Process of fetal head descent as depicted by ultrasonography – How does it compare to the conventional first stage of labor?

The Affiliated Drum and Tower Hospital of Medical School of Nanjing University, Nanjing, China

Objective
To evaluate serial intrapartum sonographic assessment of the angle of progression (AoP) in the first stage of labour as the basis to define the duration of the normal first stage of labor.

Methods
A total of 375 nulliparous women with a singleton pregnancy in cephalic presenting at term between August 2017 and March 2018 were enrolled to undergo intrapartum transperineal ultrasound scans for the measurement of AoP by trained operators, commencing at labor onset, then repeated every 0.5 h-1h until the second stage of labour. A repeated-measures analysis with 6th degree polynomial model was used to construct mean, 5th and 95th percentiles of the AoP.

Results
Of the 375 women enrolled, there were 20 excluded for unsatisfactory image quality or inadequate images for analysis, 10 for intrapartum cesarean section for fetal distress or chorioamnionitis, and 9 for forceps delivery for fetal distress. Of the 336 women in the final analysis, only 15 (4.5%) had cesarean delivery for non-progressive labour. Women with vaginal delivery had a significantly larger AoP (114.4±11.0) at initial assessment than those with cesarean delivery (106.4±11.6) (P=0.006). The AoP depicted first-stage labor curve exhibited an initial stable period which took up to 8.1 hours to progress to 119° (average velocity of 3.26°/hour since AoP reaches 108°), and a subsequent active phase of up to 3.9 hours to progress from 120° (average velocity of 8.65°/hour).

Conclusion
Based on our results, an ‘AoP partogram’ of the first stage was produced, which is similar in pattern to the one obtained by vaginal examination.