Simulator

see Simulation.

see Virtual Reality Simulator.

Pediatric hydrocephalus has a high prevalence and therefore a major neurosurgical problem in Africa. In addition to ventriculoperitoneal shunts, which have high costs and potential complications, endoscopic third ventriculostomy is becoming an increasingly popular technique, especially in this part of the world. However, performing this procedure requires trained neurosurgeons with an optimal learning curve. For this reason, González-López et al. have developed a 3D printed training model of hydrocephalus so that neurosurgeons without previous experience with endoscopic techniques can acquire these skills, especially in low-income countries, where specific techniques training as this, are relatively absent.

The research question was about the possibility to develop and produce a low-cost endoscopic training model and to evaluate the usefulness and the skills acquired after training with it.

A neuro endoscopy simulation model was developed. A sample of last year's medical students and junior neurosurgery residents without prior experience in neuro endoscopy were involved in the study. The model was evaluated by measuring several parameters, as procedure time, number of fenestration attempts, diameter of the fenestration, and number of contacts with critical structures.

An improvement of the average score on the ETV-Training-Scale was noticed between the first and last attempt (11.6, compared to 27.5 points; $p<0.0001$). A statistically significant improvement in all parameters was observed.

This 3D printed simulator facilitates acquiring surgical skills with the neuroendoscope to treat hydrocephalus by performing an endoscopic third ventriculostomy. Furthermore, it has been shown to be useful to understand the intraventricular anatomical relationships [1].

1)
González-López P, Gómez-Revuelta C, Puchol Rizo M, Verdú Martínez I, Fernández Villa de Rey Salgado J, Lafuente J, Fernández-Jover E, Fernández-Cornejo V, Nieto-Navarro J. Development and evaluation of a 3d printed training model for endoscopic third ventriculostomy in low-income countries. Brain Spine. 2023 Apr 5;3:101736. doi: 10.1016/j.bas.2023.101736. PMID: 37383453; PMCID: PMC10293302.