

Using a hands-on cadaver lab to train senior anesthesiology residents for neuraxial procedures in the lateral decubitus position

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INTRODUCTION

Traditional lecture-based teaching continues to be the dominant form of transferring information in medical education, despite mounting evidence that residents have limited attention and poor recall with this format (1). Particularly in healthcare education, many believe that the in-class focus should be shifted away from the teacher and onto the learner by using a constructivist learning framework– a methodology in which trainees apply knowledge they already have to actively solve problems, and the instructor serves as a guide to facilitate learning rather than regurgitating facts for memorization (2). To bridge this gap, we created a hands-on cadaver workshop to train senior residents to perform challenging neuraxial procedures, particularly in the lateral decubitus position.

METHODS

- The cadaver lab curriculum was designed by one of the authors (MZ) and reviewed by 5 attending anesthesiologists in the Education Committee at HSS.
- CA3 anesthesiology residents enrolled in the regional anesthesiology elective at HSS were invited and consented to participate in the study (N = 7).
- On the day of the workshops, the materials required were a combined spinal epidural kit, an ultrasound machine with a curvilinear probe, gowns and gloves, and a thawed cadaveric torso..
- A de-novo survey was designed to assess trainees’ level of satisfaction with the cadaver workshop content and delivery after the lab was completed. Quantitative responses to the satisfaction surveys were all assessed using a 5- point Likert scale.

References: 1. Lewis, C. E. The Flipped Classroom: Abandon the Sage on the Stage, and Embrace the Guide on the Side. American College of Surgeons; Resources in Surgical Education. 2018; Retrieved 2023, from <https://www.facs.org/for-medical-professionals/news-publications/journals/rise/articles/flippe> 2. Hrynchak P, Batty H. The educational theory basis of team-based learning. Medical teacher. 2012;34(10):796-801. 3. Kopacz D.J., Neal J.M., Pollock J.E. The regional anesthesia ‘learning curve’. What is the minimum number of epidural and spinal blocks to reach consistency? Reg Anesth. 1996;21:182–190.

Senior anesthesiology residents indicated that they prefer a cadaver lab for challenging procedures in regional anesthesiology over traditional learning modalities.



RESULTS

Table 1. Satisfaction survey quantitative results

Trainee survey		M (Range = 5)
1	Do you think training for challenging neuraxial procedures was a useful way to utilize this cadaver lab?	5
2	Did you find it helpful to practice using paramedian technique in a low-stakes environment without time constraints?	5
3	Did you feel the content of the cadaver lab curriculum was relevant to your stage in training?	4.7
4	Did you feel that the properties of the cadaveric specimen (eg tactile feedback during needling, image acquisition with ultrasound) simulated a living patient successfully?	4.85
5	Do you feel more confident in your ability to use neuraxial ultrasound for preprocedural mapping?	4.85
6	Do you feel better prepared to perform neuraxial procedures on patients in the lateral decubitus position?	5
7	Would you recommend this curriculum to another learner at your stage in training?	5

DISCUSSION

- The results of this pilot study suggest that the implementation of a cadaver lab for challenging neuraxial procedures as part of a senior resident elective in regional anesthesiology is feasible and results in higher learner satisfaction.
- **The composite satisfaction score of the participants was a 4.91 out of 5 on the quantitative questions**, which was in concordance with the qualitative feedback that highlighted an overwhelmingly positive experience.
- One clear limitation of this study was the number of participants– the curriculum was implemented in October 2023, therefore even with participation from every CA3 who rotated on the Regional Anesthesiology elective at HSS, only seven were able to participate prior to submission.
- Furthermore, although residents clearly preferred the cadaver lab to intraoperative learning or a traditional lecture, our pilot only assessed satisfaction and did not test for knowledge acquisition or retention.