

Safety Oriented, Low-Cost Peritonsillar Abscess Needle Aspiration Model for Emergency Medicine Simulation

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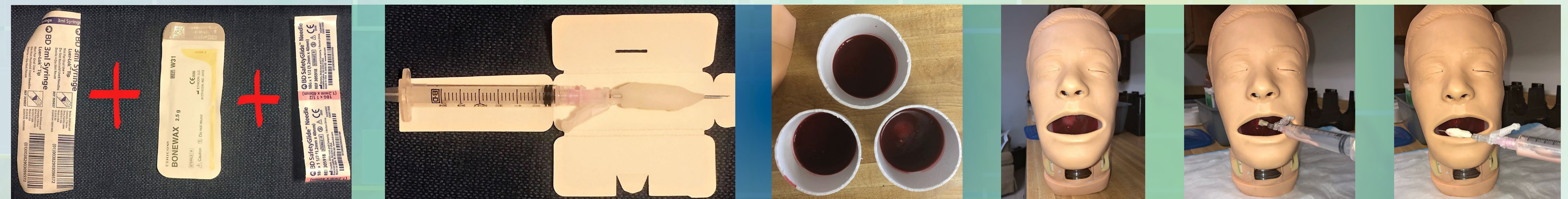
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BACKGROUND

Needle aspiration of peritonsillar abscess is a routine emergency department procedure that in combination with antimicrobial therapy and hydration results in resolution in more than 89% of cases. When performing a needle aspiration, one unique challenge is potential hemorrhage due to inadvertently puncturing the carotid artery if the needle is advanced too far. Through exposure and practice with medical simulation, emergency medicine residents can gain confidence and proficiency in performing needle aspirations of peritonsillar abscesses.

OBJECTIVE

To create a low-cost, realistic model of peritonsillar abscesses that can be used to teach safer techniques for needle aspirations. Our simulation model design prioritizes readily accessible supplies, ease of assembly, and anatomical accuracy in order to reinforce procedural risks. Two ways that our simulation model improves on existing peritonsillar abscess models are by introducing procedural risks in regards to the simulated carotid artery and by teaching the use of a bone wax needle guard.



METHODS

Abscesses were constructed from 1-inch bubble wrap filled with yogurt. The carotid artery was constructed by filling small zip lock bags with red colored water. Two “abscesses” were placed inside a disposable cup, covered with red gelatin, and allowed to set overnight. Within a Resusci Anne face mask or Halloween mask, two of the “carotid artery” zip lock bags were placed laterally and the “oropharynx” cup was placed anteriorly at the mouth of the mask.

OUTCOMES

We plan to use these models during a future procedural simulation date for emergency medicine residents. As such, the full impact of this simulation model has not been established. We do expect that learners will find this model to be very realistic and will have procedural risks reinforced. Total cost per model, excluding reusable face masks, is less than \$10. Each cup can be used twice and the cups can be replaced between procedures.

SUMMARY

We present a safety-oriented peritonsillar abscess simulation model that allows emergency medicine residents to practice and gain proficiency in needle aspirations.

Notably, we instruct residents to use an 18 gauge or spinal needle with a “needle shield” during the simulation. Several variations are popularized, including a variation where the needle sheath is trimmed 1 cm and then recapped to serve as a needle shield. We encountered an issue where our needle sheaths would simply crack when they are being trimmed. The novel solution we teach is to wrap bone wax around the needle shaft, with 1 cm of the needle exposed to serve as a shield. The bone wax subsequently serves as a physical barrier from advancing the needle too far and potentially puncturing the carotid artery.

Our simulation model improves on existing peritonsillar abscess models by introducing a simulated carotid artery to emphasize procedural risks. Another novel addition is that we teach the use of a bone wax needle guard. These two features allow emergency medicine residents to develop proficiency and confidence with this procedure.