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A Playbook for Neurosurgical Resident Education Training in Skull Base Surgery

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Abstract

Introduction

To be adequately prepared for the technical surgical demands and inter-professional teamwork required of the operating room, cadaveric laboratory training is essential.¹ A recent survey of neurosurgical residency programs in the US bore this out: 95.4% of respondents view laboratory dissection as integral to training and an additional 89.2% would support a national “suggested” dissection curriculum and manual.² To address this demand the OHSU Neurosurgery residency program partnered with OHSU Simulation, the OHSU Body Donation Program, and industry stakeholders to develop, over the past six years, an annual three-part cadaveric surgical simulation course series that has provided training in skull base procedures.

Methods

Resident surgical education aims to 1) Develop decision making, complication management and technical surgical abilities in a low-risk environment, 2) Review anatomy, and 3) Refine inter-professional teamwork. Successful resident education in simulation is dependent on collaboration between neurosurgical faculty, educational support staff, and industry experts. We describe a manuscript for successfully implementing a cadaveric surgical simulation course to meet the educational objectives above. This comprehensive overview details 1) Equipment and instrumentation, 2) Course maps and photos (Figures 1 and 2), 3) Curriculum, 4) Tissue procurement and preparation, 5) Communications between major stakeholders, 6) Scheduling and logistics, 7) Evaluation of resident proficiency, 8) COVID-specific modifications to course curriculum.

Results

Over the last 6 years, 337 course evaluations from OHSU Neurosurgery and Otolaryngology residents were collected and analyzed. Means and SDs of Likert scale questions were calculated and indicated uniformly positive responses (Table 1). Free text responses were analyzed via sentiment analysis. This resultant heat map (Figure 3) indicated positive attitudes, with the lowest value being +0.41 (on a scale of -1.0 – 1.0).

Conclusions

We hope this manuscript can serve as a guide for other institutes to develop their own residency educational curriculum in cadaveric skull base procedures.

References

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Table 1. Course evaluation means and SDs of Likert responses by skull base course type – 3 of 10 total responses are shown.

#	Question	Course (mean ± standard deviation)		
		Anterior Fossa	Middle Fossa and Lateral	Endoscopic Endonasal
1	The size of the course was appropriate	4.66 ± 0.84	4.92 ± 0.27	5 ± 0
2	I had all of the essential equipment & supplies needed for the skills session	4.66 ± 0.62	4.62 ± 0.56	4.64 ± 0.8
3	The instructor effectively communicated desired goals and objectives	4.88 ± 0.42	4.89 ± 0.32	4.93 ± 0.25

Figure 1. Example setup for skull base lab



Figure 2. Sample course layout map

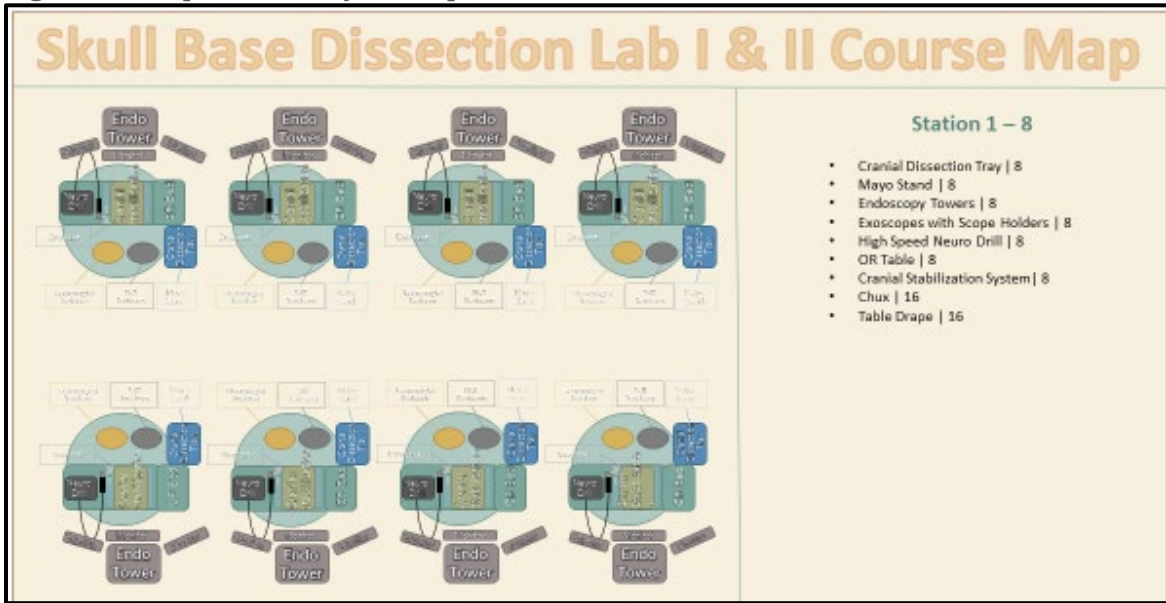


Figure 3. Compound sentiment value heat map derived from free-text responses to course evaluations

