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The use of iCT Brain suite for frame based stereotactic biopsies in the pediatric setting. Practicality, use and results

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Introduction: In this paper we describe a single-step procedure for stereotactic brain biopsy using the intraoperative CT (iCT, Brainlab).

Procedure: In the OR the patient is intubated, fitted with the Base Frame, fixed to the low profile frame holder on the OR table, the head positioned centrally in the scanner gantry (Toshiba & iCT Brainsuite Brainlab AG, Germany and the iCT-scan is performed. The images are fused with a preoperative MRI including biopsy trajectory plan formulated beforehand. The biopsy procedure is performed while the patient stays on the same operating table, with the same head fixation. A second CT scan can be performed to verify the procedure.

Results: In the first 8 month the procedure was successfully used 65 times including 8 times in pediatric cases. The procedure duration in the intubated pediatric patients was in average 89 minutes (Median 89, 78-100 minutes).

Before implementation of iCT, pediatric cases were cumbersome with transportation of an intubated and sedated patient between our OR and the Department of Radiology two floors below. This was resource demanding and carried a potential risk for the patient.

Our system has allowed us to performed biopsies from all intracranial locations.

Conclusion: The many advantages includes reduced time for the patient with the headring mounted, less discomfort with no need to move from one department to another wearing the frame, elimination of transfer of intubated patients, easy access to CT for follow-up on cyst aspirations.

This study demonstrates that frame-based stereotactic biopsies in all brain locations are a feasible and practical technique with improved workflow, added patient safety and comfort.