Uterine artery Doppler for personal and family history of preterm delivery

The nomenclature of gestational age is typically discussed in terms of the number of completed weeks. *The World Health Organization (WHO) defines preterm birth as any birth before 37 completed weeks of gestation.*
*Collaboration Preterm Birth Working Group. Preterm birth: Case definition & guidelines for data collection, analysis, and presentation of immunization safety data. Vaccine. 2016 Dec

Past obstetrical history of preterm delivery confers increased risk for recurrence. Etiology of PTD is multifactorial and incompletely understood. Contributing factors include impaired placentation necessitating uterine artery Doppler to optimize risk assessment of recurrence.

Many cases of PTL / PTD appear to be caused by abnormal uterine spiral artery remodeling and defective trophoblastic invasion similar to preeclampsia and fetal growth restriction.
*Role of the Placenta and Preterm Birth: A Review. Amer J Perinatol 2016; 33 (03): 258 - 266.

Uterine artery Doppler is a validated non-invasive proxy for placenta ischemia due to impaired placentation and defective trophoblastic invasion. Uterine artery Doppler is a marker for defective remodeling of spiral arteries with consequent placental malperfusion and associated impaired fetal growth.
*Scazzocchio. Ultrasound Obstet Gynecol 2017; 49:435 - 441.
*Mifsud. Placental pathology in early onset and late onset fetal growth restriction.Fetal Diagn Ther 2014;36:117-128.

Pregnant patients who were born prematurely or who have siblings born preterm have an increased risk of preterm delivery in their own pregnancies. Assessment of female personal and family history of PTD should be used to identify women at risk of having a PTD in the present pregnancy.

Seventeen of 173 women (9.8%) in the PTD group reported being born preterm, compared to five of 169 women (2.9%) in the control group ($p = 0.01$), with an odds ratio (OR) of 3.57 (95% confidence interval, CI 1.29-9.92). Women who delivered preterm also reported more frequently having a sibling who was born preterm (12.4% vs. 4.2%, $p = 0.01$), with an OR of 3.18 (95% CI 1.31-7.7).

*The role of family history of preterm delivery in the individual risk of spontaneous preterm delivery: a case-control study. Huri. Arch Gynecol Obstet 309, 2515-2519 (2024). https://doi.org/10.1007/s00404-023-07144-z