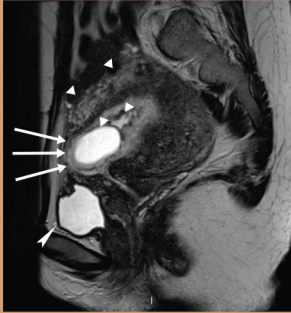


### Background and objective

Transvaginal ultrasound (TVS) is usually the first-line investigation for clinically suspected ectopic pregnancy[1]. In cases of uncommon implantation location or prior surgical intervention, MRI is also a useful adjunct. We hereby illustrate the MR imaging features with several case examples.

### Case One

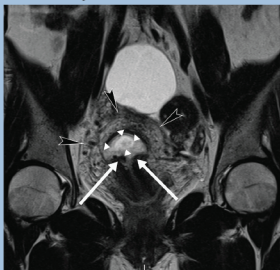
43 years old lady with history of repeated LSCS. TVS shows an intrauterine sac near the anterior lower uterine pole and thinning of the overlying myometrium (6mm). Repeated scan at 8 weeks demonstrates further thinning of the overlying myometrial mantle and absent fetal growth. Diagnostic doubt between normal intrauterine pregnancy, impending miscarriage or ectopic pregnancy arises.



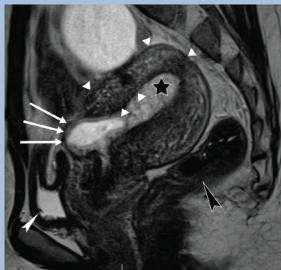
Sagittal T2-weighted turbo-spin echo (TSE) MR image. Gestational sac at the lower segment of uterus, presumed site of widened Caesarean section (arrow) Normal thickness of the myometrium for comparison (arrowheads); urinary bladder (dart).

### Case Two

33 years old lady with history of repeated LSCS and ectopic pregnancy. TVS shows a sac-like structure just above the internal os. Fetal pole is detected with cardiac pulsation. The overlying myometrium is significantly thinned. Diagnostic doubt between cervical pregnancy and scar pregnancy arises. On MRI, a gestational sac with fetal pole is identified at the lower uterus at level above the cervical os, bulging anteriorly into the widened LSCS scar.



Coronal T2-weighted TSE MR image confirms the location of the gestational sac (arrowheads) just above the internal cervical os (arrows). Internal amorphous signals likely corresponds to deformed fetal pole.



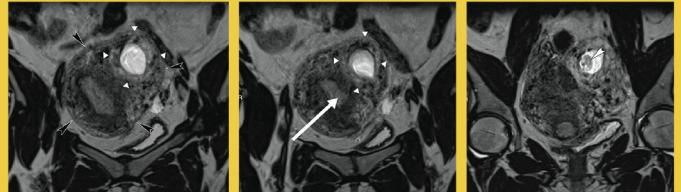
Sagittal view. Gestational sac bulging into widened Caesarean section scar (white arrow). Myometrium of normal thickness above (arrowheads); endometrial cavity (asterisk); urinary bladder (white dart); rectum (black dart).

### Case Three

34 years old lady with history of LSCS and repeated laparoscopic ovarian cystectomy for endometriosis, clinically presented with per-vaginal spotting. TVS shows a gestational sac with fetal pole and cardiac pulsation over the left lateral aspect of the uterus. Sonographic differentiation between interstitial (intramural segment of Fallopian tube) versus angular (lateral angle of uterine cavity) pregnancy was difficult.

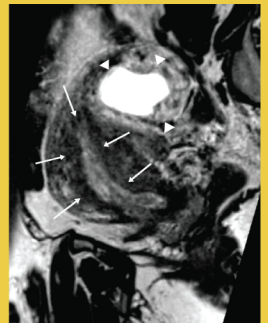
The patient subsequently underwent diagnostic laparoscopy, which was limited by fibrotic bands in the left angular and fallopian tube region. Otherwise the uterus appears unremarkable in contour. In view of persistent clinical suspicion, an MRI was arranged.

A gestational sac is identified at outer myometrium near the left tubo-uterine junction, outside the uterine cavity at the intramural portion of the Fallopian tube. A diagnosis of interstitial pregnancy was thus established. Open left corneal resection was subsequently performed.



Serial coronal T2 weighted TSE MR images. The gestational sac (arrowheads) is outside the uterine cavity (arrow). Fetal pole (white dart) is seen in the gestation sac.

Reformatted oblique planes from T2 SPACE image. Myometrium outlined by arrows. The gestational sac (arrowheads) adopts a superolateral position relative to the uterine angle.



### Discussion

- Diagnostic criteria<sup>2</sup> for scar pregnancy requires an empty uterine cavity and demonstration of a gestational sac at the site of the scar; both features are not readily identified on initial TVS in both illustrated cases. MRI serves as a helpful adjunct in such situations.
- Differentiation between angular and interstitial pregnancies is important, as angular pregnancies are still considered potentially viable<sup>3</sup>. Recent retrospective reviews<sup>4</sup> suggested non-specific sonographic signs. Definite diagnosis still relies on MR images, where a T2-hyperintense endometrial lining should only be seen around the gestational sac in angular pregnancy.

### References:

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3. Rankin M.B., Allison D.B.S. et al. Angular pregnancy: a review of cases reported in the past 80 years. Gynaecol. Case. Rev. 2014; 1:105.