

Reaudit of the Correlation between Ultrasound-estimated Fetal Weight and Birth Weight

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Background

- Timing of delivery in at-risk pregnancies, for example, suspected large and small for gestational age (LGA and SGA) require accuracy in ultrasound-based estimated fetal weight (EFW).
- The EFW guides counselling regarding safety and risks of continuing pregnancy or accelerating birth.
- Regular audits of local error margins of EFW are important in providing appropriate care.

Standards and methodology

- There are no national guidelines or standards for assessing the quality and reliability of growth scans.
- Standard used in this study was from Francis et al. (2011) who suggested 70%, 89% and 95% of EFW should be within $\pm 10\%$, 15% and 20% of birth weight respectively.
- Retrospective data collection at Stepping Hill Hospital between Sept 2021 and Feb 2022 identifying suspected LGA and SGA with a scan-to-delivery interval less than seven days.

Results

- 179 women were identified. Only 49 (31 LGA and 18 SGA) fulfilled the criteria above.
- Most of the exclusions were due to a scan-to-delivery interval >7days.
- 87% of suspected LGA and 89% of SGA fetuses were within the suggested 10% error margin of the birth weight (Table 1).
- No significant inter-sonographer differences were noted.
- No SGA babies were missed.
- Caesarean section rate was 50% in LGA and 33% in SGA. 61% of LGA deliveries had no complications (Fig. 1)

Margin of Error	LGA (n=31)	SGA (n=18)	Previous audit (n=100) 2019	Suggested Standard Francis et al. (2011)
$\pm 10\%$	87% (27/31)	89% (16/18)	71%	70%
$\pm 15\%$	97% (30/31)	100% (18/18)	91%	89%
$\pm 20\%$	100% (31/31)	0%	97%	95%
>20%	0%	0%	0%	0%

Table 1. shows the distribution of cases according to error margin percentage of estimate fetal weight compared to birth weight. This is compared to a previous departmental audit and to the suggested standard. The majority (above standard) of scan estimations were within the 10% error margin for fetal weight estimation.

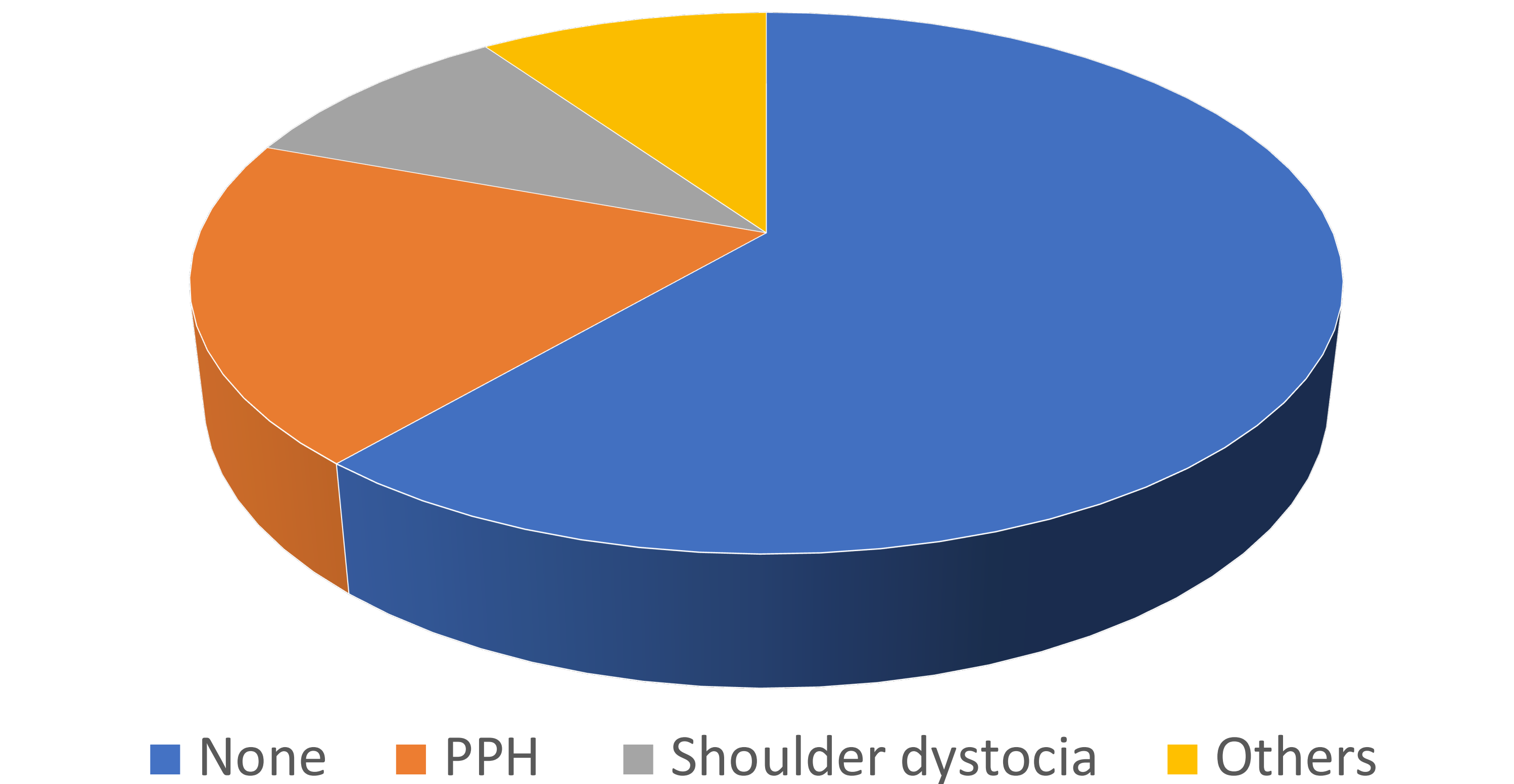


Figure 1. shows the complication distribution associated with LGA deliveries. The majority 61% (19/31) had no complications, 19% had post-partum hemorrhage, and 10% (3/31) sustained shoulder dystocia.

Discussion

- It is reassuring that our departmental scan accuracies are well within suggested standards.
- Clinicians should remember the importance of discussing scan error margins including fetal weight and estimated birth weight when counselling these women.
- This conversation may have an impact in their decision making to either continue with the pregnancy or accelerate birth.

Conclusions

- For both LGA and SGA, the error margins for majority of the fetal weight estimations are within the suggested 10%.
- Ultrasound appears to be slightly more accurate at correlating estimated and birth centiles for SGA fetuses compared to suspected LGA.
- There was no significant sonographer variation.

What’s next?

- Re-audit in three years to ensure most recent data is used for counselling.
- Good practice has been shared with the ultrasound department.
- Look at counselling around delivery planning, are we adequately discussing scan error margins for both LGA and SGA groups?

References

Francis, Tonks, Gardosi (2011). Accuracy of ultrasound estimation of fetal weight at term. *Archives of Disease in Childhood - Fetal and Neonatal Edition*; 96:Fa61