

PREDICTION OF PRETERM LABOR IN MULTIPLES

Birgit Arabin^{1,2}, Carolien Roos^{1,2}, Jim van Eyck^{1,2}

¹Department of Perinatology Isala Hospital Zwolle, The Netherlands

²Clara Angela Foundation
clara-angela@wxs.nl

INTRODUCTION

Lifestyle changes of women in developed countries during the second half of the 20th century up till now have caused that the age at which childbirth is desired has increased. Involuntary infertility and naturally reduced fecundity of advanced age were met by new treatments. Due to higher maternal age and even more to the use of poorly monitored ovulation induction and artificial reproductive techniques (ART), the incidence of twin and multiple births increased in the United States from 1971 to 1997 in epidemic proportions with immediate consequences of infants born < 33 weeks (1.7% for singletons, 13.9 for twins and 41.2% for triplets). Likewise, twin births have increased in most developed countries since the late seventies. Some studies have indicated that twin infants originating after in-vitro fertilization (IVF) have an even greater tendency to prematurity than naturally conceived twins.

OBJECTIVE

Many strategies have been suggested but up till present, failed to prevent spontaneous preterm birth (SPB). We report on our own data combined with recent literature regarding cervical assessment to improve early diagnosis of SPB at a stage when it might have an impact on preventive or therapeutic strategies. Thereby we have evaluated the value of routine longitudinal transvaginal sonography (TVS) in a recumbent and standing position in detecting SPB.

MATERIAL & METHODS

For both positions, the inter- and intra-observer agreement of cervical length (CL) measurements was calculated. In 363 pregnancies at risk for SPB, we prospectively determined CL and funnel width (FW) from 15 weeks onwards. Differences between a standing and recumbent position of both CL and FW and between different gestational age groups were calculated. To determine the most significant parameters to predict SPB < 36 weeks, multivariate logistic regression analysis and contingency tables were used whereby data were stratified according to singleton or twin pregnancy, differences in maternal position, gestational age at examination and different cut-off values.

RESULTS

The intra-class correlation coefficient (CC) was not impressively influenced by experience and position. The inter-CC with the 95% CI was 0.952 (0.811-0.984) in the recumbent and 0.942 (0.837-0.978) in the upright position.

After exclusion of pregnancies with iatrogenic preterm birth 15/138 (11%) of singletons and 29/153 (19%) of twin pairs were born < 36 weeks. Between 20 and 25 weeks, only results in the upright position reached statistical significance. After 25 weeks, measurements in the recumbent position also became significant.

Similarly, the predictive value mainly expressed by the diagnostic odds ratio(DOR) was better in the upright than in the recumbent position between 20 and 25 weeks. In general, the longitudinal difference in CL or FW between 15 and 30 weeks was more predictive than between 15 and 25 or between 20 and 30 weeks based on the DOR.

As reported by the first study of the National Institute of Child Health and Human Development -Maternal-Fetal Medicine Network Preterm Prediction Study dealing with twin pregnancies, most widely known risk factors for SPB were not significantly associated with SPB of twins. Of all other risk factors evaluated at 28 weeks, fetal fibronectin was the only statistically significant predictor of SPB. In our data set, we have found that a combination of cervical assessment of either CL or funneling in both positions and fibronectin were significant predictors of SPB in twin pregnancies between 20 and 28 weeks.

The most recent summary of our data is published as a book chapter¹

CONCLUSIONS

Transvaginal sonography of the cervix in the upright position seems to add reliable information about the risk of SPB in both singleton and twin pregnancies at early gestation. In the future, cervical assessment should be incorporated in the routine care of twin pregnancies by educating patients to recognize first symptoms of SPB or to reduce physical stress and by educating physicians to perform TVS at regular intervals or even initiate interventions based on TVS results. Specially trained staff and twin clinics are desirable.

Cervical assessment allows researchers to target randomization in risk patients when evaluating the effectiveness of interventions to prevent SPB. Collaborative studies are needed with a definition of dynamic thresholds of cervical assessment and defined outcome parameters such as gestational age at delivery, morbidity, mortality, and long-term follow-up separate for mono- and dichorionic twins.

References

1. Arabin B, Nizard J, Van Eyck J. Pregnancy Management: Assessment of Cervical Status. In : Multiple Pregnancy (Second Edition) (Ed. I. Blickstein, L.Keith) Taylor and Francis, Abingdon 2005, pp. 456-470