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New anatomical simulator for pediatric neuroendoscopic training

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Introduction: The practice of neuroendoscopic procedures requires many years of training to obtain the adequate skills and abilities to perform this surgery, safely. The main goal of this study is to present a new pediatric neuroendoscopic simulator for training.

Methods: This real simulator was built with a synthetic thermo-retractile and thermo-sensible rubber called Neoderma[®] which, when combined with different polymers, produces more than 30 different formulas. These formulas present textures, consistencies and mechanical resistance similar to many human tissues. Silicon and fiberglass moulds, in the shape of the cerebral ventricles, constitute the basic structure of the neuroendoscopic module trainer.

Results: There were many possibilities to training: the endoscopic navigation to visualize and identify the anatomical structures (Septal and Thalamus Striatum veins, Monro foramen, Temporal horns and IV ventricle), to perform the choroid plexus coagulation and the third ventriculostomy. The presence of intraventricular lesions, simulating tumors, allowed their resection with bleeding.

Conclusion: It's important to emphasize that is possible to perform with this simulator not only the rigid but also the flexible endoscopy, with good correspondence to the reality and no risks. Notable future perspectives can be considered regarding this new pediatric simulator, for example: to improve the learning curve for non experienced neurosurgeons and to spread the flexible endoscopy technique whose knowledge of its application is still restricted to few developed countries.