### **Three-dimensional Intraoperative Ultrasound**

A dedicated commercial system for navigated Three-dimensional Intraoperative Ultrasound allowing to acquire 3D ultrasound (US) volumes by combining a stack of 2D US scans with known spatial positions was first presented in 2000 by Gronningsaeter et al., <sup>1)</sup> and applied to different cranial pathologies <sup>2) 3)</sup>

# Three-dimensional Intraoperative Ultrasound for intracranial tumor surgery

Three-dimensional Intraoperative Ultrasound for intracranial tumor surgery

### With preoperative rotational digital subtraction angiography

Intraoperative coregistration of 3D intraoperative ultrasound data with preoperative 3D Rotational Angiography is possible with high accuracy. It allows the immediate visualization of vessels beyond the microscopic field, as well as parallel assessment of blood velocity, aneurysm and vascular tree configuration. Although spatial resolution is lower than for standard angiography, the method provides an excellent vascular overview, advantageous interpretation of 3D-ioUS and immediate intraoperative feedback of the vascular status. A prerequisite for understanding vascular intraoperative ultrasound is image quality and a successful match with preoperative rotational digital subtraction angiography <sup>4</sup>.

## Three-dimensional intraoperative ultrasound for intradural spinal tumor

#### Three-dimensional intraoperative ultrasound for intradural spinal tumor.

1)

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