OP16.05  
Scoring system to predict the subsequent risk of miscarriage in women with a viable intrauterine pregnancy at the primary transvaginal ultrasound

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Objectives: To develop a scoring system to predict subsequent risk of miscarriage in those women who present with a viable intrauterine pregnancy (IUP) at the first transvaginal ultrasound (TVS).

Methods: Data were collected prospectively from a cohort of 1115 consecutive women presenting to one early pregnancy unit with a singleton IUP, at a gestational age < 84 days, with cardiac activity at the first TVS. Those women whose pregnancy outcome was known at the end of the first trimester were included to develop the scoring system. Previously noted variables were assessed for inclusion into the scoring system (maternal age, embryonic heart rate (EHR), log ratio Gestational sac (GS)/Crown–rump length (CRL), CRL and the presence or absence of clots). Univariate and multivariate analyses demonstrated that all variables except maternal age were significant prognosticators for miscarriage and included. The performance of the new scoring system was evaluated using receiver operating characteristic (ROC) curves.

Results: Eight hundred and fifty-two women with a viable IUP at the first scan whose outcome was known at the end of the first trimester were included to develop scoring system. At the end of the first trimester 787 (92.4%) pregnancies were still viable and 65 were non-viable (7.6%). The score was obtained by using the variables below:

\[
\text{Score} = \text{no clot} \times 30 + \text{EHR} + \log \text{ratio GS/CRL} \times 40 + 2^\text{CRL}.
\]

- Note that for the presence of clots ‘30’ is multiplied by 1 and for the absence of clots, ‘30’ is multiplied by 0.

Risk for miscarriage was divided into three subgroups based upon the score: low, medium and high. Lower scores indicate women at higher risk of miscarriage.

- The scoring system to predict ongoing viability gave an AUC of 0.817 (95% CI = 0.762-0.873),
- Low risk for miscarriage: scores > 275
- Medium risk for miscarriage: scores 225 – 274
- High risk for miscarriage: < 224

Conclusions: We have developed a scoring system to predict the likelihood of miscarriage in a woman who initially presents with a viable IUP.

OP16.06  
The subjective assessment of viability of early intrauterine pregnancies on ultrasound

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Objectives: Can examiners correctly assess the likely viability of intrauterine pregnancies of uncertain viability (IUPV) using subjective impression of the ultrasound findings with and without clinical information?

Methods: Sixteen examiners, including expert gynecologists (n=6), and non-experts (n=10) were asked to review ultrasound images of IUPV’s from 19 patients whilst blind to the pregnancy outcome. They scored their impression of viability (1-definitely viable, 2-possibly viable, 3-uncertain, 4-possibly miscarriage, 5-definitively miscarriage). They were then given clinical information (maternal age, gestational age, bleeding/pain scores) and asked to repeat scoring. We assessed diagnostic certainty and accuracy, with/without clinical information, and compared this to an established prediction model.

Results: When only reviewing ultrasound images, overall 4.9% of responses were correct (15/304), but only 6.2% of responses were scored 1 or 5 (19/304). Such a “definite” answer was marginally more likely, and more accurate, with the addition of clinical information (7.8% and 6.9%).

Most responses were uncertain. Classifying score 1 or 2 as predicting viability, and 4 or 5 miscarriage, experts predicted viability correctly in 81.5% of viable cases, and miscarriage in 43% of miscarriage cases. The non-experts were neither good at predicting viability (48%) or miscarriage (66%). Using a known viability prediction model (Bottomley, 2011), 100% of viable pregnancies were correctly diagnosed, but only 50% of miscarriages. Both experts and model were good at predicting viability when given ultrasound and clinical information, but not miscarriage.

Conclusions: Predicting which IPUVs will miscarry based on the subjective impression of the first ultrasound scan and clinical information is not possible with any accuracy or degree of confidence regardless of experience. It is not possible to counsel patients about IUPV based on subjective interpretation of ultrasound appearances even with clinical information.