ORIGINAL RESEARCH PAPER

Radiology

KEY WORDS:

SHIFTING THE PARADIGM: RECOGNIZING ENHANCED MYOMETRIAL VASCUALRITY AS RPOC, NOT UTERINE AVM

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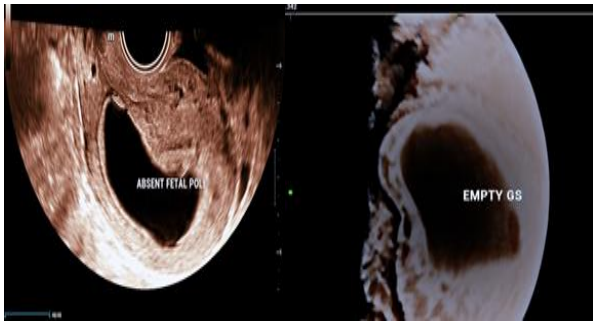
INTRODUCTION:

RPOC is a common cause of both primary (within 24 hours) and secondary (between 24 hours and 12 weeks) post-pregnancy bleeding. It can occur after any gestational age delivery, termination, or pregnancy loss and is characterized by the persistence of intrauterine chorionic villi after uterine evacuation. EMV(Enhanced Myometrial vascularity) is different from an AVM(Arterio-Venous malformation), and regression typically occurs either spontaneously or, when associated with RPOC, after the expulsion or removal of the retained tissue. The terms *EMV* and *AVM* should not be used interchangeably due to the important management implications for either diagnosis. The term EMV refers to a focal or diffuse area of high-velocity low-resistance vascularity in the myometrium and represents involuting or persistent myometrial vessels involved in the uteroplacental circulation after a recent pregnancy.

This case report highlights the importance of classifying RPOC, diagnosing EMV and to distinguish from other differentials, especially AVM

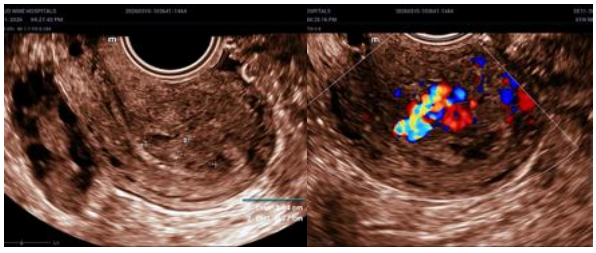
CASE REPORT:

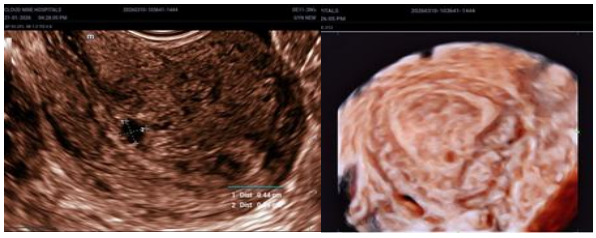
- Mrs X came to cloudnine hospital for the first time for viability scan on november 15th 2025 at a Gestational age of 11 weeks 6 days
- Ultrasound TVS at our unit revealed Irregular large empty gestational sac with absent embryo and absent Yolk sac which is suggestive of Missed miscarriage



1st Followup

- Patient underwent Medical management for expulsion of products of conception and came for the follow-up of RPOC after 2 months on 21 st of January 2026.
- Patient had persistent bleeding per vagina for which she came for TVS pelvis.
- Ultrasound pelvis TVS findings: Small RPOC is seen in the endometrial cavity, Sagittal view of Retroverted uterus showing multiple tortuous vessels in the posterior myometrium extending into the posterior aspect of endometrial cavity. Arterial flow noted in the vessels with peak systolic velocity ~56.3 cm/sec.

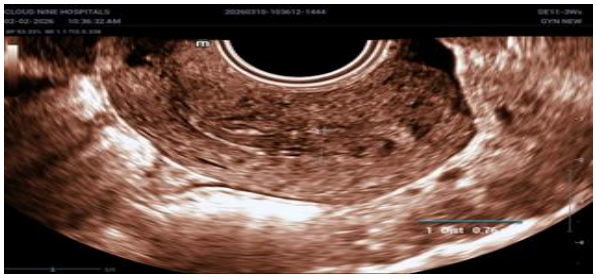




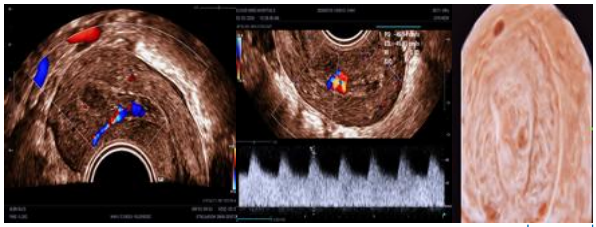
- There is small aneurysmal dilatation of the vessel in the Posterior Endo-myometrial junction measuring 4 x 3 mm.
- Diagnosis of Type 3 RPOC with Enhanced myometrial vascuality has been made
- Patient has been given medical management with tab LETROZOLE 2.5 mg BD for 10 days to reduce blood flow

Second Follow up :

Patient came for follow up after 12 days on 02.02.2026. Bleeding stopped and patient got regular menstrual cycle. Beta HCG came as 0.



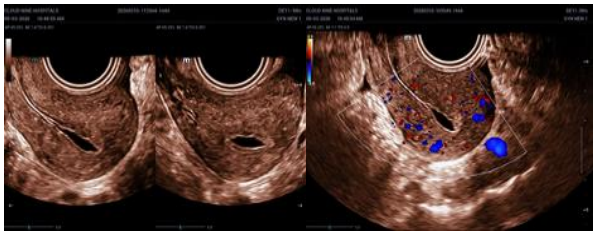
Endometrium appeared heterogenous with ill-defined internal contents.



There was mild reduction in the myometrial vascularity, but there was no significant change in the tortuous vessels and aneurysmal dilatation. Arterial Peak systolic velocity remained same ~46.9 cm/sec – s/o Enhanced myometrial vascularity

Third Followup :

Patient came after one month, on 09.03.2026, on Day 7 of menstrual cycle.



There is complete resolution of Enhanced myometrial vascularity after one month. Minimal fluid noted in the Endometrial cavity with no RPOC

DISCUSSION:

What is EMV (Enhanced Myometrial Vascularity)?

The term EMV refers to a focal or diffuse area of high-velocity low-resistance vascularity in the myometrium and represents involuting or persistent myometrial vessels involved in the uteroplacental circulation after a recent pregnancy. The presence of RPOC can delay the regression of this circulation. EMV has often been incorrectly confused for AVM or acquired AVM in the literature. EMV is distinct in cause from an AVM, and regression typically occurs either spontaneously or, when associated with RPOC, after the expulsion or removal of the retained tissue.

The terms EMV and AVM should not be used interchangeably due to the important management implications for either diagnosis

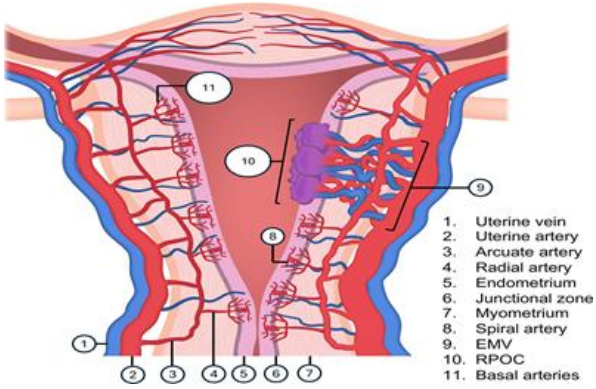


Figure 5. Schematic representation of an EMV associated with RPOC. Note the dilatation of the myometrial vascularity in the placental bed and the persistent uteroplacental circulation in the presence of RPOC.

Retained Products of Conception:

RPOC is a common cause of both primary (within 24 hours) and secondary (between 24 hours and 12 weeks) post-pregnancy bleeding. It can occur after any gestational age delivery, termination, or pregnancy loss and is characterized by the persistence of intrauterine chorionic villi after uterine evacuation. Human chorionic gonadotropin levels may be mildly elevated or not detectable with mild elevations more commonly seen after early pregnancy loss compared with postpartum RPOC

Diagnosis of RPOC :

US images showing thickening of the endometrial echo complex of greater than or equal to 10 mm or distention of the endometrial cavity by a mass are suggestive of RPOC in the appropriate clinical setting Vascularity at color Doppler US is variable.

placental bed and when not associated with detectable RPOC Given its extreme rarity, AVM should not be included in the differential diagnosis of EMV, as its mere mention often inadvertently shifts management toward uterine artery embolization (UAE) in patients who may otherwise be managed conservatively.

Types of RPOC

Kamaya et al described four categories of vascularity: avascular (type 0), minimal (type 1, less than adjacent myometrium); moderate (type 2, similar to myometrial vascularity), and marked (type 3, marked arterial vascularity much greater than normal myometrium in the same imaging section).

When RPOC is visible and associated with myometrial hypervascularity, it can be referred to as EMV with detectable RPOC or RPOC with underlying EMV. In cases where myometrial hypervascularity is the predominant finding, with no obvious RPOC at TVUS, it should be referred to as EMV without detectable RPOC Because trophoblastic invasion and associated vascular remodeling are normal adaptations during pregnancy, EMV is considered a normal intermediate stage of involution of the myometrial hypervascularity in the postpregnancy be managed conservatively

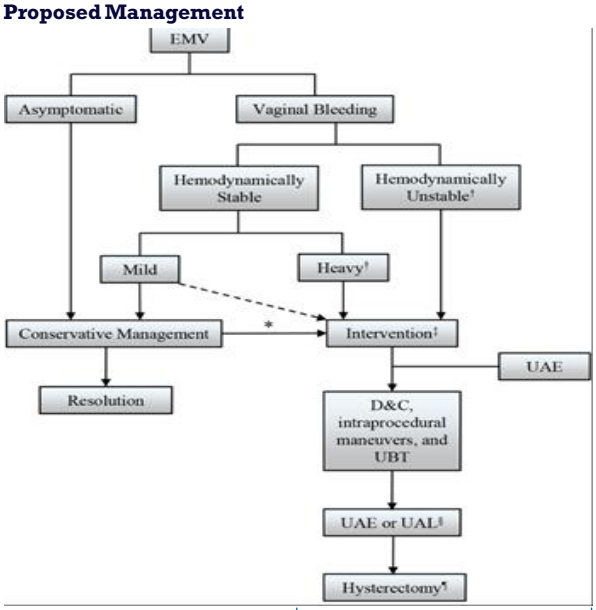
Uterine AVM

Uterine AVM is an extremely rare type of peripheral AVM that, for many years, has been overdiagnosed due to the use of this terminology for EMV . As a result, much of the literature discussing the imaging findings of uterine AVM does not present cases of this congenital abnormality but rather includes postpregnancy cases that most likely represent EMVs

Uterine AVMs have been described as malformed vasculature exhibiting a high degree of architectural complexity that involves extrauterine vessels and adjacent structures. Treatment is considered challenging as the complete occlusion of the nidus requires multiple embolization sessions and liquid embolic agents

If an AVM is not identified before conception, distinguishing its imaging findings from those of EVM may be difficult (41). However, EMV is the most likely diagnosis in the postpregnancy setting.

Proposed Management



CONCLUSION:

Enhanced myometrial vascularity (EMV) is a common postpregnancy (ie, postpartum, postpregnancy termination, and postpregnancy loss) sonographic finding that represents involuting myometrial hypervascularity of the placental bed in the early puerperium and may persist if retained products of conception (RPOC) are present. On color Doppler US images, EMV is characterized by tortuous and dilated myometrial vessels with high-velocity and turbulent flow. These features can be easily mistaken for an arteriovenous malformation (AVM). AVMs are vascular congenital malformations, whereas EMV is a dynamic finding in the postpregnancy state related to persistent or involuting uteroplacental circulation. Knowledge of EMV and AVM are important for radiologists, gyenecologists and other clinicians as the treatment differs widely.

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