Cervical length as a predictor of latency to labour in twin pregnancies complicated by preterm prelabour rupture of membranes (PPROM): a retrospective study

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Objectives: Preterm prelabour rupture of membranes (PPROM) is a significant risk factor for preterm birth, which carries tremendous medical, financial and psychological burden. Predicting onset of labour after PPROM can result in timely interventions, including appropriate transfer to tertiary care centres; this in turn may improve neonatal care and decreased maternal and provider uncertainty. Ultrasound-measured cervical length can predict preterm delivery in singleton pregnancies complicated by PPROM, but no such data exists in twins. Therefore, we sought to determine whether cervical length could predict latency interval in twin pregnancies complicated by PPROM.

Methods: Using the BORN Database, we identified 43 twin pregnancies between 2012-2016 complicated by PPROM at McMaster University, Hamilton, Canada. Cervical length was determined by ultrasound measurement. We then compared our primary outcome, latency to labour in those pregnancies with cervical lengths less than 25mm to those greater than 25mm and results were analysed by Mann-Whitney statistical analysis. Additional secondary measures compared the groups on length of stay, PPROM parameters and neonatal outcomes.

Results: We determined that the average latency interval in those twin pregnancies with cervical lengths less than 25mm is statistically significantly shorter than in those with cervical lengths greater than 25mm (49.2 vs 196.0 hours, p=0.035). The average length of stay was also significantly greater in those with longer cervical lengths (5.32 vs 11.05 days, p=0.03). Potential confounders such as parity, chorioicity, administration of steroid, erythromycin or magnesium sulfate did not have any significant effect by ANCOVA regression analysis.

Conclusions: In those twin pregnancies complicated by PPROM, cervical lengths less than 25mm are associated with shorter latency intervals, which may prompt critical, timely intervention in this group.

Significance of black line appearance of cervix on ultrasound in predicting outcomes for preterm birth

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Objectives: Current strategies to diagnose preterm birth include measurement of cervical length (CL) by ultrasound and various ultrasound markers such as beaking or funnelling or the presence of sludge. We looked at a new ultrasound marker ‘Black line’ appearance of cervix on transvaginal ultrasound (TVS) as an additional marker to predict preterm birth. The close cervical canal is usually described as a highly echogenic “white line” however it can also appear as two white lines separated by an echolucent area of a few mm width. We have described this appearance as a “black line” and hypothesise that it represents a degree of cervical laxity and thus an increased risk of preterm birth.

Methods: Single centre case control study. Fifty women attending a specialist preterm labour clinic at The Royal Women’s Hospital (RWH), Parkville, VIC, Australia from 17/12/2007 to 1/08/2016 with a documented black line appearance of cervix on ultrasound were matched with fifty women with the same cervical length for gestation but without the black line appearance.

Results: There were no significant demographic differences between cases and controls. Cases delivered at a significantly earlier mean gestation than controls (35 versus 37 weeks, p=0.01, paired t test). Cases were significantly more likely to deliver <37 weeks (p=0.0001) and <34 weeks (p=0.0002, chi-squared) however there was no increase in deliveries <28 weeks gestation. There was no increase in presence of abnormal flora or beaking or funneling in association with the “black line” appearance.

Conclusions: Presence of black line appearance of cervix on TVS appears to be an additional predictor of preterm birth. Reporting on its presence may assist practitioners’ clinical decision making in women at high-risk of preterm birth.

Association of abnormal vaginal colonisation and preterm delivery: effect of cervical length


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Objectives: The exact relationship between abnormal vaginal colonisation and adverse pregnancy outcome in preterm labour remains unclear. Therefore, we hypothesised that women with shorter cervical length (CL) are predisposed to ascending infection in women with preterm labour (PTL) or short CL. We aimed to examine abnormal vaginal colonisation rate according to cervical shortening and to compare the association between abnormal vaginal colonisation and spontaneous preterm delivery (SPTD) before 34 weeks according to CL in women with PTL or short CL.

Methods: This study included 580 patients who admitted to our high-risk unit due to PTL or short CL and underwent vaginal culture and measurement of CL at admission between 2003 and 2015. Maternal age, parity, parity, body mass index and CL at admission, vaginal culture result, birth weight of neonates, and SPTD before 34 weeks were retrospectively reviewed. The study population was divided three groups according to the degree of cervical shortening; CL ≥ 1.5cm (n=145), 0.5cm to 1.5cm (n=145), ≥ 1.5cm (n=322).

Results: There was no difference in abnormal vaginal colonisation rate according to the CL shortening (17.7% vs 17.9%, 13.7% in group with CL < 0.5cm, 0.5cm to 1.5cm, ≥ 1.5cm, respectively, p=0.22). Overall, the rate of SPTD was not different according to the presence or absence of abnormal vaginal colonisation in three groups (93.3% vs 68.3%, p=0.06 in group with CL < 0.5cm; 40.9% vs 55.7% p=0.21 in group with 0.5cm to 1.5cm, 42.4% vs 33.2% p=0.30 in group with CL ≥ 1.5cm). However, in group with CL < 0.5cm, the presence of gram negative bacteria (but not gram positive) was significantly associated with higher SPTD (100% vs 68.6%, p=0.03). In other two groups, there was no difference in the rate of SPTD according to either the presence of gram positive or negative bacteria.

Conclusions: Our data showed that maternal vaginal colonisation by gram-negative bacteria in advanced cervical shortening in PTL or short CL is associated with SPTD before 34 weeks.