Low-Cost Synthetic Dura for Neurosurgical Training

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Disclosures

• We have no actual or potential conflict of interest in relation to this program or presentation
Introduction

• The decrease in resident training time in neurosurgery on a yearly basis requires an adaptation of training methods.

• The most effective training methods are those that can most closely replicate the tactile feel and sensations of the actual operation.
Methods

• The use of a polyvinyl alcohol (PVA) dura model allows for the closest tactile sensation to real brain measured by neurosurgeon feedback.

• 3D printed skull on PJ660 and hydrogel brain model allows for completely realistic training simulation.
Results – Hydrogel Brain Model with Dura Mater
Results- Patient specific 3D Printed skulls
Results - Full System Model used for Robotic Neurosurgery Training
Discussion

- Simple resident training can benefit from realistic model training.

- 3D skull and brain renderings can allow for surgeon and resident teaching operations and practices on new technology.
Summary

• Increase in Neurosurgical technology requires advanced training techniques.

• Models of brain, skull, and dura durable enough to undergo drilling, provide training for robotic surgeries such as those seen in epilepsy and tumor resection.

• Models that mimic tactile modulus allow for the best training experience for neurosurgical procedures on new and complex machines.