

tomography (CT) and O-arm imaging enabled a detailed three-dimensional comparison of screw placement. The objective was to compare the accuracy of pedicle screw placement with intraoperative X-ray versus O-arm image-guided navigation. **Methods:** This was a retrospective analysis of image-guided pedicle screw placement in patients who underwent spinal instrumentation. Post-operative CT and O-arm imaging allowed grading of screw accuracy based on pedicle breaches. Clinical outcomes included patient and operative factors. **Results:** Pedicle screws were placed in 208 patients (1116 screws). Three-dimensional O-arm guidance was utilized for 126 patients, while the remainder underwent two-dimensional X-ray imaging and post-operative CT assessment. O-arm navigation was associated with improved pedicle screw accuracy: pedicle breaches were more likely to be low grade (odds ratio 2.84, p=0.001) and less likely to be medium grade (odds ratio 0.35, p=0.007) or high grade (odds ratio 0.31, p=0.025). **Conclusions:** This study provided a detailed comparison of surgical accuracy with X-ray versus O-arm guidance. Navigation with O-arm imaging is associated with benefits in spinal instrumentation, without impacting operative risks for patients.

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Direct Visualization of Thalamic Nuclei using 7 Tesla MRI and quantification in patients with temporal lobe epilepsy.

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Background: Most individual thalamic nuclei cannot be directly visualized on routine clinical MRI. Stereotactic targeting techniques are indirect, relying on histological atlases and electrophysiological recording. We investigate whether high-field MRI can directly visualize the thalamic nuclei *in vivo* and allow for analysis of disease-related changes. **Methods:** Thirty-two healthy individuals were imaged with 7T MRI at a resolution of 0.7mm³. To obtain a high-resolution composite image, these were registered across subjects and averaged together. Three thalamic structures closely integrated in seizure propagation, the anterior thalamic nucleus (ATN), mammillothalamic tract (MTT), and centromedian nucleus (CM) were manually segmented in a subset of healthy subjects and patients with temporal lobe epilepsy (TLE). **Results:** There is sufficient resolution within the thalamus at 7T for visualization of the ATN, CM, and MTT. In the small subset of 5 controls and 5 TLE patients examined, there was no significant difference ($p>0.05$) in volume or mean T1map for the three thalamic structures of interest. **Conclusions:** MRI at 7T provides a method of direct visualization of thalamic nuclei, uncovering substructures not previously identifiable *in vivo*. These advances will enable quantitative analysis of disease-related changes to these structures and improved clinical targeting as demonstrated in this initial ‘proof-of-concept’ subset analysis.

NEUROSCIENCE EDUCATION

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Assessing the competence of neurology residents in performing an interphysician telephone consultation.

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Background: Neurology Residency training in Canada is transitioning to competence based medical education (CBME) in July 2020 and the Royal College Neurology Specialty Committee has identified “providing consultation for and managing patients at outlying centers,” to be an entrustable professional activity (EPA). At Western, neurology telephone consultations, from outlying centres, are attended by both the resident and the staff Neurologist. This scenario provides the ideal situation for direct observation and immediate formative feedback. The resident’s performance is assessed using the ‘TeleTool’ which utilizes an entrustment scale and has a short narrative portion. **Methods:** This mixed methods study aims to determine the reliability and validity of the ‘TeleTool’ in assessing the performance of the telephone consultation by senior neurology residents. Informed consent was obtained from residents (9) and staff (7) involved. Scores on the entrustment scale and narrative comments were analysed. **Results:** Information on 30 encounters (involving 9 residents) was collected. TeleTool results demonstrated higher entrustment scores in PGY4 and PGY5 levels. Overall, ratings were consistent across the 7 consultants assessors. **Conclusions:** The TeleTool was reliable and valid in assessing competence in the telephone consultation and will be a useful tool for assessment of this EPA.

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The Effect of the COVID 19 Pandemic on the Training of Surgical Residents in Canada. A Survey of Residents and Program Directors.

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Background: The coronavirus 2019 pandemic has led to restructuring of health care systems and has subsequently had secondary effects on medical education. This study examines the impact on training of surgical residents in Canada. **Methods:** The study consisted of a 25-question survey for residents and a 22-question survey for program directors, which were distributed electronically through program administrators on July 3rd- July