the first 13 interviews (8 males, 5 females; median age 54), 10 had English as a first language, all completed post-secondary education, and 8 had a brain tumor. In addition to expecting excellent surgical skills and comprehensive medical knowledge, participants expected "good" neurosurgeons to be human (compassionate, empathetic, no ego), transparent communicators, accountable, passionate, collaborative, emotionally composed and highly intuitive. However, there were marked differences in minimum set of competencies required and the expectations of the thresholds to determine competence for neurosurgeons. **Conclusions:** Patient perspectives show commonalities and marked differences of the expected competencies compared to CBD and significant variability of the thresholds of competence. Further investigations should explore these themes in other specialties. The existing CBD curriculum will need to expand its framework to include humanistic values to improve public perceptions of competence.

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High-Fidelity Simulation-Based Microsurgical Training for Neurosurgical Residents

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Background: Microsurgical techniques remain a cornerstone of neurosurgical training. Despite this, neurosurgical microvascular case volumes are decreasing as endovascular and minimally invasive options expand. As such, educators are looking towards simulation to supplement operative exposure. We review a single institution's experience with a comprehensive, longitudinal microsurgical simulation training program, and evaluate its effectiveness. **Methods:** Consecutive postgraduate year 2 (PGY-2) neurosurgery residents completed a one-year curriculum spanning 17 training sessions divided into 5 modules of increasing fidelity. Both perfused duck wing and live rat femoral vessel training modules were used. Trainee performance was video recorded and blindly graded using the Objective Structured Assessment of Technical Skills Global Rating Scale. **Results:** Eighteen participants completed 107 microvascular anastomoses during the study. There was significant improvement in six measurable skills during the curriculum. Mean overall score was significantly higher on the fifth attempt compared to the first attempt for all 3 live anastomotic modules ($p<0.001$). Each module had a different improvement profile across the skills assessed. The greatest improvement was observed during artery-to-artery anastomosis. **Conclusions:** This high-fidelity microsurgical simulation curriculum demonstrated a significant improvement in the six microneurosurgical skills assessed, supporting its use as an effective teaching model. Transferability to the operative environment is actively being investigated.

NEUROTRAUMA

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Self-Assembling Peptide Biomaterial to Optimize Human Stem Cell-Based Regeneration of the Injured Spinal Cord

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Background: Human induced pluripotent stem cell-derived neural stem cells (hiPS-NSCs) are a promising therapeutic approach to regenerate after spinal cord injury (SCI) as they can differentiate to myelinating oligodendrocytes, synaptically-active neurons, and supportive astrocytes. Unfortunately, most chronically injured patients develop *ex vacuo* microcystic cavitations which prevent regenerative cell migration and neurite outgrowth. QL6 is a novel, pH-neutral, biomaterial which can self-assembles into a supportive extracellular matrix (ECM)-like matrix *in vivo*. This work assesses QL6's ability to support hiPS-NSC-based regeneration. **Methods:** *In Vitro:* hiPS-NSCs were extensively characterized by EDTA assay, qPCR, and immunocytochemistry(ICC), electron microscopy(EM) and neurosphere formation assays. *In Vivo:*Immunodeficient rats received clinically-relevant chronic C6-7 injuries. Animals were randomized: (1)vehicle, (2)hiPS-NSCs, (3)QL6, (4)QL6+hiPS-NSCs. All rats underwent treadmill rehabilitation and behavioural testing. A subset underwent single-cell RNA sequencing(scRNAseq). **Results:** hiPS-NSCs proliferated robustly on QL6($Ki67^+/DAPI^+$; 29%vs6%; $p<0.01$). EDTA assay showed hiPS-NSC binding to QL6 to be driven by calcium-independent mechanisms. Importantly, QL6 enhanced adherent neurosphere formation. EM-imaging provided the first images of the hiPS-NSC/QL6 interaction. Behavioural assessments demonstrate synergistic improvements with combinatorial treatment. High-throughput scRNA-seq differential gene expression analyses suggest QL6 is altering lineage signalling in the human graft post-transplantation. **Conclusions:** This work provides key proof-of-concept data that QL6 can support translationally-relevant human iPS-NSCs in traumatic SCI.

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Accuracy of External Ventricular Drain Freehand Placement in patients with Traumatic Brain injury. A 5-year single-institution experience

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Background: Placement of an external ventricular drain is considered a simple yet fundamental procedure. Despite its wide practice, an inaccuracy rate of around 50% has been reported.