Development and Implementation of an Ultrasound-Guided Regional Anesthesia Simulation for SRNAs

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Introduction

- Annually, 10-30% of surgical patients experience chronic pain postoperatively [1]

- Regional anesthesia has been shown to reduce the incidence of chronic pain postoperatively by 20-25% [2]

- Novice anesthesia providers struggle to gain confidence and competence in ultrasound-guided regional anesthesia.

Purpose

Purpose: To create a workshop for novice anesthesia providers to increase their confidence and competence in ultrasound-guided regional anesthesia (UGRA)

Objectives:

1. Develop a regional anesthesia simulation using human cadavers.

2. Evaluate the simulation's effects on SRNA's confidence and competence, and patient satisfaction with regional anesthesia

3. Develop plan for sustainability

Methods

- This project was deemed not human subjects research

- Setting: University of Iowa SRNA program clinical sites

- Population: Novice UI SRNAs and patients deemed appropriate to receive UGRA

- Develop a cadaveric UGRA simulation experience

- Recruit UGRA experts to assist with instruction

- Prepared educational plans for day long simulation seminar
  - Classroom instruction and ultrasound machine practice
  - Simulated cadaveric practice with injections using ultrasound

- Assess SRNA skill and confidence gain, and patient satisfaction

- Create instructional packets for future course directors
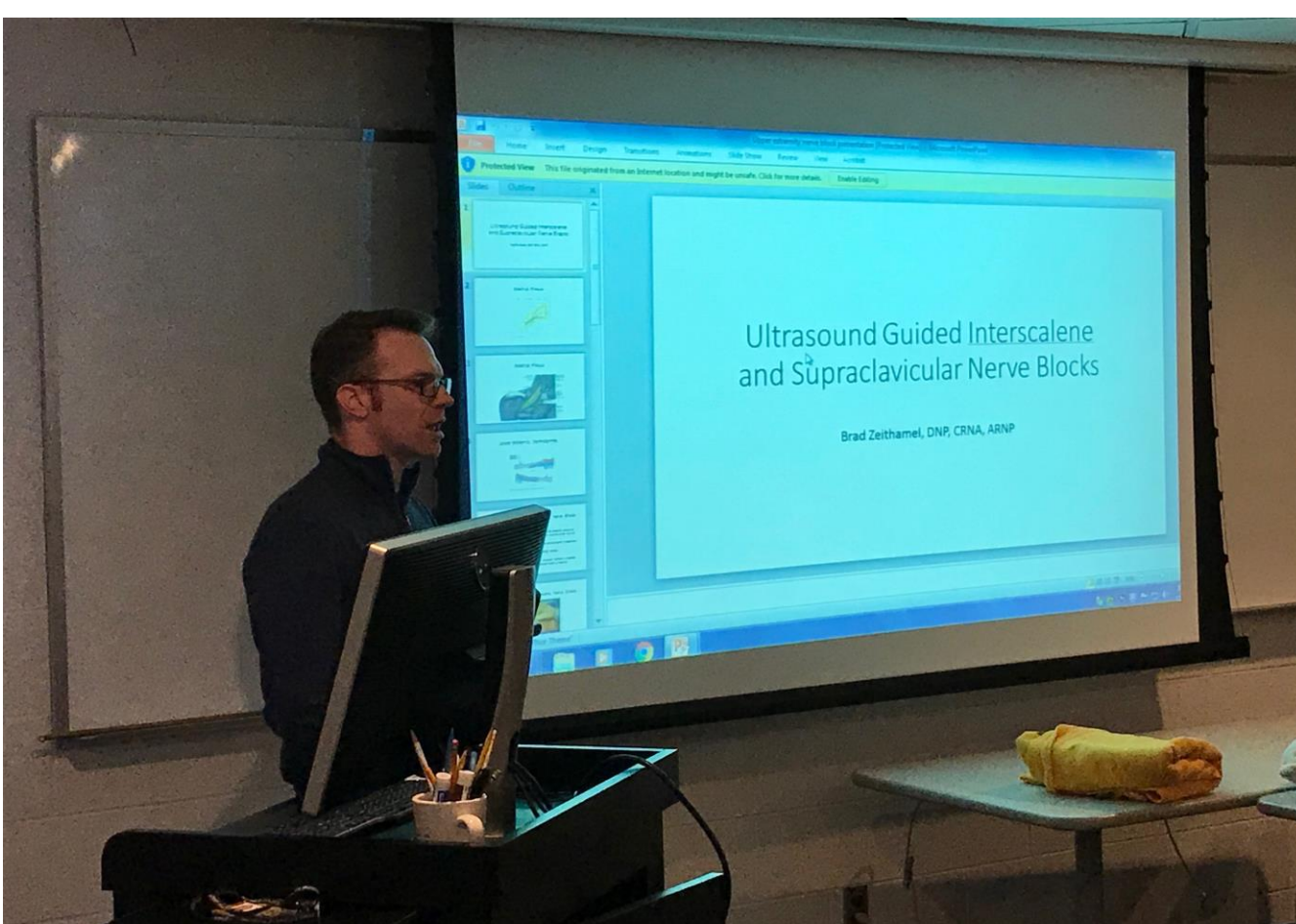
Outcomes

- Regional anesthesia workshop and simulation held December, 2017

  - Attended by 22 SRNAs

  - Completed block simulations for: interscalene, supraclavicular, axillary, transverse abdominal plane, quadratus lumborum, femoral, adductor canal, and popliteal using 3 unembalmed human cadavers

Confidence Scores by Percentage of Respondents		1 Extremely Unconfident (1 to 1.99)	2 Somewhat Unconfident (2 to 2.99)	3 Neither Confident nor Unconfident (3 to 3.99)	4 Somewhat Confident (4 to 4.99)	5 Extremely Confident (5)
Ultrasound Use	Pre	43%	43%	---	14%	---
	Post	---	28.5%	28.5%	43%	---
	1-mo	---	14%	72%	14%	---
Upper Blocks	Pre	86%	---	14%	---	---
	Post	---	29%	57%	14%	---
	1-mo	14%	43%	43%	---	---
Lower Blocks	Pre	86%	14%	---	---	---
	Post	---	14%	86%	---	---
	1-mo	14%	29%	57%	---	---
Overall	Pre	72%	14%	14%	---	---
	Post	---	14%	43%	43%	---
	1-mo	---	14%	72%	14%	---

Data through 03/18

- Future workshops to be held annually in similar format

  - Instructional materials, contacts, documentation, and resource list created

  - Materials reviewed with and handed off to junior chief SRNA, who will direct/manage the 2018 workshop

Evaluation

- SRNA participants and instructors gave extremely positive reviews of the workshop/simulation experience

- The workshop had a positive short and long-term impact on student self-confidence scores with respect to UGRA

- Although limited data is available, SRNA competency at placing UGRA blocks in the clinical arena shows improvement over previous years

- Patient satisfaction data collection is ongoing but difficult to obtain due to clinical performance pressures in operating rooms

Conclusions

- Simulation created a high-quality training environment for ultrasound-guided regional anesthesia

- Simulation is an effective tool to help SRNAs gain confidence in current and emerging regional anesthesia techniques

- Simulated block placement in human cadavers increased SRNA confidence without the risk of patient complications

- This program can be replicated in other settings to provide high quality education and training for UGRA

- Improved self-confidence with UGRA increases the likelihood that providers will perform regional anesthesia for appropriate patients and may reduce the burden of chronic pain

- Abstracts will be submitted to the *Journal of Nursing Education* and *Nurse Educator*

References

1. Bruce, J., & Quinlan, J. (2011). Chronic Post Surgical Pain. *Reviews in Pain*, *5*(3), 23–29. http://doi.org/10.1177/204946371100500306

2. Andreae, M.H. & Andreae, D.A. (2013). Regional anesthesia to prevent chronic pain after surgery: A Cochrane systematic review and meta-analysis. *Br J Anaesth, 111*(5), 711-20.

Acknowledgements