178 Tumor volume to fetal weight ratio > 0.12 is associated with worse perinatal outcomes in fetuses with sacrococcygeal teratoma

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OBJECTIVE: Tumor volume to fetal weight ratio (TFR) > 0.12 before 24 weeks has been associated with poor perinatal outcomes in fetuses with sacrococcygeal teratoma (SCT) but is not universally accepted. We evaluated the predictive value of TFR in our large cohort of fetuses with SCT.

STUDY DESIGN: Retrospective, single-center, cohort review of fetuses evaluated for SCT from 1997-2015. Patients who chose termination of pregnancy (TOP), delivered elsewhere, or had their initial evaluation > 24 weeks were excluded. Outcomes were compared in fetuses with TFR ≤ vs > 0.12. Poor outcome was defined as intrauterine fetal demise, neonatal demise, fetal deterioration warranting open fetal surgery, and fetal deterioration warranting delivery prior to 32 weeks.

RESULTS: 140 pregnancies were confirmed to have SCT. 28 chose TOP, 13 delivered elsewhere, and 40 had their initial evaluation > 24 weeks. 59 fetuses with TFR at ≤ 24 weeks were stratified into two groups based on TFR (table). Fetuses with TFR > 0.12 were more likely to have a poor perinatal outcome compared to those with TFR ≤ 0.12 (24/32 vs 3/27; p<0.01). The sensitivity, specificity, positive predictive value, and negative predictive value of TFR > 0.12 in predicting poor outcome was 88.9%, 75.0%, 75.0% and 88.9%, respectively.

CONCLUSION: This is the largest single-center study to date and supports the use of TFR > 0.12 at ≤ 24 weeks to risk stratify fetuses with SCT. This information is useful in counseling and in forming surveillance programs for these highest risk fetuses.

Baseline characteristics and perinatal outcomes based on TFR

	TFR ≤ 0.12 (n=27)	TFR > 0.12 (n=32)	p-value
Maternal age	32.7 (19.4-49.5)	30.8 (22.7-41.7)	p=0.2
Maternal body mass index	26.6 (18.9-36.6)	28.1 (19-56.4)	p=0.7
Gestational age at intake	21.7 (18.4-24)	21.9 (17.9-24)	p=0.4
Tumor volume at intake	**14.0 (1.2-53.5)**	**119.9 (45.4-668.9)**	**p<0.01**
TFR at intake	**0.03 (0.002-0.08)**	**0.24 (0.121-0.97)**	**p<0.01**
SCT type	Type I (6; 22%), Type II (19; 70%), Type III (0), Type IV (2; 7.4%)	Type I (12; 38%), Type II (17; 53%), Type III (3; 9%), Type IV (0)	p=0.1
>90% solid	8 (29.6%)	15 (46.9%)	p=0.2
Development of hydrops	**0**	**6 (18.8%)**	**p=0.03**
Gestational age at delivery	**36.1 (27.9-38.9)**	**28.4 (24.3-38.6)**	**p<0.01**
Preterm delivery for fetal compromise < 32 weeks	**1/26 (3.8%)**	**9/25 (36%)**	**p<0.01**
Open Fetal Surgery	0	4 (12.5%)	p=0.1
Intrauterine Fetal Demise	1 (3.7%)	7 (21.9%)	p=0.06
Neonatal demise	**1/26 (3.8%)**	**10/25 (40%)**	**p<0.01**
Poor perinatal outcome	**3 (11.1%)**	**24 (75%)**	**p<0.01**

179 Decreased placental folate transport in early pregnancy of obese women

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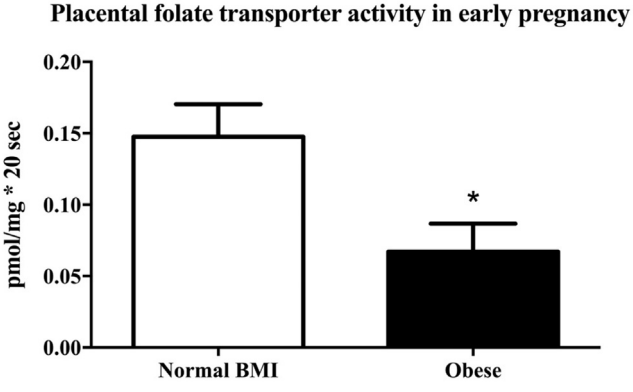
OBJECTIVE: Neural tube defects (NTDs) are one of the most common birth defects worldwide and represent a major cause of disability. Obese women have two fold higher risk for NTDs, which appear to be resistant to folate supplementation. Placental transfer of folate is mediated by three proteins; folate receptor alpha (FR-α), proton coupled folate transporter (PCFT), and reduced folate carrier (RFC). Decreased placental transport capacity may contribute to NTDs in women with normal folate levels. We tested the hypothesis that early pregnancy placental folate transport capacity is reduced in obese women.

STUDY DESIGN: Placental tissue was collected from 13 women with normal BMI (21.9 ± 1.9), mean gestational age 14.3 weeks and 11 obese women (33.1 ± 2.8), mean gestational age 15.6 weeks, who were undergoing elective termination of pregnancy. The syncytiotrophoblast microvillous plasma membranes (MVM) were isolated using homogenization, magnesium precipitation, and differential centrifugation. MVM expression of FR-α, PCFT and RFC was determined by western blot. Folate transport was assessed using radiolabeled methyl-tetrahydrofolate and rapid filtration techniques. We measured serum folate levels in both groups of women. Statistical differences were evaluated by student's *t* test with significance of $p \leq 0.05$.

RESULTS: Serum folate levels were not significantly different in normal and obese women. Placental MVM folate transporter expression did not change significantly with gestational age (range 8-22 wks). Expression of PCFT was not altered by maternal BMI. Placental expression of RFC (-19%) and FR-α (-17%) was significantly decreased in obese women as compared to normal BMI women ($p < 0.05$). Additionally, folate placental transporter activity was reduced by 52% (p<0.05) in obese compared to normal women (Figure 1).

CONCLUSION: Folate transporter expression and activity in the placental MVM is reduced in obese women in early pregnancy. This decrease would impair placental folate transfer to the fetus and could result in fetal folate deficiency. These results may explain the higher incidence of NTDs in fetuses of obese women despite adequate maternal folate levels.



180 North American fetal therapy network: selective reduction in complicated monochorionic twins

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OBJECTIVE: To review outcomes in complicated monochorionic (MC) pregnancies undergoing selective reduction (SR) in a multicenter contemporaneous cohort.
STUDY DESIGN: Retrospective review of MC pregnancies undergoing SR at 9 NAFTNet centers from January 2010 - December 2014 was performed. Indications for SR included twin-twin transfusion syndrome (TTTS), selective fetal growth restriction (sFGR), twin reversed arterial perfusion (TRAP) sequence, and discordant anomalies. Method used, perioperative complications, obstetrical and neonatal outcomes were collected. Descriptive statistics and two paired t-test were done using STATA/IC 14.0.
RESULTS: 308 cases met criteria. Diagnostic indications for SR included discordant structural or karyotype anomaly in 67 (22%), sFGR in 67 (22%), TRAP in 92 (30%), TTTS in 81 (26%), and other in 1 (0.3%). Methods used for SR included bipolar cord coagulation (BCC) 19 (6%), BCC with cord ligation 1 (0.3%), cord ligation 1 (0.3%), laser cord coagulation 2 (0.6%), and radiofrequency ablation (RFA) 285 (93%). Technical success was reported in 98.7% (304/308). Average gestational age (GA) at the time of procedure was 19.9 weeks (14.5-26.7). Complete pregnancy outcome was available on 237 cases. Average GA at delivery was 34.2 weeks (17.9-41.6) with average birth weight of 2337.4 g (460-3969). PPROM occurred in 24.5% (58/237) and average GA at PPROM was 27.4 weeks (16.9-35.7). Co-twin demise occurred in 15.2% (36/237) at an average GA of 20.8 weeks (14.6-33.4). Overall live birth rate was 84.8% (201/237). Maternal complications (i.e. infection, hemorrhage, etc) occurred in 19.4% (46/237). Comparison of RFA and BCC outcomes are presented in the table. When reviewing outcomes by diagnosis and method of SR, there were no significant differences in outcomes comparing RFA and BCC for TTTS, sFGR or discordant anomaly. PPROM occurred in both cases of laser cord coagulation for TRAP.
CONCLUSION: RFA is the most commonly used method of SR in this contemporaneous cohort with a high technical success rate. PPROM and co-twin demise continue to be significant complications of SR procedures.

RFA and BCC Outcomes

	RFA (n=218)	BCC (n=15)	p value
GA at procedure (weeks) mean, SD	19.9 (2.3)	21.1 (1.9)	0.041
GA at procedure (median, range)	19.9 (14.5-26.7)	21.3 (17.6-23.7)	
Ga at delivery (mean, SD)	34.1 (5.5)	34.7 (4.4)	0.787
GA at delivery (median, range)	36.6 (17.9-41.6)	34.9 (24.9-40.3)	
PPROM rate	22% (48/218)	40% (6/15)	0.066
Latency from procedure to delivery (weeks)	14.2 (0.1-24.3)	13.5 (4-22.6)	0.691
GA at PPROM (mean,SD)	27.4 (5.0)	29.4 (5.5)	0.388
GA at PPROM (median, range)	28.0 (17.7-35.7)	32.8 (19.4-34.9)	
Co-twin demise rate	15.6% (34/218)	13.3% (2/15)	0.408
GA at IUFD (mean,SD)	20.7 (3.7)	22.2 (2.8)	0.581
GA at IUFD (median, range)	20.0 (14.6-33.4)	22.2 (19.4-25)	
Live birth rate	84.4% (184/218)	86.7% (13/15)	0.816
Birth weight (g) (mean,SD)	2366 (902.5)	2213 (749.7)	0.555
Maternal complication rate	17.0% (37/218)	33.3% (5/15)	0.056

181 Red cell distribution width as a novel prognostic biomarker in fetal growth restriction

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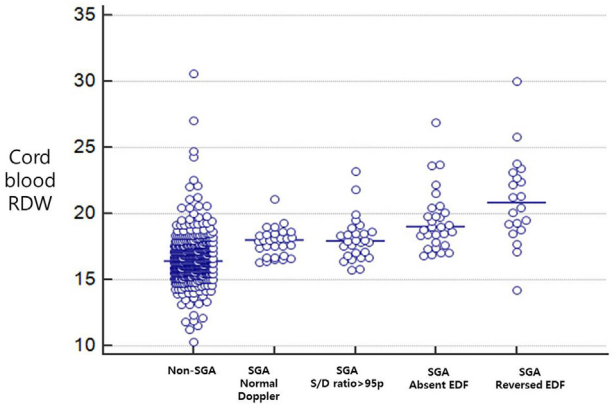
OBJECTIVE: Recent evidences suggest that red cell distribution width (RDW) can be a good prognostic marker for adverse outcomes in adult cardiovascular disease. This association has been attributed to the impaired erythropoiesis and abnormal red blood cell survival, originating from chronic hypoxic status or poor nutritional condition. Considering the pathophysiologic association between fetal growth restriction and chronic intrauterine hypoxia, which in turn can result in impaired erythropoiesis, we hypothesized that RDW could be a novel biomarker in fetal growth restriction. To address this issue, we evaluated the RDW in fetal growth restriction.
STUDY DESIGN: The study population consisted of singleton preterm neonates (24-34 weeks of gestation) born in Seoul National University Hospital. RDW in cord blood was measured at the time of delivery, and was compared between small for gestational age (SGA) neonates (birthweight $<$ 10 percentile) and non-SGA neonates (birthweight $\geq$ 10 percentile). Among SGA neonates, RDW was also examined according to the presence or absence of neonatal morbidity and/or mortality.
RESULTS: A total of 552 neonates were included in the analysis, including 115 SGA neonates and 437 non-SGA neonates. RDW of SGA neonates was significantly higher than that of non-SGA neonates (median, 18.9 in SGA neonates vs. 16.6 in non-SGA neonates, $p<0.001$). In SGA neonates, RDW increased as the umbilical arterial Doppler worsened. In addition, RDS above 90 percentile was associated with increased neonatal morbidity and/or mortality among SGA neonates, and this relationship remained statistically significant after adjustment for gestational age at delivery, birthweight, and hematologic parameters.
CONCLUSION: The RDW was higher in SGA neonates and was associated with neonatal morbidity and/or mortality among SGA neonates.

Figure. Cord blood RDW according to the presence or absence of small for gestational age (SGA) and abnormal Umbilical artery Doppler



182 Preoperative ultrasound prediction of essential landmarks for fetoscopic laser coagulation of placental vascular anastomoses

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OBJECTIVE: Successful fetoscopic laser occlusion (FLOC) treatment of twin twin transfusion (TTTS) hinges on selecting a uterine entry that safely allows complete visualization of all anastomoses along the vascular equator (VE). We hypothesized that pre-operative ultrasound of the donor lie, placental cord insertions and size discordance