Fetal Fibronectin and Cervical Length: Predicting Preterm Birth in Women with Congenital Uterine Anomalies

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Preterm Birth

Leading cause of neonatal morbidity and mortality

1 in 10
Background risk

4 in 10
Unicornuate uterus
Impact
associated with poor obstetric outcomes

associated abnormalities
urological / axial skeletal systems

prevalence
10% recurrent pregnancy loss
Mullarian Duct Anomalies

- Unicornuate uterus
- Uterus didelphys
- Bicornuate uterus
- Septate uterus
- Arcuate uterus

FUSION

RESORPTION

Mullarian Duct Anomalies
Impact

associated with poor obstetric outcomes

preterm birth
increased rates of miscarriage and PTB

poor obstetric outcomes
malposition, IUGR, placental abruption

associated abnormalities
urological/axial skeletal systems

prevalence
10% recurrent pregnancy loss
Why do we predict?

- To prevent sPTB
- To improve outcomes

“I always think of you on Amelia’s birthday (1st February) and am always grateful. Here is this year’s photo. At her feet the teddy that was the same size as her at birth”
Prematurity Clinic
Surveillance of asymptomatic women at high risk of preterm birth

Transvaginal Ultrasound
Cervical length measurement 2 to 4 weekly

Fetal fibronectin
Quantitative fFN from 18 weeks gestation

Surveillance
Access
Counselling
Advice
Mechanisms
Underlying cause of preterm birth

- Cervical weakness (A)
- Uterine Stretch (B)
- Vascular Disorders (C)
- Inflammation & Infection (D)
Aim

• To evaluate the accuracy of quantitative fetal fibronectin and cervical length to predict spontaneous Preterm Birth in women with congenital uterine anomaly
Transvaginal Ultrasonography of the Cervix to Predict Preterm Birth in Women With Uterine Anomalies

James Airoldi, MD, Vincenzo Berghella, MD, Harish Schdev, MD, and Jack Ludmir, MD

Transvaginal ultrasonography to predict preterm birth in women with bicornuate or didelphys uterus

Joan Crane, Heather Scott, Andrew Stewart, Sujata Chandra, Wendy Whittle & Donna Hutchens
Methods

Planned analysis of prospective collected data from asymptomatic high risk women attending a high-risk PTB surveillance clinic between 2002 and 2016
Methods

Women with congenital uterine anomaly were identified
Methods

Predictive test results (qfFN and CL) were collected and analysed from the 1st visit after 20 weeks’ gestation (until 24+6)
Methods

Predictive statistics were calculated and compared for delivery before 34 and 37 weeks gestation.

ROC curves were generated and Area Under Curve (AUC) calculated and compared for each test.
Results

- 73 women with uterine anomaly included in the analysis
- 24% (18/73) delivered before 37 weeks gestation
  - 80% of these had no prior history /RF
- 10% (7/73) delivered before 34 weeks gestation

<table>
<thead>
<tr>
<th>Measure</th>
<th>CL (&lt;25 mm) 95% CI</th>
<th>fFN (&gt;50 ng/mL) (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>67% [22 to 96]</td>
<td>23% [5 to 54]</td>
</tr>
<tr>
<td>Specificity</td>
<td>98% [90 to 100]</td>
<td>80% [80 to 98]</td>
</tr>
<tr>
<td>Positive predictive value</td>
<td>80% [28 to 99]</td>
<td>43% [10 to 82]</td>
</tr>
<tr>
<td>Negative predictive value</td>
<td>96% [87 to 99]</td>
<td>92% [82 to 98]</td>
</tr>
<tr>
<td>Positive likelihood ratio</td>
<td>36 [5 to 272]</td>
<td>3.6 [0.88 to 14.69]</td>
</tr>
<tr>
<td>Negative likelihood ratio</td>
<td>0.34 [0.11 to 1.05]</td>
<td>0.73 [0.41 to 1.3]</td>
</tr>
</tbody>
</table>
Cervical length is a significantly better predictor of preterm birth in this group.
Discussion

• Is the predictive accuracy of these markers related to mechanism of preterm birth?

• When identified as high risk are standard interventions, such as ultrasound indicated cerclage, equally as valid in this cohort?
Conclusion

Women with uterine anomaly are at significant risk for preterm birth.

In this cohort of women, quantitative fetal fibronectin was no better than chance.

Cervical length was predictive of PTB.

And can be relied upon to plan management in women with uterine anomaly.
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