

Estimated fetal weight vs birthweight discrepancy in big babies: real or artifact?

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Objective

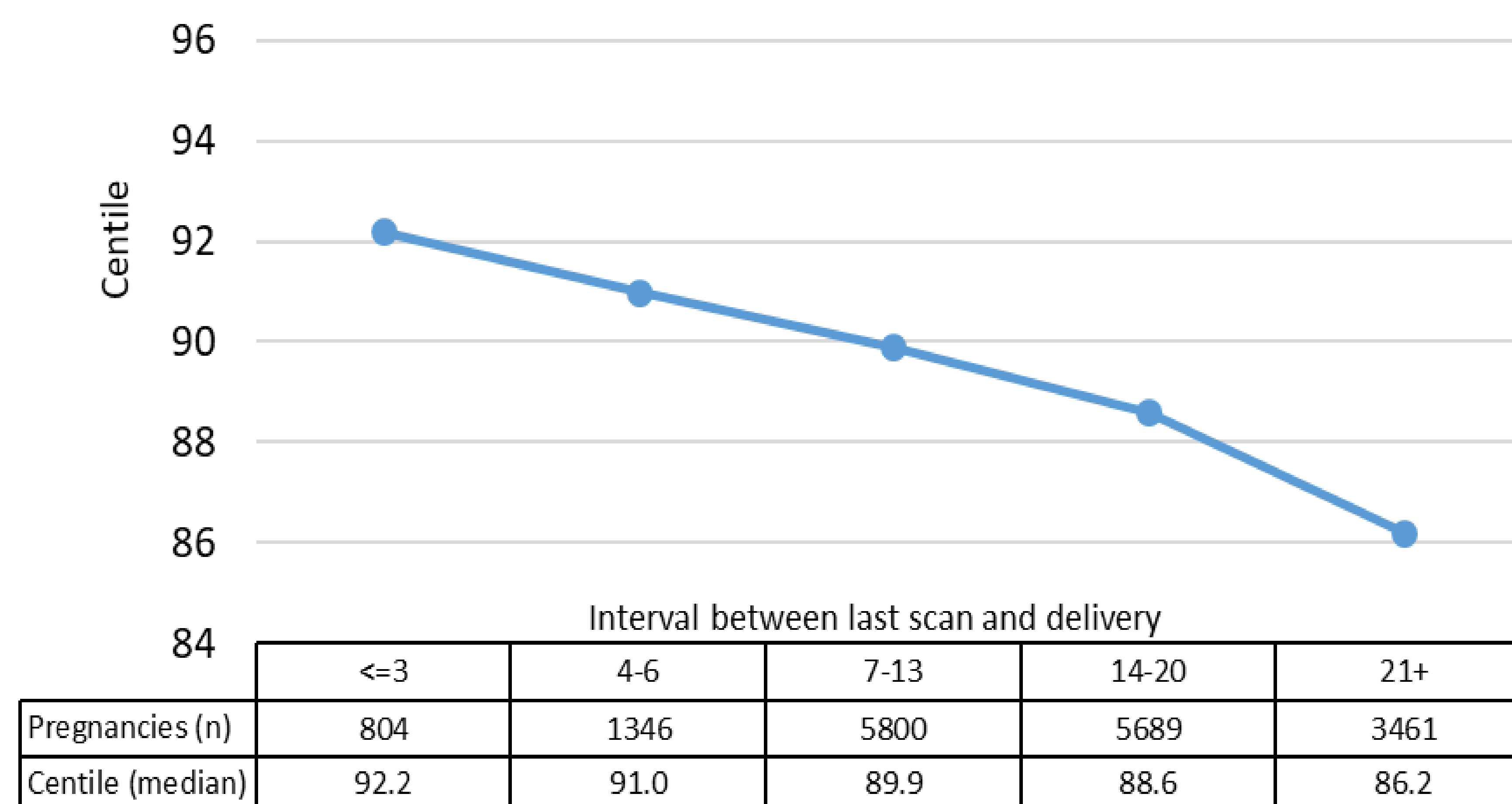
Ultrasound estimated fetal weight (EFW) in large for gestational age (LGA) babies is often reported to be prone to overestimation when compared to the centile at birth, resulting in reports of poor predictive value and high false positive assessments.

We investigated potential reasons.

Methods

- We examined a routinely recorded NHS database where EFW at last scan had indicated LGA (>90th centile) (n=17,101).
- EFW was usually calculated by the Hadlock-3 formula and the centile was customised according to the GROW 2.0 standard.
- Accuracy of EFW vs birthweight was assessed using the gestation adjusted projection method¹. Positive predictive value (PPV) was determined for scan predicting LGA at birth.
- EFW centiles were furthermore compared with their respective birthweight centiles at the following intervals from last scan: ≤ 3 , 4-6, 7-13, 14-20 and >21 days.
- Trend in EFW-birthweight discordance was assessed using the Spearman Rank test.

Figure – Birthweight centiles at intervals after LGA EFW



Results

- The last LGA EFW paired with deliveries within 3 days (median 2) had a systematic error of +5.8% and random error of 9.2%.
- The average gestational age at last scan was 36+4 weeks and at birth 38+6 weeks, giving a scan-to-birth interval of 16 days.
- The average EFW and birthweight centile was 96.4 and 89.0, respectively, with a PPV of 47.3% for LGA at birth.
- The average birthweight centile at delivery within the 5 interval periods from 96.4 centile at last scan decreased from:
 ≤ 3 days: 92.2 (centile drop: -4.2) to 21+days: 86.2 (drop -10.2).
- The centile drop increased significantly with the interval between last scan and birth (trend $p < 0.01$). Over this period, 45% of babies were delivered by caesarean section, having had an average EFW centile of 97.0 and a birthweight centile of 92.5.

Conclusion

- LGA based on EFW measurement at the last scan had a positive systematic error and a poor PPV indicating overestimation.
- The large EFW-birthweight centile discordance observed over longer scan-to-delivery intervals may be inflated because larger babies are delivered earlier.

Reference

- Mongelli M, Gardosi J. Gestation-adjusted projection of estimated fetal weight. Acta Obstet Gynecol Scand. 1996;75(1):28–31. <https://doi.org/10.3109/00016349609033279>