The prediction of preterm delivery in twin pregnancy: an individual patient level meta-analysis

Kindinger LM, Poon L, Fox N, Nicolaides K, Ashrafian H, Darzi A, Bennett P, Teoh TG
Imperial College Healthcare NHS Trust, London, United Kingdom

Objective

An individual patient level metaanylsis to assess the effect of gestational age on cervical length measurements at transvaginal ultrasound in the prediction of preterm delivery in twin pregnancy.

Methods

MEDLINE and Embase searches identified relevant studies. Inclusion-exclusion criteria were applied. Individual patient level data were obtained from study authors. A multinomial logistic regression analysis was performed. Predicted probabilities for delivery within categories of extremes of prematurity were calculated as a function of the gestational age at screening and the cervical length measurements.

Results

A total of 4257 transvaginal scans (TVUS) were performed on 2718 twin pregnancies in 8 studies. Heterogeneity between studies was assessed. Both change in cervical length (CL) and gestational age at TVUS screening have a significant and non-linear effect on predicted gestational age at delivery in twin pregnancies. CL screening < 20weeks is most predictive for delivery <28weeks when CL is <25mm (p<0. 001). Predicting prematurity between 28-32 weeks, screening between 22-24 weeks has a significantly better predictive value, compared to screening <20 weeks (p=0. 037), 20-22 weeks (p <0. 001), and >24 weeks (p <0. 001).

Conclusion

This individual patient level metaanalysis demonstrates that a finding of short cervix has variable significance depending on the gestational age at screening. A short cervix <20 weeks is most predictive for very preterm delivery before 28 weeks. A short cervix at later screening between 22-24 weeks has higher probability of delivering between 28-32 weeks, than <28weeks. Predicting delivery ˃32 weeks only improves when screening is after 24 weeks.