CONCLUSION: Oligohydramnios defined as AFI < 5th percentile better predicts fetuses at risk for adverse perinatal outcome compared to AFI < 5 cm. Pregnancies with AFI > 5 cm but < the 5th percentile for gestational age are still at an increased risk for NICU admission.

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363 Utility of MRI for ultrasound-diagnosed fetal lesions

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OBJECTIVE: Prenatal MRI as a follow up to ultrasound-diagnosed fetal lesions is common in modern obstetrics. However, MRI is expensive, time consuming, and the benefits in the pregnant population are unclear. The objectives of the study are to correlate US and MRI fetal findings and to determine if management is changed based on the MRI results.

STUDY DESIGN: A retrospective cohort study of patients presenting for prenatal MRI from 2005-2008. Postnatal information was used as the gold standard to compare the correlation coefficient for antenatal MRI and US. McNemar's test was used to compare the two modalities. In addition, the impact of MRI diagnosed findings on patient care was investigated.

RESULTS: 109 prenatal MRIs were performed between 2005-2008 and complete information was available for 80. The PPV of MRI was 79% vs. 70% for US (p 0.008). Fetal lesions were further subdivided based on location: intracranial, thoracic, abdominal, skeletal, and other. A statistically significant difference was found between the US and MRI diagnosis for intracranial lesions 69% vs. 58% (p 0.005). No difference was found between prenatal US and MRI diagnoses for thoracic, abdominal, skeletal, or renal lesions. Twenty (25%) of the 80 total cases referred for MRI were determined to be normal postnatally.

CONCLUSION: US diagnosed lesions involving thoracic, abdominal, renal, or skeletal pathology do not mandate further investigation with prenatal MRI. Prenatal MRI may be of benefit to intracranial lesions diagnosed by US.

Accuracy of Diagnosis by Imaging Technique

Location of Lesion (n)	MRI PPV (%)	US PPV (%)	P value
Intracranial (36)	25 (69)	21 (58)	0.005
Thoracic (9)	8 (89)	7 (78)	0.317
Abdominal (20)	17 (85)	16 (80)	0.317
Skeletal/NTD (8)	6 (75)	6 (75)	1.00
Renal (5)	5 (100)	4 (80)	0.317
Other (1)	1 (100)	1 (100)	1.00
Total (80)	63 (79)	56 (70)	0.008

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365 Correlation between three-dimensional placental volume and vasculature indices with maternal serum A-disintegrin and metalloproteinase (ADAM12s), -HCG and PAPP-A in the first trimester

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OBJECTIVE: We tested the hypothesis that first-trimester 3-D placental volume and vasculature indices correlate with the maternal serum analytes, A-disintegrin and Metalloproteinase (ADAM12s), PAPP-A and -hCG.

STUDY DESIGN: Placental volume and vasculature was determined in a prospective cohort study of 219 women at 11-14 weeks' gestation. Placental volume was obtained using pre-established ultrasound settings and the rotational technique (VOCAL). Vascularization index (VI), flow index (FI) and vascularization flow index (VFI) was obtained from 3-D power Doppler histograms. ADAM12s, -hCG and PAPP-A levels were measured using the immunofluorometric assays, and values were converted to multiples of the medians for the gestational age. The relationship between the placental volumes or vasculature indices and each serum analyte was assessed using linear regression and Pearson's or Spearman's correlation coefficients as appropriate

RESULTS: The mean placenta volume, VI, FI and VFI were: 41.5cm^3, 22.6, 42.8, and 7.4, respectively. Placental volume, VI, and VFI were not correlated with any of the three serum analytes (Table). FI showed a weak but significant correlation with ADAM12s and PAPP-A levels but not hCG.

CONCLUSION: Placental volume, VI, and VFI in first trimester placentas are measures of placental development independent of analyte secretion. The correlation of flow index with both PAPP-A and ADAM12s likely reflects the key role these molecules play in trophoblast invasion. The data suggest that placental volume, VI, VFI and analyte secretion can be used in combination to develop prediction models for adverse pregnancy outcomes in the second half of pregnancy.

Correlation coefficients and significance levels of analytes

	ADAM12 (p-value)	PAPP-A (p-value)	β-hCG (p-value)
Placenta volume	0.06 (0.42)	0.10 (0.17)	0.02 (0.76)
VI	0.11 (0.16)	0.06 (0.39)	−0.013 (0.86)
FI	0.18 (0.02)*	0.15 (0.04)*	−0.008 (0.91)
VFI	0.12 (0.11)	0.07 (0.38)	−0.002 (0.98)

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366 Placental volume measurements early in pregnancy predict adverse perinatal outcomes

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OBJECTIVE: Effective early predictors of adverse obstetric outcomes are lacking. We sought to determine whether volumetric assessment of the early placenta can predict adverse obstetric outcome.

STUDY DESIGN: In this prospective cohort study, we obtained 3D placental volumes at 11-14 weeks. The VOCAL application of 4DVIEW (GE) was used to calculate placental volume (PV). PV was normalized to CRL to yield the placental quotient (PQ=PV/CRL). In addition, we measured the distance from the cord insertion to the nearest placental margin every 45 degrees around the placental circumference (8 measurements). The mean of these values, mean cord distance (MCD), is intended to serve as a novel descriptor of the chorionic plate and the centricity of the cord insertion. PQ and MCD were analyzed as predictors of a composite adverse outcome (COMP=SGA [BW<10th percentile], PEC, SPTB<37 wk, NICU admission). T-tests were used to compare mean values. ROC curves were constructed to determine optimal cut-points for each independent variable.

RESULTS: 135 subjects were included. 40 (29.6%) had a composite adverse outcome (SGA-23, PEC-7, PTB-4, NICU-14). PV did not vary with maternal age, parity, BMI or ethnicity. Mean PQ (1.08, 0.97-1.19 vs 1.20, 1.15-1.25; p=0.04) and MCD (4.03, 3.85-4.21 vs 4.29, 4.17-4.40; p=0.02) were significantly lower in pts with COMP. PQ<1.00 conferred an increased risk for COMP (OR- 3.5, 1.6-7.34, P<0.002), with a specificity of 77.9% (68.2-85.8) and sensitivity of 50% (33.8-66.2). Similarly,

MCD<4.00 was associated with COMP (OR-2.3, 1.1-4.9, p=0.03), with a specificity of 69.5%, (59-79) and sensitivity of 50% (34-66). Secondary analysis using SGA as the outcome also yielded significant associations (PQ: OR-3.9, 1.5-9.87; MCD: OR-4.3, 1.7-11.1).

CONCLUSION: Small placental volume and eccentric cord insertion are significantly associated with adverse perinatal outcome and may serve as biologically plausible predictors of placental dysfunction. Further research is warranted to investigate the optimal application of these novel 3D ultrasound techniques.

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367 Routine ultrasound screening for placenta accreta, "The Accreta Scan", in women undergoing repeat cesarean section does not predict intraoperative hemorrhage and may increase rates of cesarean hysterectomy

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OBJECTIVE: We determine whether routine ultrasound exam for placenta accreta in women with prior cesarean delivery, termed "Accreta Scan", corresponds with intraoperative hemorrhage and morbidity.

STUDY DESIGN: A case control study was performed using 640 women who were delivered by repeat cesarean section between 2007-2008. Women who served as cases were prospectively screened for sonographic evidence of placenta accreta at a mean gestational age of 33 weeks (N=149). The remaining 491 women were not screened and served as controls. Opertative findings, hemorrhage, blood transfusion, and pathologic specimens were compared for cases and controls. The sensitivity and positive predictive value of the Accreta Scan for placenta accreta and hemorrhage were determined.

RESULTS: The incidence of Accreta was 12/1000 in the total group. Accreta with anterior placenta without previa occurred in 4/1000 women. Pathologic incidence of Accreta for cases and controls was the same (0.13 vs. 0.10, p= 0.8). Demographics were the same for cases and controls. Uterine atony, cesarean hysterectomy, and volume of blood products transfused were greater in the screened women. The sensitivity of the accreta scan was 50%, PPV of 25% for accreta and 14% for hemorrhage.

CONCLUSION: There is no correlation between an accreta scan and hemorrhage at repeat cesarean section. This is likely due to the low incidence of accreta in the absence of placenta previa, and other more common causes of intraopertive hemorrhage. Routine screening for placenta accreta may set the stage for more cesarean hysterectomies.

Intraoperative Findings for Women with Repeat Cesarean Delivery

	Screened Cases(%)	Unscreened Controls(%)	p
N(640)	149	491	
Adhesions	57 (38)	163 (33)	NS
Ut Atony	11 (7.4)	19 (3.9)	0.03
Hysterectomy	6 (4)	5 (1)	0.004
Lacerations	3 (2)	7 (1.4)	NS
Ut Rupture	1 (0.7)	1 (0.2)	NS
Trx vol. *	68	113	0.001

*Transfusion Mean vol.(cc)/person/group

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368 Implications for prenatally diagnosed liver calcifications and abdominal echogenic foci

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OBJECTIVE: The purpose of this study is to examine cases of prenatal calcifications in the liver and abdominal echogenic foci, and determine the clinical significance of these findings.

STUDY DESIGN: A retrospective, non-blinded chart review was performed from 2004 through 2009. 38 cases were identified from our ultrasound database. Exclusion criteria were incomplete records or patients lost to follow-up.

RESULTS: The incidence of these ultrasound findings was 1 in 430 cases. Seven cases had the isolated ultrasound findings of liver calcifications or abdominal echogenic foci. These children had a postnatal abdominal x-ray or ultrasound performed, and two of the seven cases had liver calcifications. These findings were diagnosed as a calcified hemangioma or vascular calcification in one case and a nonobstructive thrombus in the L. portal vein in the other case. Both of these children had otherwise normal exams at birth. Twenty-one cases had other ultrasound anomalies in conjunction with liver calcifications and abdominal echogenic foci. There was a range of concurrent anomalies: hydrops (10%), renal pyelectasis (14%), club feet (10%), intracardiac echogenic foci (28%) and IUGR (10%). Single cases of Dandy-walker, severe ventriculomegaly and an abdominal mass were seen. These children tended to have poorer prognoses; their outcomes entailed chromosomal abnormalities (19%), extreme premature births (19%), and meconium perforation (10%).

CONCLUSION: The prenatal findings of liver calcifications or an echogenic focus in the abdomen seem to be a benign finding as an isolated abnormality. An imaging study is recommended for the infant in the postnatal period. This evaluation may reveal a vascular abnormality but generally these children seem to have good short term prognoses. However, if these ultrasound findings are seen concurrently with other anomalies, these children seem to have a poorer prognosis.

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369 Portal vein Doppler in IUGR fetuses delivered at 32 weeks

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OBJECTIVE: Animal studies have shown increased blood flow through the ductus venosus proportionate to the severity of fetal hypoxia. Although data suggest this also occurs in the human fetus, it has never been demonstrated. The aim of this study was to characterize the portal vein (PV) Doppler, which has a monophasic pattern in normal fetuses, from the time of diagnosis of IUGR to delivery of the fetus.

STUDY DESIGN: Initial assessment with PV Doppler occurred at the time of diganosis of IUGR (EFW<10th percentile and abnormal umbilical artery pulsatility index); the final study occurred within 24 hours of delivery. PV waveforms were correlated to perinatal death or acidemia at birth. Umbilical artery cord pH was evaluated at birth [considered abnormal if the value was <7.10 and/or the base deficit was <-9.0 (2 SD below the mean for preterm neonates)]. Fisher's exact test was used for statistical analysis.

RESULTS: PV Doppler waveforms were assessed on 69 occasions in 14 IUGR fetuses (median: 4 studies; range: 2-10). The median gestational age (GA) at the time of the first study was 26.6 weeks (range: 21.6-30.1 weeks) and at the last study was 28.4 weeks (range: 25-31.6 weeks). Three distinct and progressive Doppler patterns were observed: a) monophasic; b) biphasic; and, c) reversed flow. 86% of the PV Dopplers were monophasic and 14% were biphasic at the 1st examination. Of those that were biphasic, 100% progressed to reversed flow. 50% of those that were monophasic progressed to biphasic and 33% of those progressed to reversed flow. Five fetuses had an adverse perinatal outcome: 3 IUFDs and 2 fetuses who were acidemic at birth. All 5 fetuses had either biphasic (n=2) or reversed flow (n=3) patterns. Among the other 9 fetuses, 7 had monophasic and 2 had biphasic patterns (p<0.05).