

TARGET THE TRUE LOCATION

**YOU CAN'T PREDICT BRAIN SHIFT.
YOU CAN CORRECT FOR IT.**

Neuronavigation systems rely on preoperative MR or CT data, which can become out-of-date over the course of surgery, reducing the accuracy of the surgery,¹ increasing the potential of harm to the patient,² and potentially leading to incomplete tumor resection.³

10.8 mm

Maximum brain shift prior to opening the dura³



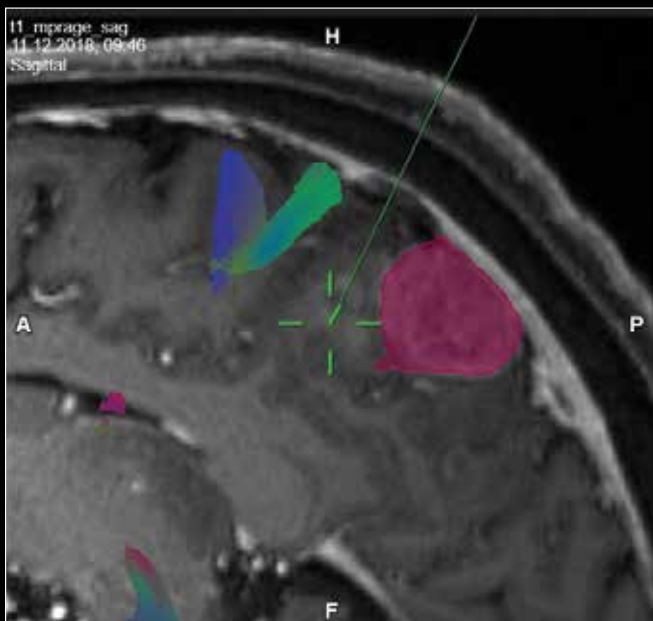
15.7 mm

Maximum brain shift after opening the dura³

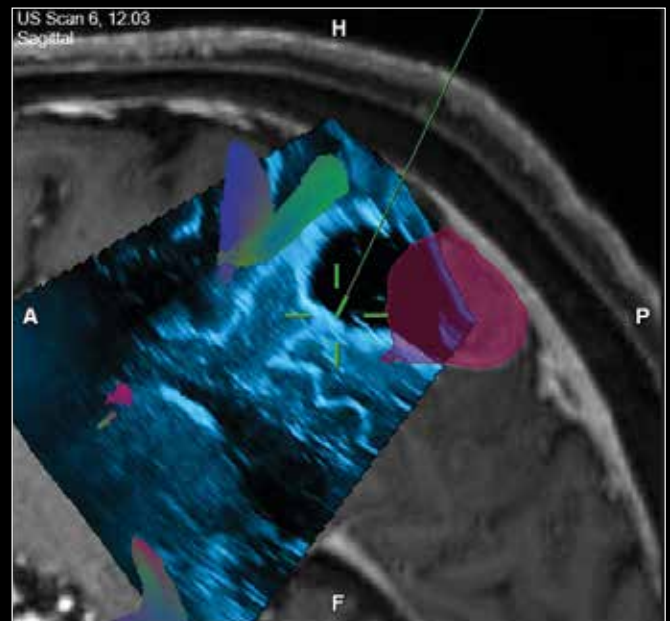


19.0 mm

Maximum brain shift post tumor resection³



Pre-operative MRI with tumor location highlighted in pink.*



Ultrasound scan, taken post tumor resection, overlaid onto pre-operative MRI. Noticeable shift of the tumor location is observed between the location of the pre-operative MRI (pink) and the ultrasound scan (blue).*

*Images courtesy of Brainlab

¹ Bayer, S., Maier, A., Ostermeir, M., Fahrig, R. "Review Article: Intraoperative Imaging Modalities and Compensation for Brain Shift in Tumor Resection Surgery." International Journal of Biomedical Imaging, 2017.

² Bucholz R.D. et al. (1997) The correction of stereotactic inaccuracy caused by brain shift using an intraoperative ultrasound device. In: Troccaz J., Grimson E., Mösges R. (eds) CVRMed-MRCAS'97. CVRMed 1997, MRCAS 1997. Lecture Notes in Computer Science, vol 1205. Springer, Berlin, Heidelberg.

³ Ohue, S., et al. "Evaluation of Intraoperative Brain Shift Using an Ultrasound-Linked Navigation System for Brain Tumor Surgery." Neurol Med Chir (Tokyo) 50, 291-300.2010.

ACTIVE IMAGING FOR ACTIVE DECISION-MAKING

NEXT-LEVEL INTRAOPERATIVE ULTRASOUND USING bk5000 HELPS YOU:

- Identify brain shift in real-time.
- Target lesions at their true location.
- Locate residual tumor.

Intraoperative Visualization and Guidance for:

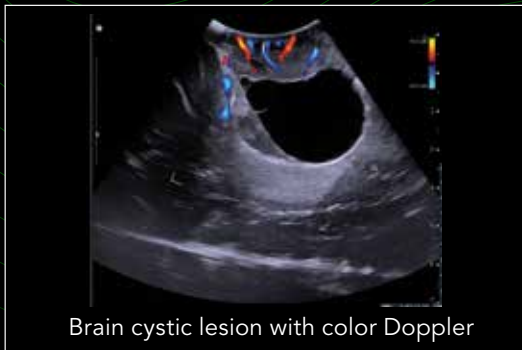
Adult Cranial Tumor Resections



Pediatric Cranial Tumor Resections



Cyst and Abscess Drainage



Shunt Placements and External Ventricular Drains



Other Procedures:

Hematoma Removal

Surgical Clipping of Brain Aneurysms

Arteriovenous Malformation Removal

Intradural Electrode Placement

* Use of the 'hockey stick' transducer for intraoperative (neuro) has not been CE-marked.

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