Intrapartum prediction of birth weight with simplified algorithmic approach derived from maternal characteristics

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Objective
To derive and validate a population-specific multivariate approach for birth weight (BW) prediction based on quantitative intrapartum assessment of maternal characteristics by means of algorithmic method in low-risk women.

Methods
The derivation part (n=200) prospectively explored 10 variables to create the best-fit algorithms (70% correct estimates within ±10% of actual BW) for prediction of BW at term, vertex presentation with engagement. The algorithm was then cross-validated with samples of unrelated cases (n=280) to compare the accuracy with routine abdominal palpation method.

Results
The best-fit algorithms were parity-specific. The derived simplified algorithms were (1) BW (g) =50 [symphysis-fundal height (SFH; cm) + 26] in nulliparous, and (2) BW (g) =50 [SFH (cm) + 30] in multiparous. Validation showed overall 67.5% accuracy within ±10% of actual BW. Algorithmic BW prediction was significantly more accurate than routine abdominal palpation in the following characteristics: BW 2,500-4,000 g, pre-pregnancy weight <50 kg, current weight 60-80 kg, body mass index <18.5 kg/m2, cervical dilatation 3-5 cm, station <0, intact membranes, SFH 30-39 cm, and mid-upper arm circumference 25-34 cm. (p<0.05).

Conclusion
An overall accuracy of term BW prediction by our simplified algorithms exceeded that of routine abdominal palpation.