Change in Clinical Management	MRI changed Diagnosis or Made Additional Findings n = 203	
	n	%
Counseling	139	68.4
Comfort Care	9	4.4
Pregnancy Termination	8	3.9
Surgical Referral	30	14.8
No further Imaging	4	2.0
Change Mode Delivery	13	6.4

Marker	Preeclampsia AUC[95% CI]	SGA AUC[95%CI]	GHTN AUC[95%CI]
PP13	0.75[0.66-0.83]	0.65[0.53-0.77]	0.70[0.50-0.73]
PV	0.77[0.69-0.85]	0.68[0.57-0.79]	0.74[0.51-0.71]
PQ	0.77[0.70-0.85]	0.69[0.59-0.80]	0.73[0.51-0.72]
VI	0.79[0.72-0.86]	0.69[0.58-0.79]	0.72[0.48-0.70]
FI	0.77[0.70-0.84]	0.67[0.55-0.79]	0.72[0.48-0.70]
VFI	0.79[0.72-0.86]	0.68[0.57-0.79]	0.72[0.48-0.70]
PP13+VFI	0.76[0.68-0.84]	0.66[0.55-0.78]	0.68[0.51-0.74]
PP13 +VI +PV	0.77[0.69-0.85]	0.69[0.58-0.80]	0.69[0.52-0.75]
PP13 + VI+ PQ	0.77[0.69-0.85]	0.71[0.60-0.81]	0.69[0.52-0.75]

346 Combination of first-trimester placental protein 13(PP13), 3D placental volume, vascular indices and maternal characteristics for prediction of adverse pregnancy outcomes

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OBJECTIVE: PP13 and placental parameters may be valuable early predictors of adverse pregnancy outcomes. We tested the hypothesis that a combination of first-trimester PP13, 3D placental volume, and vascular indices would improve the prediction of adverse pregnancy outcomes.

STUDY DESIGN: We performed a prospective cohort study of 422 singleton pregnancies presenting to our prenatal ultrasound unit between 11 and 14 weeks gestation. Placental volume (PV) was obtained by 3D ultrasound using the VOCAL technique. Placental quotient (PQ) was determined by taking the ratio of PV to fetal crown-rump length. Vascularization index (VI), flow index (FI), and vascularization flow index (VFI) were obtained from 3D power Doppler histograms. PP13 levels were measured, and the values were converted to multiples of the median (MoM) for gestational age. Adverse outcomes evaluated included preeclamspis (PE), gestational hypertestion (GHTN) and small for gestational age (SGA=birthweight, <10th percentile). Comparisons of PP13, 3D PV, PQ, vascular indices, and maternal characteristics between women who developed any of the adverse pregnancy outcomes and those with normal outcomes were performed using the Wilcoxon rank sum test. Logistic regression analysis was used to identify the final prediction model and receiver-operating characteristics (ROC) curves used to evaluate the predictive ability of each or combination of variables, using area under the curve (AUC).

RESULTS: PE was diagnosed in 42(10%), GHTN in 39 (9.2%), and SGA in 32(7.6%) of the women included. PP13 MoM was significantly lower in women diagnosed with preeclampsia (0.67;$p<0.001$) and PQ was significantly lower in pregnancies complicated by SGA (0.61; $p=0.1$). The area under the ROC curve for the prediction of SGA with the combination of PP13 with VI and PQ was 0.71. However, combination of these first-trimester parameters did not improve the prediction of preeclampsia or GHTN. Results summary in the table.

CONCLUSION: PP13, VI, and PQ have modest ability to predict SGA individually. Combination of these parameters do not further improve the prediction of preeclampsia or GHTN nor SGA.

347 Hydramnios in twin gestations

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OBJECTIVE: To evaluate the effect of hydramnios on pregnancy outcomes in dichorionic (DC) and monochorionic (MC) twins.

STUDY DESIGN: This is a retrospective cohort study of all twin pregnancies that received prenatal ultrasound evaluation between August 1997 and December 2010 and delivered live-born infants >24 weeks of gestation. Chorionicity was assessed sonographically. Sonography was routinely performed every 4 to 6 weeks. Hydramnios was defined as a single deepest pocket of amniotic fluid >8 cm, and further qualified as mild (8-9.9 cm), moderate (10-11.9 cm), and severe (>12 cm). The greatest degree of hydramnios identified during pregnancy was used for analysis. Monoamniotic pregnancies and pregnancies complicated by twin-twin transfusion syndrome were excluded. Infants with major structural anomalies were analyzed separately.

RESULTS: There were 1919 twin pregnancies meeting inclusion criteria, of which 1301 (68%) were DC and 618 (32%) MC. Hydramnios was identified in 323 pregnancies (17%), with no differences in prevalence or severity according to chorionicity. Outcomes are presented in the table below. The prevalence of major structural anomalies increased significantly with the degree of hydramnios in both DC and MC pregnancies. The remainder of the analyses excluded anomalous infants. In DC pregnancies, there was a significant association between degree of hydramnios and infant birthweight; however, this relationship was not present in MC pregnancies. Hydramnios was not associated with preterm birth, birthweight discordance, or neonatal death.

CONCLUSION: Hydramnios is common in twin gestations and is associated with an increased risk for fetal anomalies. In the absence of malformations, we did not identify an increased risk for adverse pregnancy outcomes.

DC	LP < 8 cm N =1070 (82)	LP 8-9.9 cm N = 174 (13)	LP 10-11.9 cm N = 43 (3)	LP ≥12 cm N = 14 (1)	P
Anomalous infant	26 (2)	5 (3)	2 (5)	2 (14)	0.03
Birthweight (g)	2397 ± 555	2518 ± 509	2652 ± 469	2635 ± 793	< 0.01
Preterm birth					
≤ 36 weeks	449 (43)	72 (42)	15 (37)	3 (25)	0.53
≤ 34 weeks	234 (22)	36 (21)	5 (12)	2 (17)	0.44
≤ 32 weeks	119 (11)	17 (10)	1 (2)	1 (8)	0.32
Discordance ≥ 25%	10 (1)	2 (1)	0 (0)	0	0.89
Neonatal death	8 (1)	0	0	0	0.63

MC	LP < 8 cm N = 509 (82)	LP 8-8.9 cm N = 77 (12)	LP 10-11.9 cm N = 23 (4)	LP ≥ 12 cm N = 9 (1)	P
Anomalous infant	12 (2)	3 (4)	3 (13)	2 (22)	< 0.01
Birthweight (g)	2291 ± 561	2374 ± 579	2326 ± 503	2243 ± 649	0.51
Preterm birth					
≤ 36 weeks	229 (46)	36 (49)	11 (55)	4 (57)	0.78
≤ 34 weeks	112 (22)	16 (22)	6 (30)	2 (29)	0.84
≤ 32 weeks	50 (10)	8 (11)	3 (15)	2 (29)	0.39
Discordance ≥ 25 %	11 (1)	2 (3)	0	0	0.89
Neonatal death	12 (2)	1 (1)	0	1 (11)	0.15

LP = Largest pocket
Data are reported as N (%) or mean ± SD

348 The accuracy of prenatal ultrasound in the diagnosis of true microcephaly

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OBJECTIVE: To determine the accuracy of prenatal ultrasound in detection of microcephaly, defined as birth head circumference (HCbirth) <10%ile.

STUDY DESIGN: This was a retrospective chart review of fetuses identified prenatally with a head circumference (HCfetal) of <3%ile. HCbirth were abstracted from the newborn medical chart, and Z-scores calculated for both. Sensitivity, specificity, false positive (FP) and false negative (FN) rates were calculated for HCfetal. An ROC curve was calculated to determine the accuracy of HCfetal in the detection of microcephaly.

RESULTS: An ultrasound database search from Jan 2005 to July 2011 for HC <3% identified 730 ultrasounds of 455 fetuses in 433 patients. There were 375 live births in this group. Median Z-scores were similar between fetal and neonatal groups (−1.16 [−1.6, −0.9] and −1.2 [−1.8, −0.7], respectively). The overall prevalence of microcephaly was similar in both groups using an HCfetal Z-score cutoff of ≤ −1.3 (40.1% and 49.6% respectively). A Z-score of ≤ −1.3 had 44.6% sensitivity, 35.1% specificity, 44.9% FP rate, and 45.9% FN rate for detection of microcephaly (p=0.08). Using a HCfetal Z-score cutoff of ≤ −1.7 yielded 28.8% sensitivity, 21% specificity, 62.6% FP and 28.2% FN rate (p=0.09). The area under the ROC curve was 0.6, indicating that HCfetal is an inaccurate test for microcephaly. Gestational age at time of ultrasound was not significantly associated with microcephaly (95% CI −0.27-0.01).

CONCLUSION: Prenatal ultrasound was able to detect a population at risk for microcephaly as evidenced by the high prevalence in this group at birth; however, the ability of prenatal ultrasound to predict a specific HCbirth for an individual is poor. Sensitivity and specificity for prenatal ultrasound are low, and FP and FN rates are high. Factors which contribute to the inaccuracy of prenatal ultrasound include the variability of the microcephaly phenotype, heterogeneous etiologies, lack of consensus regarding the definition of microcephaly, high rate of concurrent growth restriction, and lack of gender- or race-specific fetal growth curves.

349 Antenatal ultrasonographic findings to predict esophageal atresia in cases with visible stomach bubble

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OBJECTIVE: Becauses fetuses with esophageal atresia need an early postnatal surgery, they should be delivered in a tertiary center. However, prenatal diagnosis of esophageal atresia sometimes challenging. The aim of this study was to determine the antenatal ultrasonographic findings which offer the best diagnostic accuracy in fetal esophageal atresia with or without tracheoesophageal fistula (EA/TEF) with moderate to severe polyhydramnios and visible stomach bubble.

STUDY DESIGN: We performed a retrospective analysis of 121 pregnant women who presented polyhydramnios (AFI ≥24) between March 1996 and April 2011. Of these, 3 cases in whom EA was suspicious but delivered stillbirth without autopsy, and those who were diagnosed as having other fetal gastrointestinal obstructions (e.g. duodenal atresia, jejunal atresia, or ileal atresia), hydrops fetalis, or congenital diaphragmatic hernia were excluded. A total of 87 cases were enrolled. Ultrasonographic findings evaluated were (1) small abdominal circumference (AC) less than 10 percentile for gestational age, (2) upper pouch sign, and (3) tiny stomach bubble. Predictive value of an individual sonographic marker was calculated.

RESULTS: Of a total of 87 cases with polyhydramnios, 2 cases had upper neck pouch sign. Of these 85 cases, 8 cases showed absent stomach bubble. The remaining 77 cases were analysed. In the setting of polyhydramnios and visible stomach bubble (77 cases), the prevalence of EA/TEF was 6.5% (5/77). Small AC had higher sensitivity compared to tiny stomach bubble. Small AC and tiny stomach bubble were statistically significant sonographic findings for diagnosing esophageal atresia antenatally. After adjusting possible confounders, only small AC was remained significant (P <0.05).

CONCLUSION: In polyhydramnios and visible fetal stomach bubble, small AC as an antenatal sonographic finding suggests that the fetus has EA/TEF. Clinicians should measure AC in this setting.

Table 1. Predictive value of antenatal sonographic findings in polyhydramnios and visible stomach bubble

Predictive value	Sensitivity	Specificity	PPV	NPV
Severe polyhydramnios (AFI ≥30)	20.0%	97.2%	33.3%	94.6%
Small AC (<10p)	80.0%	91.7%	40.0%	98.5%
Tiny stomach bubble	60.0%	97.2%	60.0%	97.2%
Small AC and tiny stomach bubble	60.0%	98.6%	75.0%	97.3%
	EA(-) (n=72)	EA(+) (n=5)	*P*-value	
Severe polyhydramnios (AFI ≥30)*	2 (2.8%)	1 (20.0%)	0.185	
Small AC (<10 percentile)*	6 (8.3%)	4 (80.0%)	0.001	
Tiny stomach bubble*	2 (2.8%)	3 (60.0%)	0.001	
Small AC and tiny stomach bubble*	1 (1.4%)	3 (60.05)	0.001	

EA, esophageal atresia; AC, abdominal circumference; PPV, positive predictive value; NPV, negative predictive value; AFI, amniotic fluid index.
Value are presented as n (%).
*Chisquare and Fisher's exact test