Estimated fetal weight vs birthweight discrepancy in LGA babies suggests slowing of growth before birth

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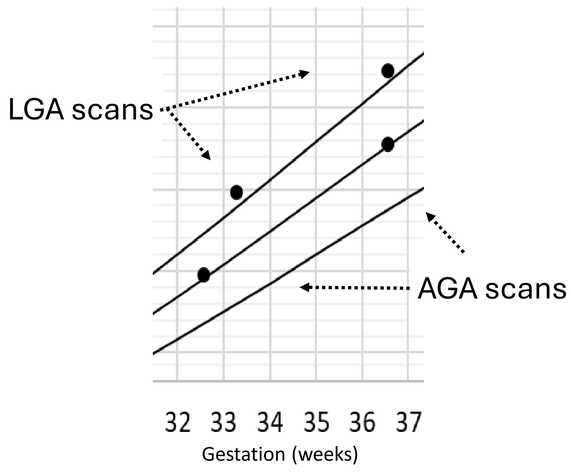
Objective

- Ultrasound estimated fetal weight (EFW) in third trimester often overestimates the weight centile of the baby at birth
- This results in high rates if false positive assessments of large for gestational age (LGA) [1] and potentially unnecessary intervention
- We wanted to investigate whether the discrepancy could also be due to reduced growth velocity before birth

Methods

- We examined a routinely recorded database of UK pregnancies within the GAP programme from 2021 – 2023, which included
  - 12,374 pregnancies with 2 or more third trimester scans for various indications
  - where the last scan was between 35+0 and 38+0. weeks and
  - where subsequent delivery was following spontaneous onset labour.
- We selected two study cohorts (see Fig 1):
  1. where the last two EFWs were LGA above the 90th customised centile (n=725); and
  2. where the last two EFWs were AGA between 40th and 60th customised centile (n=1232).

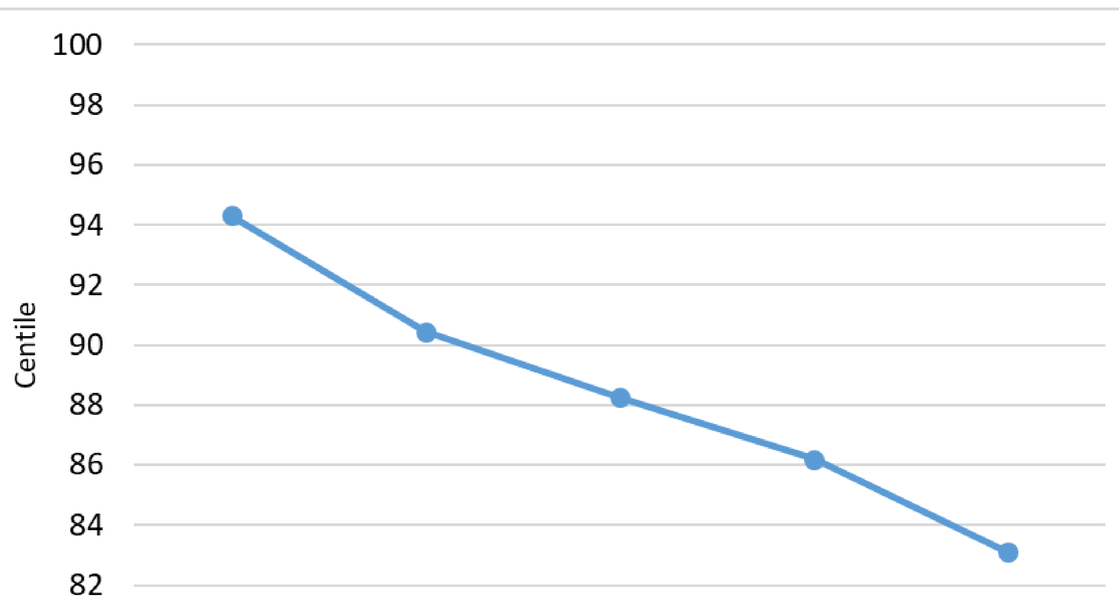
Fig 1 LGA and AGA - EFW cohorts



Results (1): LGA

- The average gestation age of the last two scans (weeks+days) was 33+2 and 36+4, and at birth 38+5 (=15 days from last scan).
- The average EFW centiles at the two scans were 96.6 and 96.7, respectively, and 86.8 at birth.
- 42% of cases that were LGA at scan were not LGA at birth
- Birthweights within 3 days of last scan showed the EFW to have a systematic error of +6.7% and random error of 9.0%.
- Centiles at birth following spontaneous onset of labour reduced gradually with increasing interval from last scan to delivery, down to 83 centiles after 21 days ($p<0.01$, Spearmans rank test).

Figure 2 Birthweight centiles at intervals after LGA EFW

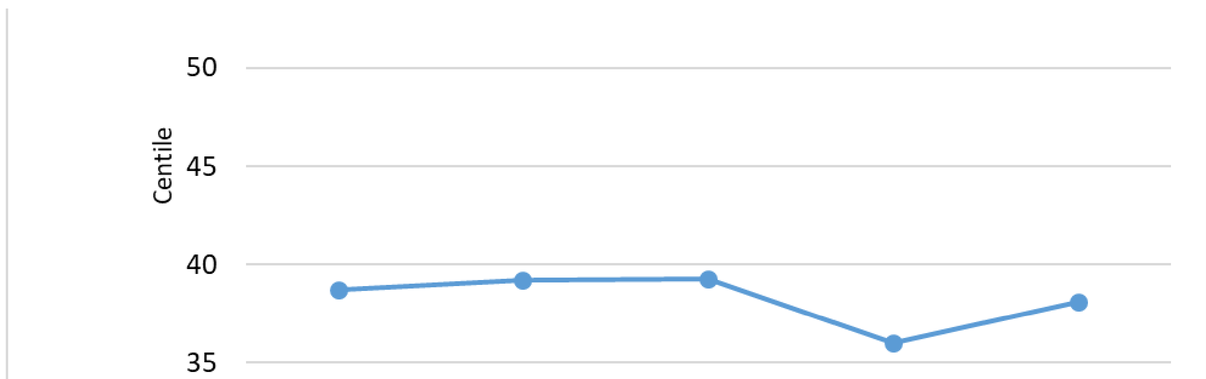


Interval (days)	<=3	4-6	7-13	14-20	21+
Pregnancies (n)	47	64	258	203	153
Centile (median)	94.3	90.5	88.3	86.2	83.1

Results (2): AGA

- The average gestation age of the last two scans (weeks+days) was 32+4 and 36+4, and at birth 39+2 (=15 days from last scan)
- The average EFW centiles at the two scans were 49.7 and 50.0, respectively, and 38.0 at birth.
- Birthweights within 3 days of last scan showed the EFW to have a systematic error of +3.3%, and random error of 8.9.%.
- Centiles at birth following spontaneous onset of labour ranged from 36.0 to 39.3 and showed no downward trend with increasing interval from last scan.

Figure 3 Birthweight centiles at intervals after AGA EFW



Interval (days)	<=3	4-6	7-13	14-20	21+
Pregnancies (n)	43	56	252	367	514
Centile (p50)	38.7	39.2	39.3	36.0	38.1

Summary / Conclusion

Nearly half of fetuses found to be LGA at last scan are not >90th centile at birth. This reduction in weight appears to be due to a slowing of growth of big babies at term which is not observed in AGA fetuses. This could be due to maternal constraint of growth in large babies [2].

References

1. Ewington L; Hugh O, Butler E, Quenby S, Gardosi J. Accuracy of antenatal ultrasound in predicting large for gestational age babies. Abstract FM011, BMFMS 2024
2. Gluckman PD, Hanson MA. Maternal constraint of fetal growth and its consequences. Sem Fetal Neonatal Med 2004;9(5):419–25 https://doi.org/10.1016/j.siny.2004.03.001