The new pathology classification for placenta accreta spectrum is well associated with clinical outcomes

Bahram Salmanian, Scott A. Shainker, Rachel D. Seaman, Anna M. Modest, Eumenia Castro, Jonathan Hecht, Sarah Toussi, Nazlisadat Mesh, Alec Brown, Amir A. Shamshirsaz, Steven Clark, Karin A. Fox, Michael A. Belfort, Alireza A. Shamshirsaz

OBJECTIVE: The terminology and diagnostic criteria presently used by pathologists to report placenta accreta spectrum is inconsistent and does not reflect current knowledge of the pathogenesis of this disease. In 2020, the perinatal subcommittee of the Society for Pediatric Pathology (SPP) proposed a new grading system for placenta accreta spectrum. We sought to correlate clinical outcomes with each group in the new PAS grading system.

STUDY DESIGN: The pathology reports of patients with histopathology confirmation of placenta accreta spectrum were reviewed in 2 academic referral centers by placenta pathologist. When available, pathology grading was assigned based on the new grading system categorizing placenta accreta spectrum in 5 groups depending on the depth of invasion as defined in figure 1. Patient characteristics and clinical outcomes were compared among these groups. Univariate analysis was performed and a multivariate linear or logistic regression was employed when needed.

RESULTS: A total of 665 patients with placenta accreta spectrum were identified. Of those, 393 were included as slides were available to review for the new grading system. The proportion of patients in each group was 89 (23%) grade 1, 74 (19%) grade 2, 79 (20) grade 3A, 120 (30%) grade 3D, and 31 (8%) grade 3E. There was a significant association between the pathology grading and number of red blood cells transfused ($\beta=1.1$, p = 0.002), and post-operative complications including rate of readmission (OR=8.3 [comparing grade 3E to 1], 95%CI 1.6-42.6), and bladder injury (OR=29.1 [comparing grade 3E to 1], 95%CI 2.9-294.9), after adjustment for antenatal diagnosis. The pathology grading was associated with estimated blood loss (p=0.014), however, when adjusted for antenatal diagnosis it was no longer significant ($\beta=51.7$, p=0.151).

CONCLUSION: The new pathology grading system accurately reflects maternal outcomes and complications of placenta accreta spectrum.

We encourage the utilization of this new grading system as it is designed to omit discrepancies in the placenta accreta spectrum reporting and to standardize communication.