DESIGN AND APPLICATIONS OF A SIMULATOR BASED ON THE MORPHOLOGY OF AN ACTUAL STOMACH FOR TRAINING IN ENDOSCOPIC THERAPY

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UEG Week Copenhagen 2023 | Poster

Oesophagus

October 15, 2023

A novel endoscopic simulator constructed from actual gastric CT imaging using 3D printing demonstrates high authenticity and significantly shortens skill acquisition time for novice endoscopists compared to traditional non-anatomical models.

KEY POINTS

- The simulator was created using computer modeling and 3D printing based on actual gastric transverse plane medical images, preserving anatomical structures including the fundus and angularis.
- In a study of 38 novice endoscopists, those trained on the new simulator scored higher than those using traditional models in familiarity with instruments, understanding of gastric structure, and self-confidence in clinical examination.
- The learning curve for novice endoscopists reached a plateau after 13 training sessions, approximately 10 hours of training.
- The simulator includes modular training components such as hollow cylinders for position identification and endoscope control, snare polypectomy simulation, and adhesive target paper with writing pencil for simulated ESD operations with quantifiable performance analysis.
- Thirty endoscopists with varying experience levels rated the device as having high authenticity, substantial convenience, low physical and mental load, and high interest, with more experienced operators requiring less testing time.

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