Pediatric and Developmental Pathology – Identifying potential risk factors that may harm placental development is a primary objective of pregnancy screenings. To help ensure healthy pregnancies and, in turn, healthy newborns, researchers and clinicians continue to develop new and innovative testing methods to monitor fetal development. Successfully identifying syncytial knots (SK) in the placenta can assist doctors in detecting maternal diabetes, hypertension, preeclampsia, anemia, and other conditions.

The authors of an article published in the current issue of the journal Pediatric and Developmental Pathology outline a new method to quantify SK, which helps recognize advanced gestation or placental malperfusion. Although SK cannot be seen until after 20 weeks gestation, this method can be used to reliably generate SK counts and help track these counts during pregnancy.

Previous research in identifying SK has been controversial due to the existence of two different types of syncytial knots, “true SK” or “false SK.” In addition, researchers have had difficulties in differentiating between the two types. As a result, the ability to correctly quantify SK has been a daunting task. The authors of this study have devised a method that includes drawing a simple grid over glass slides of placental tissue samples and counting the percentage of terminal villi with SK. This unique method provides a potentially reliable approach to identify SK, and creates a solid system to not only count, but also to determine whether the SK counts are normal or abnormal.

Two authors from the study, Patricia K. Senagore and Claudia B. Holzman, commented: “Our research is exciting because it potentially enables studies with diverse purposes, populations, and resources to reliably quantify syncytial knots, and permits subsequent meaningful comparisons between them. Not all syncytial knots are the same, as recognized historically by expert investigators and confirmed by molecular interrogation. Our study identifies specific conditions in which special care must be taken in the application of counting criteria to ensure reproducibility.”

By perfecting this grid method, the authors have the ability to aid in overall identification of syncytial knots. This has incredibly important implications for continuing to monitor fetal health and recognize indicators for pregnancy complications. This method will also lead to a deeper understanding of the formation of syncytial knots and increased knowledge of the impact they

have on pregnancy.

Full text of the article, “Working Towards a Reproducible Method for Quantifying Placental Syncytial Knots,” Pediatric and Developmental Pathology, Vol. 19, No. 5, 2016, are available at http://www.pedpath.org/doi/full/10.2350/15-08-1701-OA.1 .