360 Ultrasound detected subchorionic hemorrhage: what are the implications?

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OBJECTIVE: To estimate the association between the sonographic diagnosis of subchorionic hemorrhage (SCH) and adverse pregnancy outcomes.

STUDY DESIGN: This was a retrospective cohort study of all consecutive women undergoing routine ultrasound prior to 22 weeks with a singleton gestation at two institutions from 1990-2007. Presence or absence of SCH defined the two study groups. The primary outcomes were abruption, intrauterine growth restriction (IUGR) defined as birth weight < 10th %ile, non-anomalous intrauterine fetal demise (IUFD) after 20 weeks, pre-eclampsia (PEC), preterm premature rupture of membranes (PPROM), and preterm delivery (PTD) <37 weeks and <34 weeks. Univariate, bivariate, and logistic regression analyses were performed.

RESULTS: Of the 63,966 women in the patient population, 1081 had SCH (1.7%). Women with SCH were at increased risk for developing abruption and for PTD, even after adjusting for bleeding during pregnancy, chronic hypertension, tobacco use, and prior PTD.

	SCH (n=1081)	No SCH (n=62885)	aOR (95% CI)	P
Abruption (n=432)	3.6%	0.6%	2.6 (1.8-3.7)	<0.01
PTD <37 (n=6601)	15.5%	10.5%	1.3 (1.1-1.5)	<0.01
PTD <34 (n=1774)	5.3%	2.8%	1.5 (1.1-2.0)	<0.01
PPROM (n=1484)	4.1%	2.3%	1.3 (1.0-1.8)	0.07
IUGR (n=8159)	13.0%	13.1%	1.1 (0.9-1.4)	0.59
IUFD (n=445)	1.3%	0.8%	1.4 (0.8-3.1)	0.21
PEC (n=4683)	6.4%	7.5%	0.8 (0.6-1.1)	0.18

CONCLUSION: Women with ultrasound detected SCH prior to 22 weeks are at increased risk for abruption, preterm delivery, and a trend towards PPROM, but are not at increased risk for other adverse pregnancy outcomes. These findings may identify patients at risk for PTD.

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361 Fetal hydronefrosis (HY): a contribution to a challenging diagnosis

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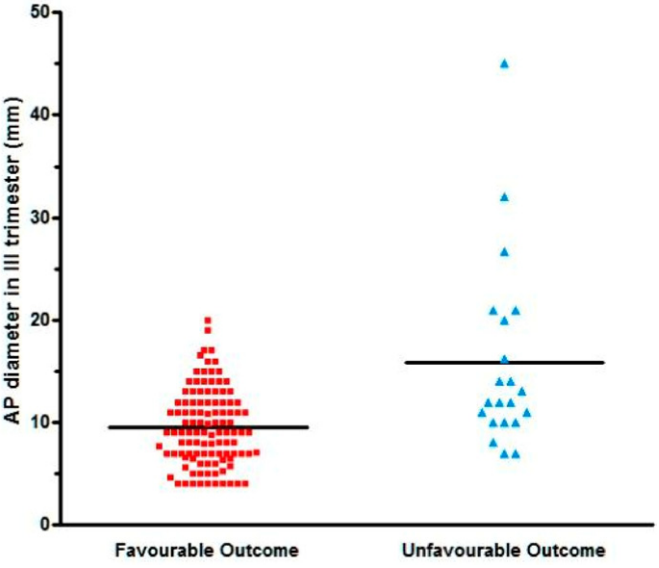
OBJECTIVE: To evaluate the postnatal course of fetal HY and to assess the ability of prenatal US to predict an unfavourable outcome.

STUDY DESIGN: Six years (2002-2007) cohort retrospective study including fetuses with HY with 100% infant follow-up. US was performed in the II and III trimester. At the last scan HY was classified as: I degree (5-7mm), II degree (8-15 mm) or III degree (> 15 mm). Postnatal US was performed at 1, 3, 6 months.

RESULTS: HY was diagnosed in 109/22,137 fetuses (0.7%), with 143 kidneys involved. Postnatal outcome was favourable in 82% of the affected kidneys, with HY regression in 3.3 ± 3.1 months. In 18% postnatal outcome was unfavourable, with a diagnosis of significant uropathy. The risk of uropathy was 11%, 18% and 46% for HY of I, II and III degree, respectively (P=0.03). There was a significant difference between the value of the average antero-posterior diameter of renal pelvis in favourable outcome group (9.6 ± 3.7 mm) and unfavourable outcome group (15.9 ± 9.3 mm) (p<0.001). The most optimal threshold of antero-posterior (AP) pelvic diameter to predict significant uropathy was 7 mm (sens.100%, spec.23%).

CONCLUSION: The risk of uropathy increases significantly according to the degree of antenatal HY. Postnatal follow-up studies are warranted if the AP pelvic diameter is ≥7 mm in the III trimester of pregnancy.



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362 Assessing the optimal definition of oligohydramnios associated with adverse pregnancy outcomes

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OBJECTIVE: The optimal definition of oligohydramnios associated with adverse pregnancy outcomes is still unclear. Our objective was to compare the use of amniotic fluid index (AFI) < 5 cm to < the 5th percentile for gestational age in predicting adverse perinatal outcomes.

STUDY DESIGN: A retrospective cohort study of pregnancies presenting to our prenatal ultrasound units from 1998-2008. Study subjects were identified by AFI < 5 cm and < 5th percentile for gestational age. The primary outcome measure was admission to the neonatal intensive care unit (NICU). Secondary outcomes included length of hospital stay, cesarean delivery, respiratory distress and Apgar scores. Relative risks were calculated for each outcome measure. The screening efficiency of each criteria of oligohydramnios for the primary outcome was determined. McNemar's test was used to compare the two criteria.

RESULTS: 17,887 patients had complete information for analysis. There were 145 NICU admissions among the 904 patients with AFI < 5 cm (RR 2.2, [95%CI 1.88-2.58]) compared to 235 among the 1429 patients with AFI < 5th percentile for gestational age (RR 2.37, [95%CI 2.08-2.69]). For pregnancies with AFI > 5 cm but < 5th percentile for gestational age the RR for NICU admission was 2.30 (95%CI 1.89-2.80). There was a significant difference between the two criteria for oligohydramnios in predicting NICU admission (McNemar 2 p<0.001). The sensitivity and specificity for NICU admission utilizing AFI < 5 was 10.9% (95%CI 9.3-12.7) and 95.2% (95%CI 94.9-95.5) compared to 17.6% (95%CI 15.6-19.8) and 92.5% (95%CI 92.1-92.9) for < 5th % for gestational age.

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,