

Three-dimensional ultrasound and microvascular imaging in prenatal diagnosis of fetal intracranial anomalies

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Objective

This study aims to evaluate value of three-dimensional ultrasound and microvascular imaging in prenatal diagnosis of fetal intracranial anomalies.

Methods

This is a retrospective study including the fetal with intracranial anomalies who underwent ultrasound examinations. All cases had ultrasound imaging data and prenatal or postnatal MRI results. The ultrasound data included three-dimensional ultrasound and microvascular ultrasound imaging. MRI results were used as the gold.

Results

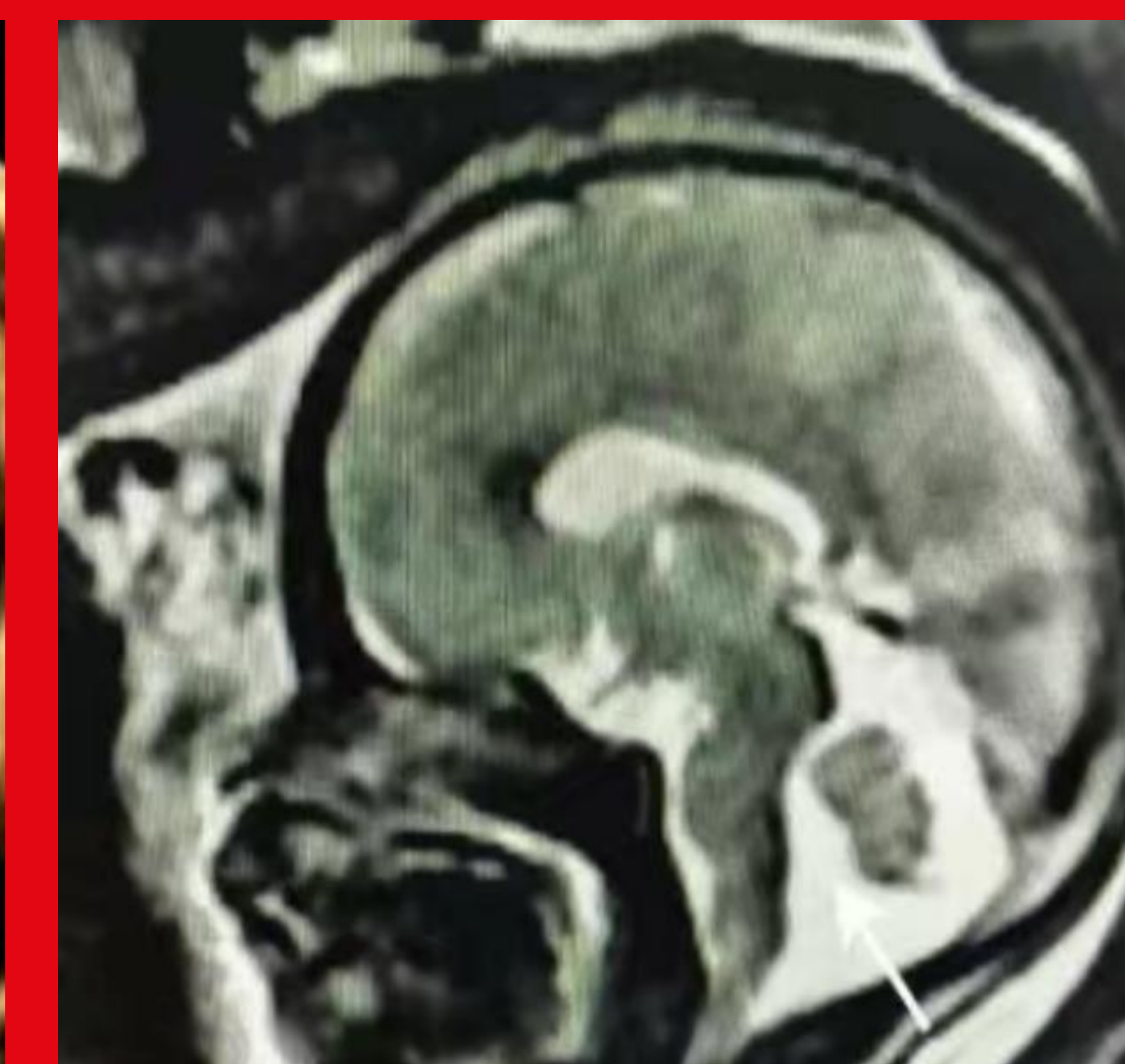
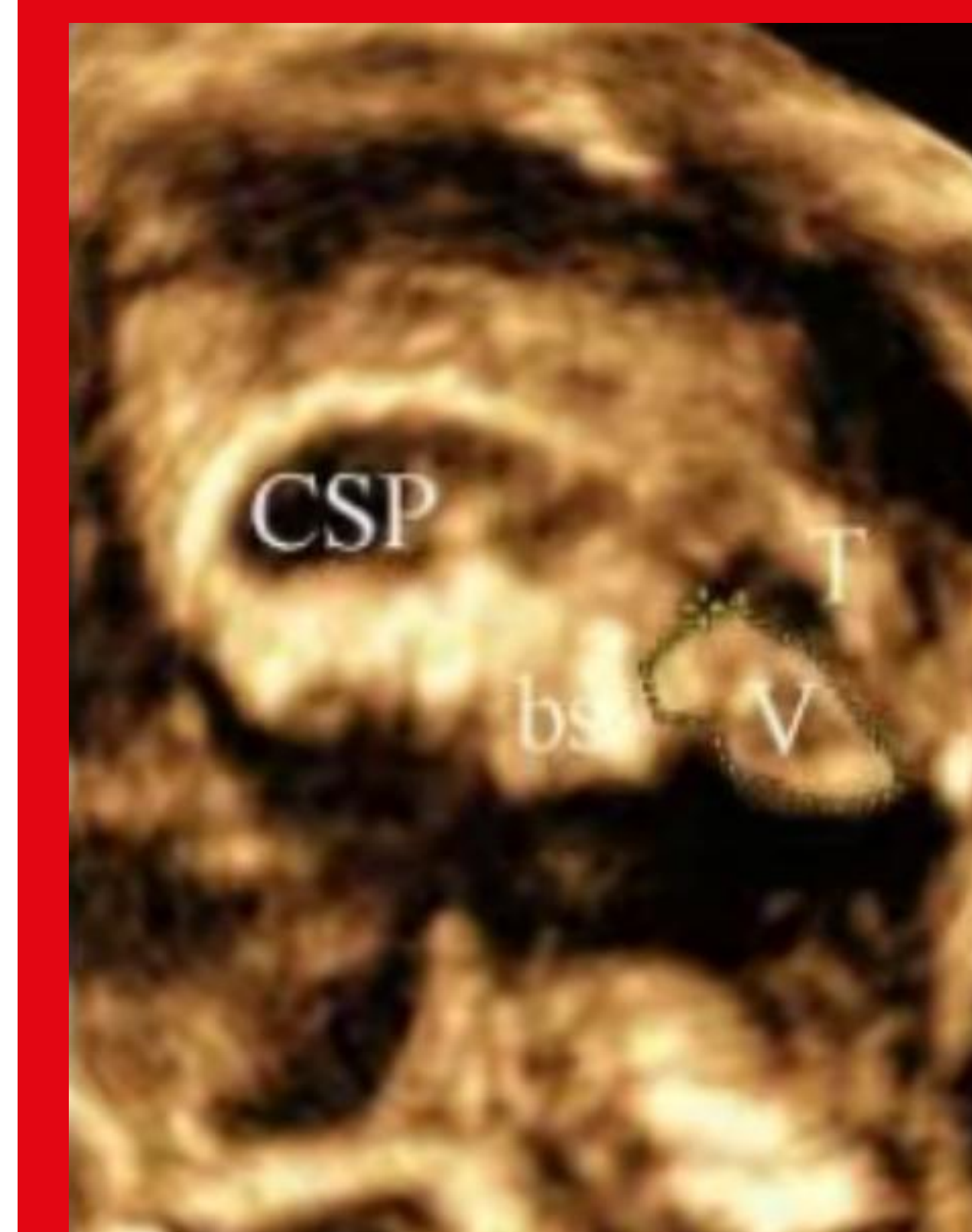
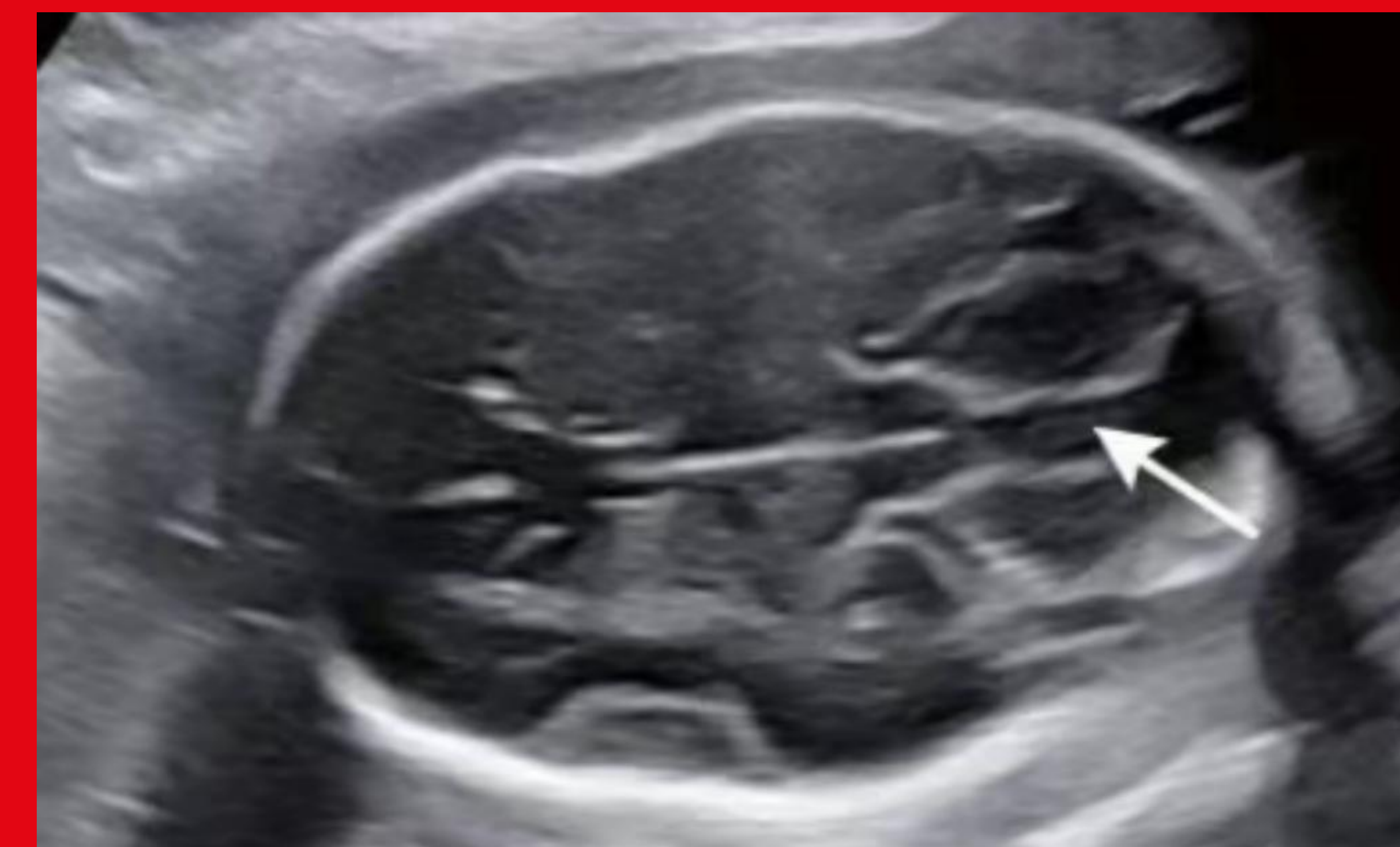
A total of 118 cases of fetal cranial malformations were included.

The diagnostic accuracy of three-dimensional ultrasound and microvascular imaging was 93.2% (110/118).

Missed diagnoses by ultrasound included 6 cases of focal cortical dysplasia and 1 case with intracranial softening lesions. An arachnoid cyst was misdiagnosed as a mega cisterna magna.

Conclusion

Three-dimensional ultrasound and microvascular imaging demonstrate significant diagnostic value for fetal cranial malformations. However, for focal cortical dysplasia, additional ultrasound techniques and MRI may enhance prenatal diagnostic accuracy.



The pregnant woman is 39 years old, at 25 weeks of gestation, with fetal Blake's cyst.

A. Fetal cranial transverse ultrasound image shows partial separation of the inferior cerebellar vermis (arrow);
B. Fetal 3D ultrasound mid-sagittal view of the brain demonstrates mild upward rotation of the cerebellar vermis, with an area of 1.14 cm² and a circumference of 4.44 cm;
C. Fetal cranial MRI reveals mild upward rotation of the cerebellar vermis (arrow).