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Evaluating the Validity of a Virtual Reality Simulation for Emergency Front of Neck Access Training

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Introduction: Emergency front of neck access (eFONA) is a rare but high risk procedure, prone to rapid skill decay. Currently, no validated virtual reality (VR) training module exists for eFONA. This study assesses the validity evidence for a novel VR eFONA training module using novice and expert participants.

Methods: Forty surgical interns(novices) and 25 experts from anesthesiology, emergency medicine, otolaryngology and trauma surgery were voluntarily recruited to participate. Novice completed the VR eFONA module, generating initial validation data. Experts are currently undergoing the same. Validation measures include subjective surveys assessing face and content validity and objective performance metrics to evaluate construct validity. Additionally, experts completed construct validity assessments to ensure accurate representation of procedural knowledge and steps within the module.

Preliminary Results: Novice data suggest strong face and content validity, with high levels of realism and usability reported. Initial performance metrics from novices indicate promising procedural familiarity and cognitive load management when using the VR module. Preliminary expert feedback supports the VR simulation's authenticity and usefulness for procedural practice.

Next Steps: Ongoing expert evaluations aim to establish construct validity. Future steps include comparative analyses with traditional task trainers and longitudinal skill retention assessments at three-month interval. User feedback and performance analytics will inform iterative improvements to enhance realism and instructional value. This validation process aims to position this VR eFONA module as the first, high-impact training tool to improve clinical preparedness and patient safety.