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C0313 - O-ARM®+VERTEK® ASSISTED ELECTRODE PLACEMENT FOR STEREO-ELECTRO-ENCEFALOGRAPHY IN THE 'SMART OR'

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Resumen

Objectives: Advanced intraoperative imaging modalities are integrating in the modern neurosurgical operative rooms. The authors present the results of a surgical technique which allows electrode placement (EP) for stereo-electro-encephalography (SEEG) in drug resistant epilepsy (DRE) with the Vertek® passive arm, guided by MR navigation, and verified by intraoperative CT(iCT) O-Arm® scanner.

Methods: Candidates for SEEG are selected by multidisciplinary epilepsy team based on comprehensive studies (PET, SPECT, VEEG, MRI). Electrode set-up planning is done in S7-PlanningStation® on preoperative findings. Patients are operated under general anaesthesia with head fixed in Doros® radiotransparent head-fixation device. A stereotactic iCT scan is launched and automatic fusion is done with preoperative MR. EP is done with the Vertek® passive arm. Control iCT scan is launched and fused to verify correct EP and rule out gross complications. Mean tip deviation is calculated; surgical time and complications are also registered. A postoperative stereotactic CT is done to validate the procedure.

Results: 20 patients were operated using this technique. A total of 159 electrodes have been implanted (mean EP per patient was 8 [3-12]). Mean tip deviation was 1,57 mm (0,76-2,3 mm). Surgical time averaged 4.5 hours with a mean electrode placement of 20 minutes/electrode (13-40 min), which shortened with experience. Mean monitoring days were 9 (7-12), and discharged on average at day 10 (8-15). One patient had an asymptomatic intraparenchymal haematoma, another developed deep vein thrombosis with pulmonary thromboembolism, which required cava filter and anticoagulation. Fifteen patients (75%) revealed a focal onset; 12 patients (60%) underwent resection, 4 patients (20%) radiofrequency thermal ablation, and 4 were not operated due to focal onset in eloquent area or multifocality.

Conclusions: The described O-Arm+Vertek® EP technique is safe, accurate and efficient for SEEG in DRE epilepsy invasive study.