Ocular Ultrasound Training Simulator (OUTS)

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Technology description

Background
The use of ocular ultrasound on emergency patients has recently been adopted by emergency physicians to evaluate for ocular pathology and emergencies. Point of care ultrasound (POCUS) has been found to be highly accurate in diagnosing and evaluating for ocular pathology in patients presenting in emergency departments. However, ultrasound training models are rare and not widely utilized for ocular ultrasound. Hands-on learning is ultimately the most effective technique for learners to acquire the skill and comfort level needed to use POCUS for clinical decision making. In addition, ocular ultrasound is included in the Emergency Medicine scope of practice and board exam. Therefore, there is a need for an ocular ultrasound training platform.
Invention Description
Researchers have developed an ocular ultrasound model that mimics live tissue. They have identified the 3D printing variables, including size, temperature, and materials that result in ultrasound images that look like real tissue.

Application area

- Train emergency medical personnel in diagnosing eye pathologies, including retinal detachment, lens dislocation, vitreous hemorrhage, foreign body, globe rupture, and increased optic nerve diameter

Advantages

- 3D models, as opposed to pictures, can teach angles, pressure, rotation, and other motor skills; experiential learning
- Low cost (~$0.50 per print); easy to make; students can afford to have their own model (instead of sharing/scheduling)
- No need for pig or cow eyes, does not expire
- No need for standardized patients or learning on the fly
- Accurate and reproducible images vs homemade or animal models; various anatomical potentials
- Simple and easy to use

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