

3D Printable Epistaxis Simulator for High-fidelity Procedure Training

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OBJECTIVES: To assess the fidelity and potential educational value of a novel epistaxis simulator.

STUDY DESIGN: Experts in epistaxis management underwent a simulation exercise and appraised attributes of the novel simulator. Evaluations from a pilot boot camp curriculum were examined to assess learner satisfaction.

METHODS: 3D Photography, CT data, and Computer aided design were used to create a simulator of active epistaxis that can be produced with 3D printing equipment for under \$20 USD. Seventeen experts in epistaxis management were recruited to undergo a simulated epistaxis emergency. Each expert performed at least 3 procedures (anterior rhinoscopy with evacuation of clot, endoscopy, and nasal packing) and completed a detailed questionnaire. Evaluations were also examined from twelve novice learners who had undergone a pilot boot camp curriculum utilizing the novel simulator.

RESULTS:

Using a 5-point rating scale (5 representing “Excellent”, “Strongly Agree”, or “Very Valuable”), the expert participants provided a mean score of 4.49 ± 0.57 for overall realism, 4.73 ± 0.49 for anatomical accuracy, 4.03 ± 0.78 for tactile realism, and 4.93 ± 0.29 for potential educational value. The novice learners rated their simulation session as 4.79 ± 0.74 for enjoyment of experience and 4.89 ± 0.36 for the educational value.

CONCLUSIONS:

Expert evaluations of a novel epistaxis simulator concluded it had high fidelity and educational potential. A pilot curriculum utilizing the simulator was highly rated by novice learners.