

Abnormal umbilical cord coiling UCC. UCC association with placental dysfunction. Uterine artery Doppler screening for placental dysfunction.

Abnormal umbilical cord coiling and comorbid associations with placental histopathology

*Ernst. Gross patterns of umbilical cord coiling: correlations with placental histology and stillbirth. *Placenta*. Volume 34, issue 7. July 2013. 583-588.

*de Laat. Hypercoiling of the umbilical cord and placental maturation defect: associated pathology? *Pediatr Dev Pathol*. Jul-Aug 2007;10(4):293-9. doi: 10.2350/06-01-0015.1.

Abnormal cord coiling (hypo- and hyper-) may have chronic (growth restriction) and acute (fetal intolerance to labor, fetal demise) effects on the fetus and can be associated with velamentous cord insertion.

Hypo coiling is significantly associated with hypertensive disorders, abruption, preterm labor, oligohydramnios and fetal heart rate abnormalities. Hyper coiling is associated with diabetes mellitus, polyhydramnios, cesarean delivery, congenital anomalies and respiratory distress of the newborn. Hyper coiling has been associated with thrombosis of chorionic plate vessels.

Although no prenatal gestational age - specific standard exists for defining hypo-coiled cords, postnatal examination of the umbilical cord has clearly shown an association between hypo-coiled cords and adverse perinatal outcomes. Several studies have reported an increased frequency of adverse pregnancy outcome, including congenital anomalies, growth restriction, fetal heart rate abnormalities, preterm birth, and intrauterine death in patients with an uncoiled umbilical cord.

Segmental umbilical coiling abnormalities:

Umbilical coiling abnormalities can be segmental, occurring in specific sections of the umbilical cord while the rest of the cord remains normally coiled.

Studies if shown that both hypo coiling and hyper coiling, even if segmental are associated with various complications.

*Blickstein. *Gynecologic and Obstetric Investigation* 2001;52(3):203-6.

*Ernst. *Placenta* 2013;34(7):583-8.

In approximately 25% of cases there can be significant changes in the umbilical cord index between second and third trimester measurements

*Second trimester ultrasound assessment of the umbilical coiling index. Qin. *Ultrasound Obstet Gynecol* 2002; 20: 458-463.

*Projection of postnatal abnormal umbilical cord coiling by antenatal evaluation pregnant women: Diagnostic accuracy study; a systematic review. Ghalichi. *Journal of Obstetrics and Gynecology Research*. November 2023. v49, is11. p2692-2699.

Interval normalization of umbilical coiling index with advancing gestational age - an acknowledged phenomenon secondary to increasing cord length with unchanged number of coils.

Management:

Pregnancies with either hypo- or hyper coiled umbilical cords are monitored closely, especially in the third trimester. The author performs serial ultrasound examinations, including Doppler studies and biophysical profile scoring, serial nonstress tests, and asks the mother to perform fetal movement counts.

*Prenatal diagnosis and management of umbilical cord abnormalities. UpToDate. Sepulveda. Literature review current through: Feb 2021. - This topic last updated: Oct 01, 2020.

*Chitra. Umbilical Coiling Index as a Marker of Perinatal Outcome: an analytical study. Clinical Study - Open Access. Volume 2012 |Article ID 213689 - doi.org/10.1155/2012/213689

*Strong TH Jr, Elliott JP, Radin TG. Non-coiled umbilical blood vessels: a new marker for the fetus at risk. Obstet Gynecol 1993; 81:409.

*Rana J, Ebert GA, Kappy KA. Adverse perinatal outcome in patients with an abnormal umbilical coiling index. Obstet Gynecol 1995; 85:573.

*Degani S, Leibovich Z, Shapiro I, et al. Early second-trimester low umbilical coiling index predicts small-for-gestational-age fetuses. J Ultrasound Med 2001; 20:1183.

*de Laat MW, Franx A, Bots ML, et al. Umbilical coiling index in normal and complicated pregnancies.

Obstet Gynecol 2006; 107:1049.

*Predanic M, Perni SC, Chasen ST, et al. Ultrasound evaluation of abnormal umbilical cord coiling in second trimester of gestation in association with adverse pregnancy outcome. Am J Obstet Gynecol 2005; 193:387.

*Ultrasonography in Obstetrics and Gynecology. Callen. Fifth Edition, p 750.

*Normal UCI range, 0.21- 0.59 (10 - 90th percentile). Sahoo. Evaluation of umbilical coiling index is a predictor of pregnancy outcome. International Journal of Health Sciences and Research. Vol.5; Issue: 3; March 2015