ISP-1-3 Factors Predicting Successful vaginal delivery at a single institution

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[Objectives] It has been well known that the length of uterine cervix and Bishop score were the good predictors for the success of vaginal delivery. However, little is known about other factors including each elements that make up Bishop score. The purpose of this study was to investigate which factor influence on successful rate of vaginal delivery. [Methods] This prospective observational study was conducted in 141 primigravidae undergoing labor and trying to vaginal delivery. For predicting successful vaginal delivery, we performed cervical evaluation by transvaginal sonography and pelvic examination on arrival at delivery room. [Results] Of the 141 patients, the 120 women delivered vaginally (85.1%). The Bishop score and cervical length were different significantly between two groups (p<0.01, p=0.01), but fetal weight, labor interval and pain score and ROM on admission were not different. The younger maternal age, the lower pre-pregnancy BMI and engagement, the higher success rate of vaginal delivery was. Of the elements of the Bishop score, station, effacement and cervical consistency were associated with success rate but dilatation and cervical position were not. The rate of cesarean section was significantly lower in patient with cervical funneling (9.0% vs. 23.1%, P = 0.02). The logistic regression analysis revealed that the successful vaginal delivery was significantly associated with Bishop score and cervical length and pre-pregnancy BMI. In a multivariate analysis, there were significant associations between the cesarean section rate and age (OR 0.82, 95% CI 0.72-0.92, P = 0.01) and Bishop score (OR 1.69, 95% CI 1.24-2.30, P = 0.001), but not cervical length and pre-pregnancy BMI. [Conclusions] Despite controversy, Bishop score is more valid to predict a successful of vaginal delivery comparing cervical length. And maternal age, funneling and engagement were independently most associated with a lower risk of cesarean section.

ISP-1-4 Sonographic assessment of fetal head position during the first and second stage of labor for the prediction of labor dystocia and perinatal outcomes

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[Objectives] The aim of this study was to perform a preliminary investigation into the predictive values of the position of the fetal occiput measured during the first and second stages of labor by intrapartum ultrasound for persistent occiput posterior (OP) position, labor dystocia and perinatal outcomes. [Methods] This was a prospective, cohort study, in which 162 primiparous women with singleton pregnancies were enrolled. The women underwent intrapartum transabdominal sonography and the positions of the fetal head were recorded during the first and second stage of labor. We analyzed the correlation between the fetal head and labor course and perinatal outcomes. Statistics were performed using SAS 9.2 and results were considered statistically significant for p value<0.05. [Results] 162 pregnancies were evaluated in the first stage of labor, with 138 of these also evaluated in the second stage. 24 pregnancies were not evaluated during second stage because they underwent Cesarean section during the first stage. 56 of 162 fetuses (34.6%) were found to be in an OP position during the first stage of labor. There were 10 cases of OP position during the second stage, and 8 of these (80.0%) were among the 56 fetuses that were found to be in an OP position during the first stage of labor. 21 of 56 cases with OP position during the first stage of labor (37.5%) and 2 of 10 cases with OP position during the second stage of labor (20.0%) underwent Cesarean section owing to arrest disorder. The rates of Cesarean section in 1st state OP position group were significantly higher than those in other group (p<0.001). Neonatal complications occurred more frequently in 2nd state OP position group than other group (50.0% vs. 17.2%, p=0.0118). [Conclusions] The results of this study suggest that the position of the head during the first and second stage of labor could be useful indicators for predicting the persistent OP position and labor dystocia. Moreover, the persistent OP position can lead to poor neonatal outcomes.

ISP-1-5 Why does amniotic fluid volume decrease in the third trimester? A hypothesis based on Laplace's law

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[Objective] In spite of 1200ml or more of amniotic fluid (AF) turn-over in a day in 10 months, AF volume (AFV) decreases only by 3-6ml a day. Thus, I explored why AFV-decline is so slow in this period. [Methods] Fetal body weight (FBW) and AFV was assumed to be 3258g and 360ml respectively. Fetus's figure was simplified; shape of its head was an ellipsoidal sphere having 4.5×5×7 cm of radius, its trunk was an ellipsoidal cylinder having 5×5.3 cm of radius with length of 15cm and its pelvis was a half ellipsoidal sphere having 6×10×10cm of radius. The amniotic membrane enveloped the fetus. AF fulfilled space between the fetus and the membrane. We assumed that amniotic membrane would form a circular curve having a radius of R between fetal head and pelvis. I applied Laplace's law (AFP = UWT/R, AFP; amniotic fluid pressure, UWT; uterine wall tension) to this model. [Results] R was 40.6cm in the model. Assuming AFP was 20mmHg, UWT was calculated to be 812mmHg cm by Laplace's equation. When UWT doubled to be 1624mmHg cm, AFP was up to 40mmHg. However, if AFV would decrease to 285m, R would be 80.9cm and AFP would go back to the initial value of 20.04mmHg by the equation. [Conclusion] UWT increases slowly in 10 months. The model suggested a process that the UWT-increase would induce a rise in AFP, which would vary AF turn-over and result in slow decrease of AFV, thus AFP would go back.