

Comparison three ultrasound based methods to determine the fetal head station to trans-vaginal digital examination.

Nizard J¹, Paltieli Y^{2,3}, Gonen R², Ohel G², Ville Y¹

¹ CHI Poissy-St-Germain, France; ² Bnai Zion Medical Center, Israel; ³ Trig Medical Ltd., Israel

Introduction

Intra-partum assessment of the fetal head station is essential for correct and safe management of labor. Routine transvaginal digital examinations (TVDE) are characterized by significant inconsistency in assessing fetal head station. We compared three different modes of assessing fetal head station during labor using LaborPro (Trig Medical, Neshar, Israel), employing a PC and magnetic position sensors.

Population and methods

Using the position sensors, the maternal pelvis is mapped and the spatial position of the pelvic inlet is determined. An ultrasound abdominal transducer is calibrated with the positioning system. Fetal head station is determined by either marking the fetal BPD plane or the lowermost part of the fetal skull in relation to the pelvic inlet by abdominal (“Abd-Tip”) or infra pubic approach (“IP-Tip”). This study presents the results of 30 BPD, 60 IP-TIP 36 Abd-Tip measurements performed on 23 women in labor. All measurements were taken immediately before or after to TVDE which was used as control.

Comparison between groups was performed by paired t-test.

Results

The mean (\pm differences between TVDE and BPD, IP-Tip and Adb-Tip station determination were 0.6 ± 0.6 cm ($p=0.15$), 0.4 ± 0.4 ($p=0.34$) and 0.9 ± 0.7 cm ($p=0.2$) respectively.

Discussion

All three ultrasound based methods showed good correlation with TVDE. Our data show that when station determination using the BPD plane is not feasible, both Tip measurements are accurate, with a priority to IP-Tip when the station is low. When comparing ultrasound station with a priority to BPD, then IP-Tip and then Abd-Tip to TVDE, results show a mean difference of 0.5 cm ± 0.5 ($p=0.19$).