanta Hospital & Research Institute, Mumbai.

Funding
None.

Conflict of Interest
None declared.

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