

**22 Sequential Doppler changes in IUGR: is there a benefit of advanced multivessel Doppler assessment? Results of the National Multicenter Prospective PORTO trial**

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**OBJECTIVE:** The PORTO Trial is a prospective study conducted at the seven largest obstetric centers in Ireland, with its goal being to evaluate the optimal management of the IUGR fetus. For the purpose of the trial, IUGR was defined as EFW <10th centile. The objective of this analysis was to evaluate Doppler changes in multiple vessels including UA, MCA, DV, AoI and MPI to establish whether there is a predictable progressive sequence and an added benefit in applying these Doppler assessments in IUGR pregnancies.

**STUDY DESIGN:** Over 1,000 unselected consecutive ultrasound-dated singleton pregnancies with EFW <10th centile were recruited between January 2010 and June 2012. Perinatal and early neonatal outcomes were documented for all participants. IUGR pregnancies were assessed by serial Doppler interrogation of UA, MCA, DV, AoI and MPI. Intervals between Doppler changes and patterns of deterioration were correlated with cases of abnormal umbilical artery Doppler (UA PI <95th centile or AEDF) and gestational age.

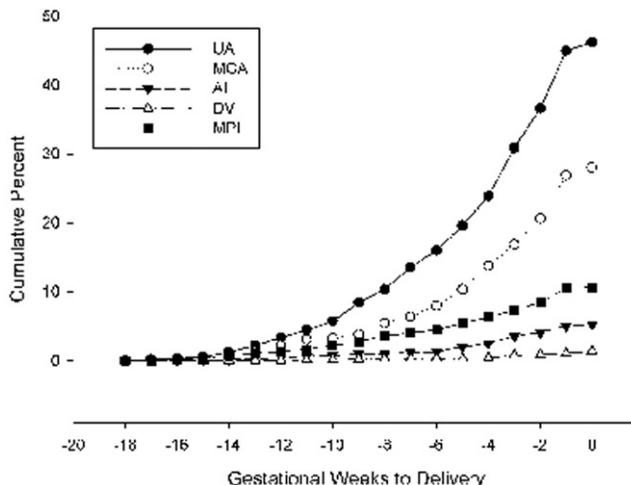
**RESULTS:** Of the 1,056 fetuses, 489 (46%) had an abnormal UA Doppler with 82 (8%) of them developing AEDF/ REDF; 296 (28%) had an abnormal MCA, 14 (1%) had an abnormal DV, 55 (5%) had an abnormal AoI and 113 (11%) had an abnormal MPI. Table 1 summarizes the median gestation at diagnosis and delivery for each vessel. 20% of AEDF cases progressed to REDF and prompted delivery. The mean gestation at AEDF diagnosis was 33 2/7 weeks and the mean time to delivery was 5 days (range 0-89). Figure 1 depicts the progression of Doppler abnormalities for each vessel.

**CONCLUSION:** Doppler interrogation of the umbilical and middle cerebral arteries remain the most predictable to demonstrate progressive temporal changes in IUGR pregnancies. Evaluation of the ductus venosus and cardiac indices have been described as a useful adjunct assessment tool in the evaluation of IUGR to inform delivery decision, however our study cannot demonstrate an added benefit.

**Onset of Doppler abnormalities and time to delivery interval**

	UA	MCA	DV	AoI	MPI
Gestation at first abnormal Doppler (weeks)	32 6/7	32 5/7	32 4/7	30 6/7	33 1/7
Median time to delivery (days)	23	21	17	21	29
Gestation at delivery (weeks)	37 3/7	37 2/7	34 5/7	38 1/7	38 4/7

AoI, aortic isthmus; DV, ductus venosus; MCA, middle cerebral artery; MPI, myocardial performance index; UA, umbilical artery.



**23 Gestational and surgical characteristics associated with early preterm birth in twin-twin transfusion syndrome (TTTS) treated by laser surgery**

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**OBJECTIVE:** Preterm birth (PTB) has been shown to be an important risk factor for suboptimal neurodevelopmental outcomes after laser surgery for TTTS. We sought to identify pre-, intra-, and immediate post-operative risk factors for early PTB in laser-treated TTTS patients.

**STUDY DESIGN:** Laser-treated TTTS patients who delivered after 24.0 gestational weeks were followed prospectively. Univariate and multivariate analyses were performed to identify gestational and surgical characteristics associated with PTB prior to 28.0 and 32.0 weeks of gestation.

**RESULTS:** Of 299 eligible patients, the mean (SD) gestational age of delivery was 33.4 (3.5) weeks gestation, with a median of 34.0 (range 24.1-40.1) weeks. 25 (8.4%) delivered prior to 28 weeks and 92 (30.8%) delivered prior to 32 weeks. Multivariable logistic regression analyses demonstrated that earlier gestational age at surgery was associated with PTB before 28 weeks (OR 0.81, 95%CI 0.67-0.99, P = 0.0352), and that the following three factors were associated with an increased risk for PTB before 32 weeks: intra-operative septostomy (OR 5.52, 95%CI 2.33-13.08, P = 0.0001); post-operative membrane detachment (OR 2.37, 95%CI 1.04-5.41, P = 0.0411); and inability to satisfactorily complete the surgical procedure (OR 8.56, 95%CI 1.59-46.17, P = 0.0126). Post-operative cervical length equal to or over 4 cm (OR 0.59, 95%CI 0.34-1.02, P = 0.0572) appeared to have a protective effect. Factors not associated with early PTB included: prior history of PTB, pre-operative cervical length, chorioamniotic separation from the internal cervical os (moon sign), and Quintero stage.

**CONCLUSION:** Both gestational and surgical characteristics appeared to contribute to the risk of early PTB in TTTS patients. This information may be useful in counseling patients regarding the risk of early PTB following laser surgery for TTTS.