Intrapartum Translabial Ultrasound: A Systematic Analysis of The Fetal Head Station in The First Stage of Labor

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Introduction This was a prospective study based on defining the angle of progression during the first stage of labour in relation to the head station of the fetal head. In the process, the angle of progression was measured via a translabial ultrasonography while the opening of the cervix was less than 5 cm and again at over 5 cm.

Methods Various influencing factors such as the head circumference, weight at birth, administration of oxytocin, epidural anaesthesia, and parity were defined, and the impact on the angle of progression was analysed. Furthermore, three alternatives for the calculation had been prepared in order to predict the potential duration of labour and the mode of delivery, respectively.

Inclusion criteria were singletons, spontaneous vaginal delivery, cephalic presentation, occipito-anterior presentation, primiparae and multiparae as well as patients with epidural anaesthesia. Exclusion criteria were pathological cardiotocography, occipito-posterior presentation, breech presentation, or the wish for a planned caesarean.

Results Overall, 30 pregnant women from a total of 80 patients complied with the study requirements. The proportion of spontaneous vaginal deliveries was 90%, and 10% required assisted births. In the case of the spontaneous vaginal deliveries, the average angle of progression was 100.9° with the cervix dilated less than 5 cm and 125.3° with the cervix dilated more than 5 cm. In the case of the assisted births, the average angle of progression was 93° with the cervix dilated less than 5 cm, and 113.9° at more than 5 cm cervical dilation. Regarding the head circumference, administration of oxytocin and weight at birth factors, there was no impact on the duration of labour or mode of delivery observed within our patient group. Regarding the parity, it was noticed that, on average, the descent of the fetal head was 97.9° in the case of nulliparae and 103° in the case of multiparae when the cervix was dilated less than 5 cm, and in the further process, it was observed that the fetal head entered into the pelvis minor more slowly among the multiparae (119.8°) than among the nulliparae (126.8°). Patients with epidural anaesthesia had an extended duration of labour. Within the group of pregnant women having epidural anaesthesia, the descent of the fetal head was 103.35° when cervical dilation was less than 5 cm and 103.8° in the group with no epidural anaesthesia, and therefore hardly changed. Among the reference group with an opening of the cervix of more than 5 cm, the fetal head descended more slowly with epidural anaesthesia (124.75°) than without PDA (128.56°). By using the calculation formula, a trend towards the duration of labour can be identified only in the first alternative, i.e. AOP 1/opening of the cervix in cm during the 1st measurement, but not regarding the mode of delivery. In the process, an increasing angle seems to be associated with a shorter duration of labour. However, this is statistically not significant.

Regarding the two other respective formulas, no trend and significance in terms of the duration of labour together with the mode of delivery can be identified.

Conclusions The prognostic significance of the ultrasonography during the dilation phase of the delivery indicates trends regarding the duration of labour. A precise prediction for the mode of delivery is possible only to a limited extent because too many influencing factors are present during the delivery.

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