The role of MRI in predicting the large for gestational age (LGA) fetus

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A. Background

- Estimated Fetal Weight (EFW) = Clinically important.
- Large for Gestational Age (LGA, EFW >95th) fetus → birth complications
- LGA diagnosis = ↑chance of intervention.
- Current diagnosis by UltraSound Scan (USS) = large variation & false **+**

Emerging evidence that MRI may be more accurate at predicting fetal weight.

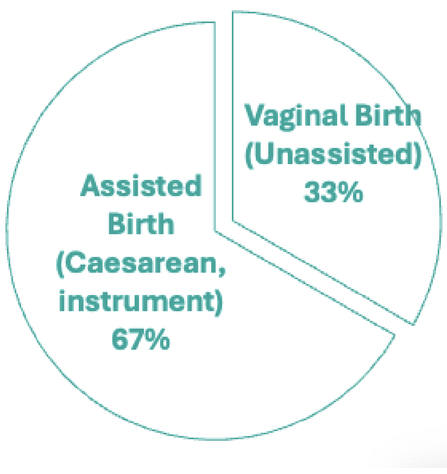
C. Results

EFW	Mean Difference with ACTUAL Birth weight centile	95% Confidence Interval
USS (Gold Standard)	6.93	1.58, 15.45
MRI (Baker et al)	5.57	0.39, 10.74
MRI (Kacem et al.)	0.57	4.6, 5.73
MRI (mean of Baker and Kacem)	3.19	1.93, 8.31

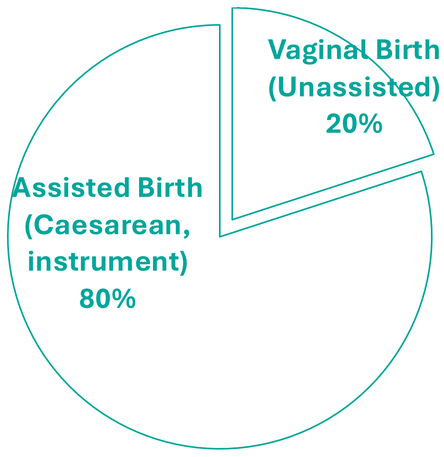
with actual birthweight centile **v** Ultrasound

D. Birth Outcomes

Whole cohort n=16



Birth Weight >95th Centile=5



No Shoulder Dystocia / Major PPH

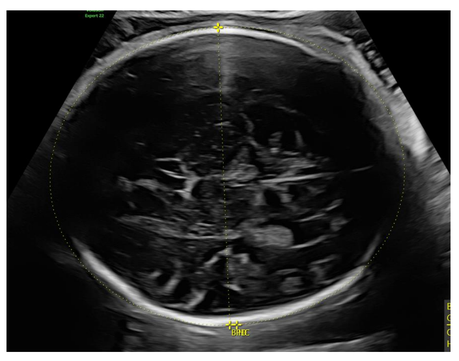
B. Methods

Sixteen ***Mibirth*** study (www.mibirthstudy.com) singleton participants
Inclusion:

1. Same day antenatal USS & MRI (performed on 0.55Tesla)
2. >36 weeks' gestation
3. Birthweight >3500g

Calculating EFW:

- **US**- 2D fetal biometry; head circumference (HC), abdominal circumference (AC) & femur length (FL)
  Hadlock 3[1] formula to calculate EFW

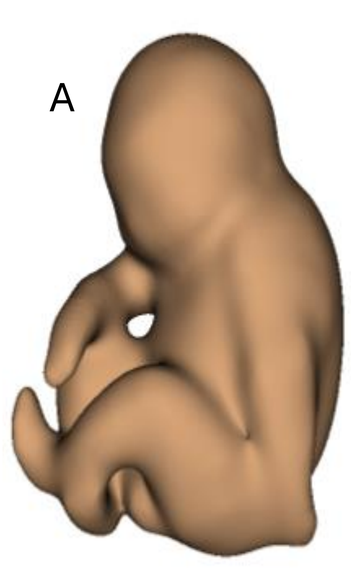


HC

AC

FL

- **MRI**- 3D fetal volume calculated by filling 3D reconstructions of the fetus with the 3D equivalent of pixels known as *voxels*.
  Used to estimate volume occupied by the fetus (A & B).
  Boundaries of the fetus defined by 'segmentation' (C), manual or automated
  The obtained fetal volume is multiplied by density coefficient to give the weight
  Various coefficients described in literature; we used Baker et al & Kacem et al



All US, MRI and birth weights plotted on Intergrowth charts to obtain centiles.

MIBIRTHSTUDY

Summary

Preliminary results suggest a smaller difference between MRI-derived EFW and actual birthweight centile compared to US-derived EFW and birthweight.
Further data (n=500) to assess significance will be collected in the ***mibirth research study.***

References

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