OBJECTIVE: There is increasing interest on the effect of fresh cycle versus frozen embryo transfer on neonatal outcomes. Several studies have demonstrated increased risk of small for gestational age among singletons born from fresh embryo transfers, while there is evidence of increased rates of macrosomia among singletons of frozen embryo transfers. The purpose of this study was to identify if these differences in weights may be detected on early sonographic markers.

STUDY DESIGN: This study is a retrospective cohort study of all singleton births conceived via In Vitro Fertilization (IVF) with transfer dates occurring between January 1, 2010 and December 31, 2014. Only the first singleton birth within the timeframe was considered for analysis. Baseline maternal demographics were obtained along with current pregnancy complications, gestational age at delivery and birthweights. Ultrasound measurements including the crown-rump length (CRL) and anatomy scan percentile measurements were recorded. Propensity score methodology using inverse probability weighting (IPW) was used to balance the two groups (fresh vs. frozen embryo transfer) on maternal characteristics (age at retrieval, race, baseline body mass index, parity, gravidity, pregnancy weight gain, and pregnancy complications) and gestational age before evaluating outcomes. The primary outcomes include differences in the calculated gestational age from the known gestational age at the time of crown-rump length (CRL) measurement, and anatomy scan growth percentile measurements compared in fresh versus frozen embryo transfer cohorts.

RESULTS: Of the 136 women, 87 (64%) underwent fresh and 49 (36%) underwent frozen embryo transfer. When comparing the gestational age based on the CRL measurements to the gestational age by IVF transfer date, we find no evidence of a difference between fresh and frozen embryos ($p = 0.22$, Table 1). Additionally there was no difference in the anatomy scan growth parameters percentiles (head circumference $p=0.36$, biparietal diameter $p=0.29$, abdominal circumference $p=0.41$, and femur length $p=0.58$, Table 1).

CONCLUSION: There is no evidence of early differences in fetal size of fetuses conceived via fresh compared to frozen embryos.

445 RCOG versus ACOG: Whose method is better for diagnosing fetal growth restriction?

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OBJECTIVE: The Royal College of Obstetricians and Gynaecologists (RCOG) endorses the use of "EFW $<10^{th}$ or Abdominal circumference (AC) $<5^{th}$ percentile" to diagnose fetal growth restriction (FGR), whereas the American College of Obstetricians and Gynecologists (ACOG) endorses the use of EFW $<10^{th}$ percentile alone. We set out to determine which method predicts small-for-gestational age (SGA) at birth most effectively.

STUDY DESIGN: We performed a review of deliveries at our institution from January 1, 2013 to March 31, 2017. Singleton, non-anomalous and well-dated fetuses with an ultrasound (US) exam within 30 days of delivery were included. EFWs were calculated and percentiles assigned using the Hadlock intrauterine growth curve. Birth weight percentiles were assigned using the sex-specific curve published by Olsen et al, and SGA was defined as birth weight $<10^{th}$ percentile. We calculated the sensitivity, specificity, positive and negative predictive values for various approaches using AC and EFW to diagnose fetal growth restriction (FGR), including the methods endorsed by ACOG and RCOG. The true positive rates were plotted graphically as a function of the false positive rates for each diagnostic approach to demonstrate receiver-operator characteristics and determine which approach had the best balance of true and false positives.

RESULTS: We identified 1704 consecutive pregnancies that had an US within 30 days of delivery, with a mean US-delivery interval of 14.0 days (SD 8.6). There were 235 SGA neonates (13.8%). Compared to EFW alone, using either EFW $<10^{th}$ or AC $<5^{th}$ percentile to diagnose FGR correctly predicted 8 additional cases and added 13 false positives. The sensitivities and specificities of the various methods were similar, as were the receiver-operator characteristics. Adopting "EFW *or* AC $<10^{th}$ percentile" instead of EFW alone to diagnose FGR identified an additional 17 cases of SGA while leading to 40 additional false positives, a ratio of 2.4 false positives for each true positive, whereas the approach of "EFW $<10^{th}$ *or* AC $<5^{th}$ percentile" generated only 1.6 false positives for each added true positive.

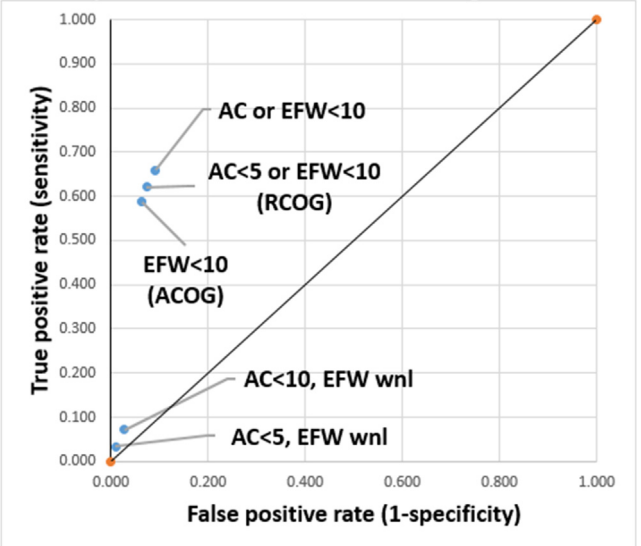
CONCLUSION: While the diagnostic approaches for FGR endorsed by RCOG and ACOG performed comparably to predict SGA at birth, the RCOG method identified a small number of additional cases while adding an acceptable number of false positives.

Test characteristics of diagnostic approaches for fetal growth restriction

	Sensitivity % (95% CI)	Specificity % (95% CI)	PPV % (95% CI)	NPV % (95% CI)	Added True positives (n)*	Added False positives (n)*	TP: FP ratio
ACOG: EFW <10 % (95% CI)	58.7 (52.1-65.1)	93.6 (92.2-94.8)	59.5 (54.0-64.7)	93.4 (92.4-94.3)	--	--	
RCOG: EFW < 10% *or* AC < 5% (95%CI)	62.1 (55.6-68.4)	92.7 (91.3-94.0)	57.7 (52.6-62.7)	93.9 (92.9-94.8)	8	13	1.6
EFW <10% *or* AC <10% (95%CI)	66.0 (59.5-72.0)	90.9 (89.3-92.3)	53.6 (49.0-58.2)	94.3 (93.3-95.2)	17	40	2.4

*Cases that would not have been identified using EFW<10% alone.

Receiver operator characteristics of criteria for fetal growth restriction



The diagonal line represents diagnostic approaches that are no better than chance at predicting SGA. Tests plotted furthest from the diagonal line have best balance of true and false positives.