

Uterine artery Doppler and the placenta / fetal heart axis - congenital heart disease CHD and placental disease share overlapping risk factors and comorbidities.

There is an increasing recognition and structural abnormalities and functional changes in the placenta can have deleterious effects on the development of the fetal heart.

*The placenta as the window to congenital heart disease. Cohen. Current Opinion in Cardiology: Jan 2021-v36. issue 1-p56-60.

Fetal CHD confers increased risk for early onset preeclampsia by a likelihood ratio 7.0. Preterm PE in a previous pregnancy has OR 7.91 with CHD in subsequent pregnancy.

*Boyd. Circulation April 2017. Association between fetal congenital heart defects and maternal risk of hypertensive disorders of pregnancy in the same pregnancy and across pregnancies.

The fetal heart and the placenta are directly linked because they develop concurrently with shared regulatory and signaling pathways. Placental disease is more common in pregnancies carrying a fetus with congenital heart disease and the fetal response to placental insufficiency may lead to the postnatal persistence of cardiac remodeling. The mechanisms underlying this placental-fetal cardiac axis of interaction potentially include genetic factors, oxygenated stress, chronic hypoxia, and/or angiogenic imbalance.

*Recent advances in placenta-heart interactions. Maslen. Front. Physiol. 9:735.
<http://doi:10.3389/fphys.2018.00735>

*The role of abnormal placentation and congenital heart disease; cause, correlate, or consequence? Courtney. Front. Physiol. 9:1045.
<https://doi:10.3389/fphys.2018.01045>

*Evidence for uteroplacental malperfusion in fetuses with major congenital heart defects. Binder. PLoS ONE 15(2):e0226741.
<https://doi.org/10.1371/journal.pone.0226741>

*The association between severe fetal congenital heart defects and placental vascular perfusion lesions.
Miremberg. Prenatal Diagnosis. 2019; 39:962-967. <https://doi.org/10.1002/pd.5515>

*Characterization of the placenta in the newborn with congenital heart disease: Distinctions based on type of cardiac malformation. Rychik. Pediatric Cardiology 2018. 39:1165-1171.
<https://doi.org/10.1007/s00246-018-1876-x>

*Placenta-related complications in women carrying fetus with congenital heart disease. Ruiz. Journal of Maternal-Fetal and Neonatal Medicine. 2016 Oct;29(20):3271-5.