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**Systolic and Diastolic Aortic Isthmus (AoI) components.**

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**Background:** The AoI is complex and its variations are difficult to understand. Anatomically is important as it is located between the cerebral and the placental circulation. A detailed observation and its relations with other territories is needed.

**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 197 scans, from 22 to 42 weeks, @mean 32 weeks. All with normal UA Doppler an AFI. AoV1 (systolic peak) was correlated with greater GA (R=0.25, p<0.001). Aov2 (systolic notch) lowered progressively during gestation (R=-0.44 p<0.001). Diastolic velocities (v3 & v4) did not correlate to GA. AoV4 were not correlated to UA PI, MCA PI nor CPR.

In fetuses ≥30 weeks (n=124), Aov3 was positively correlated to CPR (Spearman R=0.18 p<0.05), and MCA PI (R=0.18 p<0.05).

**Conclusions:** This shows the correlation of CPR and Ao V3 after 30 weeks. The higher CPR (& MCA-PI), the diastolic flow in the AoI is higher, toward the placenta. This only in fetuses @30w and later. There is a regulation of cerebral resistance and aortic flow that could be detected in normal adequate growing fetuses.