Clinical significance of 3D HDlive silhouette/flow in neurosonoembryology and fetal neurosonography

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Objective
Recent evolution in prenatal imaging is HDlive silhouette/flow technology. By HDlive silhouette mode, an inner cystic structure can be depicted through the outer surface structure of the body and it can be appropriately named as ‘see-through fashion’. HDlive flow mode adds more spatial resolution to conventional 3D ultrasound angiogram. We have utilized this technology in neuroimaging and investigated its clinical significance.

Methods
Between October of 2014 and November of 2015, in 450 cases including 46 cases of CNS abnormalities, fetal brain was examined by transvaginal 3D HDlive silhouette/flow. The equipment used in this study was Voluson® E10 with 6-12 MHz/256 element 3D/4D transvaginal transducer (GE Healthcare, Milwaukee, USA).

Results
HDlive silhouette imaging demonstrated clear images of ventricular system with outer fetal surface structure in early pregnancy as well as in the middle gestation. Silhouette ultrasound demonstration of thick slice of 3D volume dataset shows more concrete inside structure of complicated morphology in specific cases. Silhouette ultrasound can also depict bony structure therefore cranial bones and vertebræ of spina bifida are detectable. HDlive flow imaging can demonstrate cerebral vascular structure of fine arteries and veins in whole gestation.

Conclusion
By HDlive silhouette, inner cystic as well as non cystic structure can be demonstrated with outer surface. HDlive flow imaging can demonstrate fine peripheral brain vasculature.