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Diffusion Lacunae and T2 Dark Bands in Placenta Accreta Spectrum: MR-Pathologic Correlation

Shinya Fujii

Tottori University, Japan

Diffusion lacunae (DL) is a novel MR imaging finding on diffusion-weighted imaging (DWI) for diagnosing placenta accreta spectrum (PAS). DL is defined as intraplacental ovoid or irregular hypointense areas on DWI, with signal intensity equivalent to amniotic fluid, demonstrating hyperintensity on the ADC map, and measuring more than 1 cm in diameter. This finding likely corresponds to placental lacunae, the most well-known ultrasound feature suggestive of PAS. Flow voids within the lacunae are often observed on T2-weighted imaging.
In PAS, maternal blood from the radial arteries flows directly into the intervillous space at higher velocity. This high-velocity flow distorts the normal placental lobular architecture, leading to enlargement of the intervillous spaces, known as placental lacunae. However, the pathological findings have remained unclear. Based on our MR–pathology correlation, DL appears to represent areas lacking chorionic villi.

T2 dark bands are widely recognized as a useful MR imaging finding for the diagnosis of PAS. These bands have been thought to represent areas of fibrin deposition due to repetitive intraplacental hemorrhage or infarction. Our pathological analysis, however, suggests that these bands are primarily caused by thrombus formation.

Keywords: *MRI, Placenta accreta spectrum (PAS), Diffusion lacunae, T2 dark bands*