Does endometrial thickness and appearance at transvaginal ultrasound scan assist in triaging women with pregnancy of unknown location (PUL)?

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Study Design
Retrospective cohort study of women with an initial ultrasound diagnosis of PUL in the Early Pregnancy Unit of a large metropolitan teaching hospital in the 5 year period 01/02/2012 to 31/01/2016. The endometrial thickness (ET) was measured in the mid-sagittal plane, and endometrial appearance was classified as menstrual, proliferative, secretory or decidual.

Results
After exclusion of patients lost to follow up 486 cases remained and were included in the analysis. The subsequent diagnoses are shown.

Endometrial thickness
IUP had significantly thicker ET than EP (13.8mm vs 9.6mm, p<0.01). Receiver operator curves showed ET was not useful in identifying EP (AUC 0.6), but was a good predictor of IUP (AUC 0.77). This was further improved if there was no reported PV bleeding (AUC 0.49 for EP vs 0.79 for IUP). A cut-off ET of 11mm had optimal sensitivity and specificity of 70%.

Endometrial appearance
IUP were significantly more likely to have a decidual appearance and less likely to have a menstrual appearance (p=0.02). IUP with a menstrual appearance presented significantly later compared with other IUP (7.6 weeks vs 5.6 weeks, p=0.005) and were more likely to result in miscarriage than IUP with a decidual pattern (OR 6.8, 95% CI 1.38 – 33.43, p=0.001).

Cavity appearance
Disruption of midline echo was not associated with outcome ($\chi^2$1.447, p=0.485). Presence of intra-cavitary fluid was significantly associated with IUP ($\chi^2$11.07, p=0.001).

Conclusion
Endometrial assessment with ultrasound in PUL appears to give prognostic information about IUP outcome but appears not to be predictive of EP. These parameters may be incorporated into multinomial risk prediction models to help identify probable IUP, thereby improving specificity.