OP27.07
The relationship between abdominal circumference and umbilical artery Doppler z-scores in severe early onset fetal growth restriction

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Introduction: The nature between umbilical artery Doppler pulsatilty index (PI) and growth restriction remains undefined. We sought to establish this relationship in babies with severe early onset fetal growth restriction (FGR), using functional linear discriminatory analysis (FLDA).
Methods: Cases with estimated fetal weight < 500g at 24 weeks gestation and abnormal umbilical artery Doppler delivered between 2003–2007 were included. Serial umbilical artery Doppler and abdominal circumference (AC) measurements were expressed as z-scores and analyzed using FLDA. The longitudinal curve was converted into a correlation coefficient expressing the relationship between umbilical artery Doppler and AC measurements.
Results: 16 women were studied, comprising 70 scans. There was a negative correlation between umbilical artery z-score and AC z-score (Spearman correlation coefficient = −0.367; p = 0.0008).
Conclusions: We report the relationship between umbilical artery Doppler and the degree of fetal growth restriction expressed as z-scores. The smaller the fetal AC is in relation to the mean for gestation, the greater is the deviation of the umbilical artery PI (higher PI). Though this model requires validation, it may enable a clearer understanding of the temporal physiological changes in FGR.

Supporting information can be found in the online version of this abstract.

The relationship between z-score of abdominal circumference and z-score umbilical artery PI

OP27.08
Late intrauterine growth restriction in HIV pregnant women in developed countries

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Objective: To analyse fetal growth in HIV pregnant women in a Western developed country.
Methods: Maternal BMI was recorded at the beginning of pregnancy. Antiretroviral therapy (ART) was started at least from the 28th week (w) of gestation. HIV pregnant women underwent 2D ultrasound and uterine Doppler at 20–22 and at 30–33 w, fetal weight was estimated by Hadlock formula. Fetal birth weight at term was estimated (EFW) using the modified Best formula. Neonatal weight at delivery was compared with Best EFW and with the 50th percentile of neonatal weight curves for Italian population at the same gestational age (Pc).
Results: 72 HIV pregnant women delivered between 36 and 39 w. Mean age was 31 (IQR 27.6–34.4) years. Mean BMI was 23.8 (IQR 19.5–28.1). Mean gestational age at last ultrasound evaluation was 32 (IQR 31–33) w. Mean uterine PI and RI were normal at 20–22 w and at 30–33 w. Mean Hadlock EFW at 32 w was 1777 (IQR 1619–1935) g; at 33 w it was 2112 (IQR 1938–2286)g. At the same gestational age 50th percentile of Pc is 1891 g (IQR 1574–2405) and 2118 (1761–2527) g respectively. Mean gestational age at delivery was 38 (IQR 37,3–38,3) w. Mean EFW with modified Best formula at 38 w was 3072 (IQR 2675–3469) g. At the same age 50th percentile of Pc is 3300 (IQR 2947–3525) g. Mean weight of neonates at 38 w was 3000 (IQR 2608–3392) g. Mean EFW at 32 and 33 w is near the 50th percentile of Pc. At 38 w the difference between neonatal birth weight and 50th percentile of Pc is higher (z score 270 and 138–339 respectively). Modified Best EFW at 38 w was very similar to actual weight (mean 3072 g; IQR 2675–3469).
Conclusions: In HIV pregnant women fetal weigh suggests a late intrauterine growth restriction. Immunological status, type and timing of ART rather than mother BMI could be involved in the late process of fetal weigh restriction. Best EFW formula fits better with neonatal weight as it does not take into account the late increase of adipose tissue in the fetus.

OP27.09
The relationship between placental circumference, placental weight and birth weight at term

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Data regarding placental measurements and birth weight derive from historical references with inadequately described methodology. The objectives of this study were to compare manually measured term placental circumference with that derived digitally, and to establish the relationship between placental circumference and birth weight, and placenta weight and birth weight in term placentas.
Method: Analysis using "Image J" software (http://rsb.info.nih.gov/ij) was performed in 200 37–42 week unselected singleton pregnancy placentas to derive placental circumference, and the relationship between manual and digital circumference measurements calculated. The placentas were weighed using a digital weighing scale (A & D GF3000 digital scale). Placental circumference and placental weight were normalised for week of gestation using z-scores, and plotted against birth weight z-score.
Results: The mean and SD for placental weight and placental circumference is shown in the table. Manual and digital placental circumference measurements were closely correlated (r−0.837, p < 0.0001), though digital measurement were consistently smaller (9%). Z-score of birth weight was closely correlated with both placental weight (r−0.564, p < 0.0001) and placental circumference (r−0.403, p < 0.0001) (see table). In this gestation range, the ratio of birth weight: placental weight was 7.16 and birth weight (gms): placental circumference (cms) was 64.76.
Conclusion: Digital placental measurement gives results similar to manual measurements. There is a strong positive correlation for birth weight both with placental weight and placental circumference at term.