



Fetal head circumference to predict delivery mode: a pilot study

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Objective

Clinical and/or sonographic estimated fetal weight (EFW) has been shown to be imprecise in predicting macrosomia or delivery mode. We investigated the ability of fetal head circumference (HC) to predict delivery mode, in order to improve prenatal macrosomia evaluation, to reduce unnecessary interventions and complications of macrosomia.

Methods

Nulliparas with term (37-42 wks) singleton fetuses presenting for ultrasound within one week of delivery were included. HC and EFW were correlated with background and obstetric outcome parameters. Multinomial regression analysis gave adjusted odd ratios for vacuum extraction (VE) and unplanned cesarean delivery (UCD), when $FHC \geq 35$ cm or $BW \geq 3900$ gr.

Results

2235 ultrasound reports of nulliparous women were collected. Elective cesareans (222/2202, 10%) were excluded; 1980 were available for analysis. The 90th centiles for HC (35 cm) and EFW (3900 gr) were determined. Less than 5% of fetuses had both $HC \geq 35$ and $EFW \geq 3900$. Fetuses with $HC \geq 35$ cm or $EFW \geq 3900$ gr had increased risk for UCD: 71/199 fetuses with $FHC \geq 35$ cm (35.7%) vs. 463/1980 (23.4%) in the cohort (OR 2.03, 95% CI 1.47-2.82). 80/209 (38.3%) fetuses with $EFW \geq 3900$ gr underwent UCD (OR 2.15, 95% CI 1.57-2.95). AORs of $FHC \geq 35$ and $EFW \geq 3900$ showed increased risk of UCD: aOR 1.48 (95% CI 1.03-2.19) and 1.62 (95% CI 1.11-2.35), respectively, controlling for GA, fetal gender, and epidural use. $EFW \geq 3900$ had a significant protective effect for VE (aOR 0.58, 95% CI 0.35-0.96), while HC had no significant effect. The rate of prolonged second stage of labor was more than double when $HC \geq 35$ cm or $EFW \geq 3900$: from 243/1980 (12.3%) in the cohort to 38/199 (25.3%) and 46/209 (28.8%), respectively.

Conclusion

$HC \geq 35$ cm significantly increased risk of UCD. $HC \geq 35$ did not increase risk of VE and $EFW \geq 3900$ had a protective effect for VE. Both $HC \geq 35$ and $EFW \geq 3900$ increased the risk of prolonged second stage. HC measurement, compared to EFW, in the last days before delivery, may be an important adjunct in labor management.