A prospective study of Doppler velocimetry indices and the accurate management in pregnancies with intrauterine growth-restricted fetuses

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Objectives
The objective of this study was to analyze the benefits of applying an ultrasound screening performed between 27 and 35 gestational weeks, by using fetal biometry data associated with Doppler velocimetry indices in uterine artery, umbilical artery and mean cerebral artery, in pregnancies with intrauterine growth restriction (IUGR).

Material and method
A prospective study of 350 singleton pregnancies (including 5 stillbirths)

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Measurement of fetal biometry and Doppler velocimetry,
Voluson E8 Expert ultrasound machine with a 4-to 8-MHz transducer. measurements were periodically performed between 24 and 42 gestational weeks

Results
Out of 350 singleton pregnancies, 58 developed IUGR and 55 of them were born alive. From these 58 fetuses, 47 developed severe fetal distress and required a cesarean section. The examination of the pregnancies was provided between 24-34 weeks, 34-37 weeks and 38-42 weeks.

In all IUGR fetuses, changes in fetal biometric ratios were observed and all of these cases had modified resistance indices on the investigated arteries. Also, a protodiastolic notch in both placental and non-placental uterine artery could be observed. In the group which needed a cesarean section, only 7 cases had increased resistance on the umbilical artery but all of them presented centralized circulation.

Conclusion
The accuracy of the diagnosis depends on the morphometric findings and Doppler velocimetry indices. Doppler identification of the fetal “brain-sparing” effect predicts negative prognosis in fetuses with intrauterine growth restriction. Also, this study highlights the correlation between umbilical and uterine artery Doppler velocimetry and an increased incidence of perinatal complications in IUGR fetuses.