Background: The AoI is a watershed vascular connection of the arterial system, between cerebral and placental circulations. Nevertheless, AoI Pulsatility index has not been correlated to umbilical artery, MCA or Cerebroplacental ratio (CPR). The hypothesis is that the diastolic parameters of the AoI is related to this watershed function, and therefore, with other Doppler parameters.

Methods: Retrospective analysis from US databases. Images with AoI, Umbilical artery PI, MCA PI were retrieved. AoI velocities were measured as follows: 1: peak systolic. 2: systolic notch, either positive or negative if inverted. 3: peak diastolic, as the highest velocity during diastole. 4: end diastolic, the lowest velocity during diastole. All these were studied and correlated to UA, MCA, CPR, fetal weight Z-score and GA.

Results: There were 163 scans, from 22 to 40 weeks, @mean 32 weeks. AoV1 (systolic peak) was correlated with greater GA (R=0.3, p<0.001). AoV2 (systolic notch) lowered progressively during gestation (R=-0.4 p<0.001). Diastolic velocities (v3 & v4) did not have changes throughout pregnancy. AoV3 and AoV4 were not correlated to UA PI, MCA PI nor CPR. In fetuses ≥30 weeks (n=97), AoV3 was positively correlated to CPR (R=0.4 p<0.05), but not with UA PI or MCA PI. This finding suggests that abnormal CPR (lower), the flow towards the placenta is decreased, expressed by the lower diastolic velocity (AoV3).

Conclusions: In this preliminary data, there was an association of CPR with AoI diastolic velocity in pregnancies over 30 weeks. This parameter could be studied in the pathophysiology of IUGR progression.