

## **Die klinische Anwendung der Neuronavigation in einer Serie von Bohrlocheingriffen**

### **Clinical application of neuro-navigation in a series of single burr-hole procedures.**

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With recent developments in computer technology and the improvement of neuroimaging, modern optical neuro-navigation systems are increasingly being used in neurosurgery. In this study, we present our experience with 51 operations using a frameless optical navigation system in a variety of single burr-hole procedures. The procedures include neuroendoscopic surgery, frameless stereotactic biopsy, cyst aspiration and catheter placement. Both the VectorVision and the VectorVision(2) neuro-navigation systems (BrainLab AG, Munich, Germany) were used. The reliability and accuracy of the neuro-navigation system, postoperative complications and the clinical usefulness of image-guidance were analyzed. The navigation system worked properly in all 51 neurosurgical cases. Exact planning of the approach and determination of the ideal trajectory were possible in all cases. The mean registration error of the system, given as a computer-calculated value, was 2.1 mm (0.4-3.1 mm). Postoperative clinical evaluations and imaging were performed on every patient in order to confirm the success of the surgical procedure. All patients recovered well and without any postoperative complications. We conclude that image guidance in single burr-hole procedures provides a high degree of accuracy in lesion targeting, permits good anatomical orientation and minimizes brain trauma. The navigation system has proven to be a helpful tool since it increases the safety of single burr-hole procedures.