

Interactive Otolaryngologic Bedside Procedure Training with Emergency Room Providers Outcomes

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Introduction

The purpose of this project is to assess how an otolaryngology bootcamp specifically augments education and confidence around flexible laryngoscopy and peritonsillar abscess (PTA) drainage for non-otolaryngology providers. The goal is to assess the utility of simulation for Emergency Department provider learning, the impact on work hours and consult volume for otolaryngology residents, and ultimately serve as a stepping stone towards a curriculum to teach Emergency Departments without otolaryngology coverage to decrease transfers to facilities with otolaryngology coverage.

Methods

A didactic was organized along with pre-test, immediate post-test, and 6-month post-test at a single academic institution, level one trauma center. The didactic consisted of a lecture portion and interactive stations with supplemental handout summary sheets. Stations consisted of a peritonsillar incision and drainage simulation, flexible laryngoscopy on volunteers, and a supplemental image-based presentation on common airway findings on laryngoscopy. Inclusion criteria included emergency medicine residents who participated in the didactic, pre-test, and post-tests. Those who did not complete these were excluded. This study was institutional review board approved.

Models



Image 1

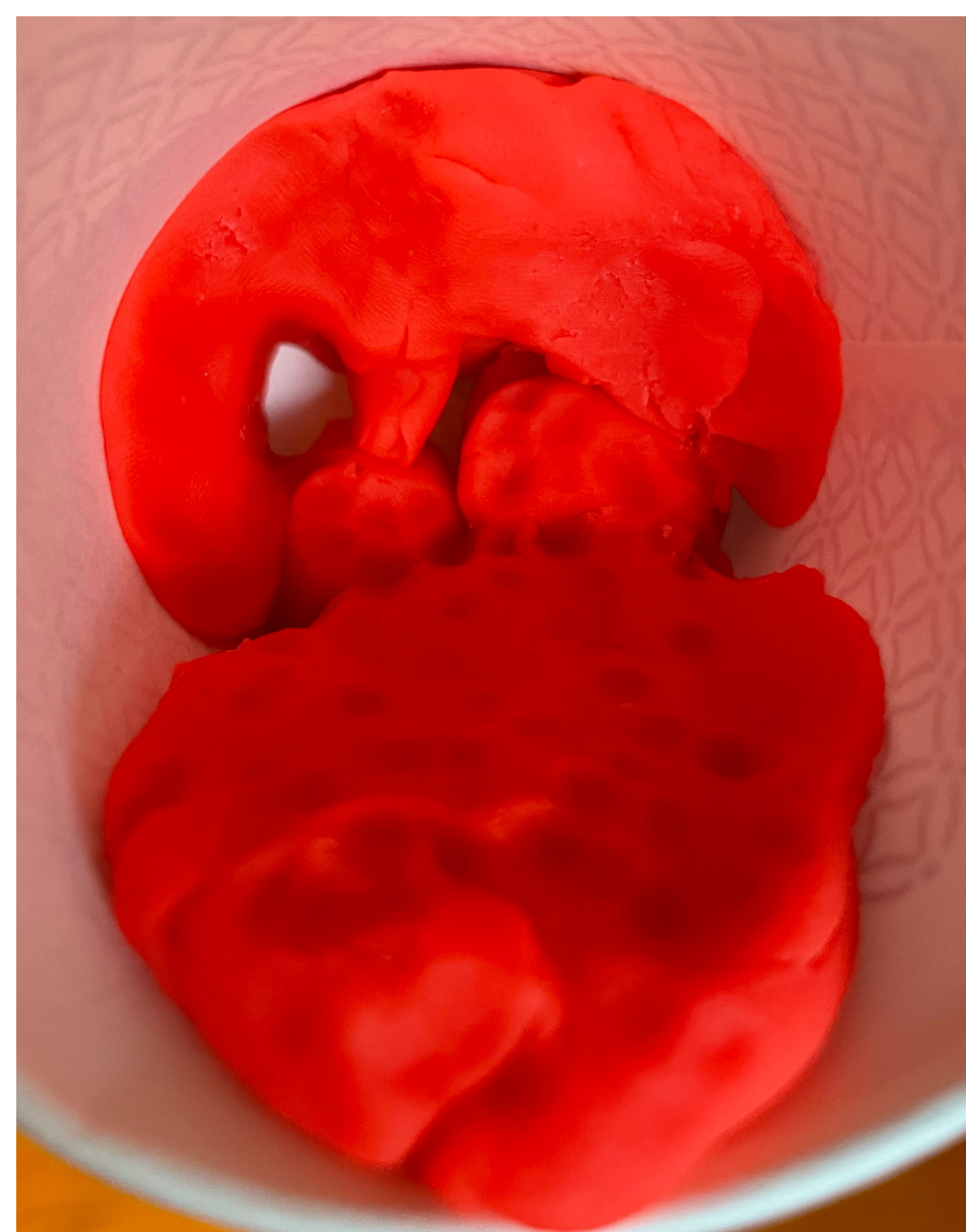


Image 2

Images: PTA models were hand created using a modeling compound to imitate the exam appearance one would see in patients. Image 1 depicts a “difficult” PTA to diagnose and treat. Image 2 depicts an “easy” PTA to diagnose and treat. Jelly was used in the peritonsillar space to provide real time feedback indicating correct technique when drained by participants.

Results

- Overall, average pre-test score was 73% (SD=0.18); this increased to 94% (SD=0.11) on post-test ($p < 0.0001$; 95% CI -29.5 to -12.5).
- Pre-test confidence levels about performing laryngoscopy were 29/100. This increased to 59/100 on post-test ($p < 0.0001$; 95% CI -42.3 to -16.0). Pre-test confidence levels about performing peritonsillar abscess drainage were 22/100. This increased to 62/100 post-test ($p < 0.0001$; 95% CI -49.1 to -29.9).
- The 6-month post-test has not yet been completed.

Test Question	Pre-Test			Post-Test			
	% Correct	Number Responded	SD	% Correct	Number Responded	P Value	95% CI
1	87%	31	0.34	100%	23	0.073	-27.3 to 1.26
2	71%	31	0.46	91%	23	0.073	-41.9 to 1.93
3	74%	31	0.44	96%	23	0.031	-41.9 to -2.06
4	74%	31	0.44	91%	23	0.114	-38.2 to 4.19
5	71%	31	0.46	100%	23	0.004	-48.3 to -9.71
6	42%	31	1.15	87%	23	0.378	-84.7 to 32.7
7	97%	31	0.18	100%	23	0.429	-10.6 to 4.55

Table: Pre-test and post-test responses for each test question. The post-test was administered immediately at the conclusion of the didactics.

Test Questions

1. What complication could arise from inserting the needle too deeply in the peritonsillar space?”
2. Which generally requires more timely intervention, a 2cm tonsillar abscess or a 2cm PTA?
3. What is phlegmon?
4. What is the structure indicated by the arrow? (Answer: right arytenoid)
5. Which of these is NOT a proper technique during a flexible laryngoscope?
6. What are the proper anatomic sites for injecting local anesthesia prior to draining a PTA? (Anatomic diagram with different numbers indicating different sites were provided and respondents had to choose correct numbers)
7. What is the correct diagnosis? (A laryngoscopic image of airway angioedema was provided)

Conclusions

Interactive bedside otolaryngologic procedure education is a useful resource in training the non-otolaryngologic provider with results showing improved knowledge and self-reported comfort and skill. This education can reduce cost incurred to the patient and consult burden to the Otolaryngology provider.

Limitations

This was a single didactic session provided by Otolaryngology residents to Emergency Medicine residents at a single academic institution. Further research would include a standardized didactic session across multiple academic institutions as taught by a single group of experts. Data does not yet include 6-month post-test results as there is likely a high degree of recall bias for immediate post-test results. Limitations also include small sample size.

Contact

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