Virtual Reality In Neurosurgical Education: Modernizing The Medical Classroom

Karam Atli MS, Warren Selman MD, Abhisheke Ray MD
Disclosures

• No disclosures
Introduction

• The landscape of medical education is constantly transforming as new technology is becoming increasingly accessible and applicable with virtual reality (VR) being one of the most revolutionary new tools emerging.

• While VR has been utilized for resident training and neuroanatomy education, application of VR has been limited for neurosurgical education. This is the first report of utilization of VR for both neuroanatomy and neurosurgery.
Methods

• 12 second-year medical students were included in this prospective survey study that was conducted to evaluate a year-long comprehensive multi-component neurosurgery elective course with an interactive VR platform as a primary teaching tool for neuroanatomy and neurosurgery procedures.

• Outcome measures were confidence levels measured on pre- and post-course competency confidence surveys in students’ ability to identify neuroanatomical structures, interpret neuroradiological imaging, and analyze neurosurgical cases, and student feedback on their experience with VR on a post-course survey.
Results

• At course conclusion, 100% of students reported significantly higher competency confidence levels on all topics.

• 100% of students agreed utilizing VR helped them gain a deeper understanding of neuroanatomy/neurosurgery.

• 92% and 69% of students agreed that using VR helped them better retain the anatomical/functional details of the brain/spine and better understand neurosurgical skills taught, respectively.

• 100% of students found the course to be a valuable learning experience and VR a useful learning tool.
Discussion/Conclusion

• In this preliminary assessment of a multi-component neurosurgery elective course using VR as a primary teaching tool, student-reported competency confidence levels in their abilities to interpret neuroimaging, perform a routine neurological physical exam, and diagnose various neurosurgical pathologies were significantly higher than those reported prior to taking the course.

• This study contributes valuable information towards the growing field of research using VR in medical education, presenting positive results of VR intervention in improving student’s confidence in understanding neuroanatomy and neurosurgical principles.