OP16.05 SCORING SYSTEM TO PREDICT THE RISK OF MISCARRIAGE IN WOMEN WITH A VIABLE PREGNANCY AT THE PRIMARY TRANSVAGINAL SCAN.

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Objective
To develop a scoring system to predict the risk of miscarriage in those women who have already had a viable intra-uterine pregnancy (IUP) on first transvaginal ultrasound (TVS).

Methods:
Singleton IUPs noted to have a viable pregnancy at the first TVS and whose pregnancy outcome was known at the end of the first trimester were used to formulate the scoring system. We assessed the merit of variables previously used to develop a published mathematical model: maternal age, embryonic heart rate (EHR), log ratio Gestational sac (GS)/Crown- rump (CRL), CRL and the presence or absence of clots. No methods of imputation were used. Univariate and multivariate analysis were performed on these variables. Maternal age was not statistically significant and therefore disregarded in the building of the scoring system. The scoring system was therefore based on EHR, log ratio (GS/CRL), CRL and the presence of clots. A logistic model was used to predict the risk of miscarriage from the conversion of Beta co-efficients to predict the probability of miscarriage by 12 weeks gestation: P=1/1+e-x. A regression equation was then formulated using the Beta values for each of the risk factors, multiplied by the value of the risk factor to obtain a score. Lower scores indicate a higher risk of miscarriage.

Results
852 pregnancies were noted to have a viable pregnancy at the first TVS and these were included in the development of the scoring system. At the end of the first trimester, 787 (92.4%) pregnancies were still viable and 65 were non-viable (7.6%). The insignificance of maternal age was reflected in the receiver operating curve (ROC) Beta-estimate analysis of the training and test results in the initial publication. The current model was ROC was 0.818 v 0.817, and with a slightly smaller 95% confidence interval.

Conversion from the Beta coefficients from the remaining variables showed that:

\[ x = \text{Intercept} + \beta_1 \times \text{fetal HR} + \beta_2 \times \text{log ratio (GSCRL)} + \beta_3 \times \text{CRL} + \beta_4 \times \text{presence of clots} \]

Each Beta value for each risk factor is multiplied by the value of the risk factor. With regards to vaginal bleeding with clots, it is multiplied by 1 if there are NO clots, and 0 if clots are present.

The risk score was formulated to be:

\[ \text{score} = \text{noclot} \times 30 + \text{EHR} + \text{lrratio} \times \text{GSCRL} \times 40 + 2 \times \text{crl} \]

The groups were categorised into three risk groups: high risk of miscarriage (bottom 25%), medium (middle 50%) and low risk of miscarriage (top 25%). Low risk scores are 275 or higher, medium risk 225-274 and a high-risk score of 224 or lower.

Conclusion
We have developed a user friendly scoring system in our early pregnancy population to predict the likelihood of miscarriage in a woman who initially presents with a viable IUP.