Objective
Fetuses with reversed aortic isthmus (AoI) net blood flow are predisposed to cardiac and cerebral hypoxemia. We hypothesized that retrograde AoI net blood flow is associated with adverse peripartum events in uncomplicated singleton pregnancies.

Methods
Fetal weight, amniotic fluid volume, and umbilical artery and AoI blood flow profiles were assessed in normal singleton vertex fetuses of healthy volunteers with a vaginal delivery plan at 37+0 - 41+6 weeks. The managing clinicians were blinded to the study data. Pregnancies with ultrasound to delivery interval > 10 days were excluded from the analysis. The associations between fetal AoI findings and birth data as well as neonatal outcome were evaluated in 163 pregnancies.

Results
Retrograde AoI net blood flow and oligohydramnios were detected in 14% and 6% of the cases, respectively. All umbilical artery blood flow profiles were normal. Cesarean deliveries for fetal distress were more frequent among fetuses with retrograde AoI net flow compared to those with antegrade net flow (17% vs. 4%, p=0.036). All birth weights were within normal limits. Gestational age at delivery (292 days vs. 292 days, p=0.43), umbilical artery pH (7.25±0.085 vs. 7.22±0.085, p=0.43), 5-minute Apgar scores [9(8-10) vs. 9(5-10), p=0.078] and admission to neonatal intensive care unit (4.3% vs. 6.5%, p=0.79) did not differ between these groups. Gestational age adjusted OR[CI] for cesarean delivery due to fetal distress was 4.58[1.17-18.1], p=0.029 in fetuses with retrograde AoI net blood flow. Oligohydramnios did not predict adverse peripartum events.

Conclusion
Retrograde fetal AoI net blood flow beyond 37+0 gestational weeks is associated with increased risk of cesarean delivery due to fetal distress in uncomplicated pregnancies. However, short-term perinatal morbidity is not increased.