Ultrasound techniques in predicting a successful vaginal delivery in patients undergoing induction of labour

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Objective
Induction of labour (IOL) has become an indispensable part of modern obstetrics. Clinicians want to know whether there is an indication to start a process by which labour is artificially initiated, with good prognosis of successful vaginal delivery. Or whether there are maternal/fetal factors in combination with a poor prediction score that would make an elective caesarean delivery a preferred choice. Increasing number of obstetric and medical indications for IOL should lead to development of methods useful in qualifying patients to IOL and choosing an optimal technique of the procedure. In view of possible risks of maternal and neonatal complications, various methods to predict IOL outcome have been attempted.

Methods
In prediction of successful IOL, various authors have examined: cervical maturity assessment (Bishop score), ultrasound cervical length measurement and parameters previously described in intrapartum ultrasound (ITU) such as head–perineum distance (HPD), angle of progression (AOP) and head position. Numerous studies were carried out to evaluate ultrasound parameters in comparison to traditional clinical assessment of cervical dilatation and fetal head station in predicting successful vaginal delivery. In general, most studies have shown conflicting results which extorts creation of an IOL model: repeatable, accessible to all healthcare providers and able to predict the success of labour induction with a view to making recommendations for clinical practice.

Results
Studies that contain antenatal history and digital cervical examination were included in a possible predictive model. The studies illustrated the disadvantage of classical fetal head station assessment as being inaccurate and subjective. Accessible models varied and demonstrated major limitations with regard to methodology, scope and execution. ITU parameters are moderately correlated with head station and there is high correlation between AOP and HPD during uterine contraction and relaxation. Nevertheless, a combination of AOP and HPD during uterine contraction might be a better assessment of the fetal head descent.

Conclusion
Until now, no published model can be recommended for use to determine the success of vaginal birth after induction of labour.