Objective
To determine whether the use of aortic isthmus Doppler waveform analysis in growth restricted fetuses delivered prior to 38 weeks predicts perinatal outcomes.

Methods
We performed a prospective study on 80 pregnancies complicated with intrauterine growth restriction and abnormal umbilical artery velocimetry results, admitted in our tertiary hospital who delivered within 7 days after the last ultrasound examination. The cases were divided into two groups according to the aortic isthmus blood flow pattern just before birth: anterograde (n = 57) or retrograde (n = 23). We compared perinatal mortality and morbidity outcomes in cases with anterograde blood flow versus retrograde blood flow in aortic isthmus. Relative risk (RR) were calculated with 95% CI and P<0.05 was considered significant.

Results
Doppler velocimetry results at the uterine, umbilical and cerebral arteries were similar in the two groups. Total morbidity and mortality rates were significantly higher in the retrograde flow group. There was no statistically significant difference for respiratory distress syndrome, intraventricular hemorrhage, bronchopulmonary dysplasia or necrotizing enterocolitis. Abnormal aortic isthmus flow pattern was detected approximately 14 days after umbilical artery and middle cerebral artery Doppler flow abnormalities and 5 days before deterioration in ductus venosus blood flow.

Conclusion
We conclude that aortic isthmus Doppler measurements are useful for identifying the decompensating growth restricted fetuses before the deterioration of ductus venosus blood flow and fetal acidosis, in order to plan for the optimal timing of delivery.