Rapid Education Event: A Streamlined Approach to Ultrasound Guided Nerve Block Procedural Training

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Rapid Education Event: A Streamlined Approach to Ultrasound Guided Nerve Block Procedural Training

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Background

As diagnostic and procedural applications of Point-of-Care Ultrasound (POCUS) continue to evolve, it is crucial that physicians continue to learn these techniques. POCUS has been shown to increase procedural safety and efficacy as well as patient satisfaction.[1] Recently, there has been growing data that regional anesthesia in the emergency department has many benefits.[2,3] Resident education of topics requiring motor skills can be challenging, but it is even more difficult when designing a program for attending physicians without robust formal ultrasound training due to their time or site of training. We developed a model called a Rapid Educational Event (REE) designed to teach the Fascia Iliaca Block (FIB) procedure to both Emergency Medicine (EM) residents and attending EM physicians.

Objectives

This educational intervention aimed to assess the effectiveness of the REE in developing physician competency of POCUS guided procedures, specifically the FIB. The goal was to have at least 90% of learners demonstrate knowledge of the FIB by passing a post-education assessment with a score of 80% or higher and demonstrate the necessary motor skills under direct observation on a gel phantom.

REFERENCES

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3. Kolodychuk N, Krebs JC, Stenberg R, et al. Fascia Iliaca Blocks Performed in the Emergency Department Decrease Opioid Consumption and Length of Stay in Patients with Hip Fracture. J Orthop Trauma. 2022;36(3):142-146.

Curricular Design

The REE design was submitted and approved by the IRB and for CME credits for those eligible for CME. Three REE sessions were executed over a two-month period in spring of 2022. Learners at the three sessions included core EM residency faculty, other attending physicians on a voluntary basis, and EM residents present at grand rounds on a dedicated ultrasound day.

The REE educational model coupled a pre-recorded lecture with a flipped classroom model to maximize time for hands-on learning. Each training session was designed to require only one hour from each of the participants. On the day of the event, there was a brief lecture-based review of the knowledge covered by pre-class materials as well as the opportunity to ask questions. During the hands-on portion of the event, learners then rotated through two stations of standardized patients and two gel phantoms to appreciate anatomic variability.

Learners completed a pre-course assessment prior to the hands-on session to determine their baseline familiarity with relevant topics. Testing of the motor skills was completed by direct observation and comparison to a pre-determined checklist developed by our team and peer reviewed by our POCUS faculty (Figure 1). Finally, learners took a post-education assessment following completion of the event. Responses of learners were transmitted to the Department of Emergency and Hospital Medicine (DOEHM) scholarly activities study coordinator who deidentified the surveys by assigning unique study IDs to each and entered the data into a secure spreadsheet.

Learner Name: ______________________ **Date:** __________

Learner Type (circle): MD DO PA-C CRNP RN Student:________ Other: ________

ITEM	PERFORMED (circle one)	SEQUENCE ERROR (check √)
Joint Commission Timeout		
Verbalized that time out performed/ consent obtained	YES NO	
Equipment and Set-up/ Medication preparation		
Verbalize that calculates maximum dosage of anesthetic, perform pre-procedure checklist (*Confirm IV access, pt connected to telemetry, US prepared, Block kit complete, Lipid emulsion kit available*)	YES NO	
Ultrasound Set Up		
Notes correct orientation of probe	YES NO	
Applies probe cover/ tegaderm	YES NO	
Positioning		
Places in supine/ frog leg position *(if not already done so)*	YES NO	
Anatomy		
Identify landmarks and the insertion point *(verbalize and show)*	YES NO	
Identifies Nerve, Artery and Vein on US screen	YES NO	
Sterile Technique		
Hand washing *(with soap and water or chemical)*	YES NO	
Cleanses skin using Chloraprep scrub in back-and-forth motion for 30 seconds. Allow skin to dry	YES NO	
Drape to create sterile field with half sheet/ towel	YES NO	
Uses sterile gel	YES NO	
Procedure		
Correctly identifies proper needle insertion site using US	YES NO	
Anesthetize skin, and soft tissue (expected route of insertion) with 1% Lidocaine and 25 gauge needle	YES NO	
Aspirates while advancing	YES NO	
Using NB needle injects saline to confirm proper needle placement	YES NO	
Successfully injects near nerve	YES NO	

Figure 1: The action checklist that all learners were graded on when practicing a mock nerve block.

Impact/Effectiveness

Overall, the REE was well received by both attending physicians and residents. The flipped classroom model utilized by the REE allowed more time for hands-on teaching of the motor skills required for this procedure, which is critical in ultrasound education. Subjectively, our learners reported feeling confident in their ability to perform this procedure after completing the REE. Their competence was objectively measured, as all 59 learners passed with a score of 100% on their observed procedural evaluation checklist, when performing the procedure on the phantom model. Aggregate pre-assessment data from all three sessions showed that the pre-assessment pass rate was 74.5% (44/59) and that of the post-assessment was 91.5% (54/59).

This data supports the effectiveness of the REE as a model for ultrasound and other procedural education for both residents and attending physicians. Future assessment of the REE's success will be measuring impact by monitoring how many patients undergo this procedure in our emergency departments and learner scores obtained during future REEs.

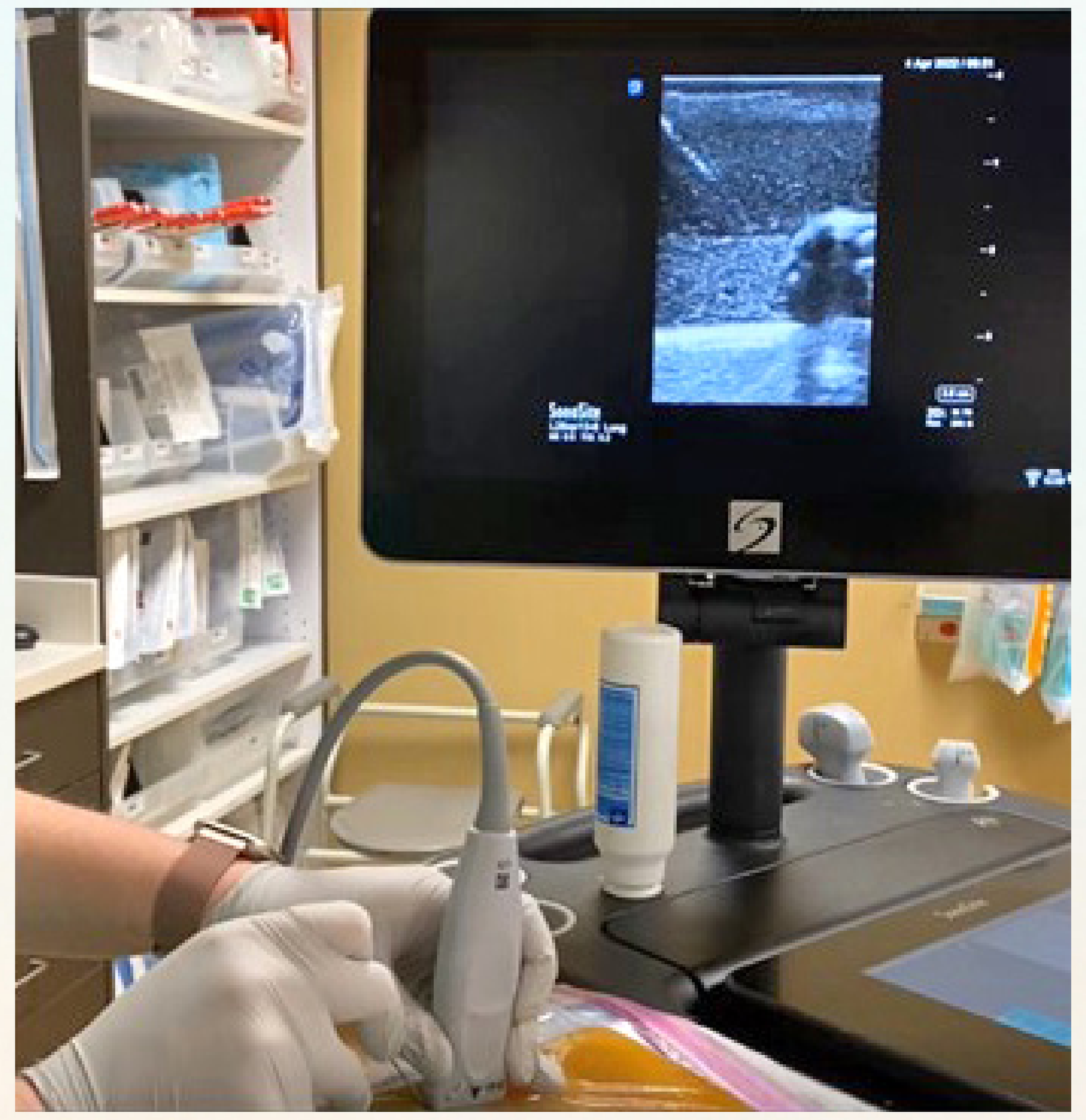

Figure 2: Phantom with needle insertion to simulate the Fascia Iliaca block procedure. *Photo credit: Andrew Helman, DO*

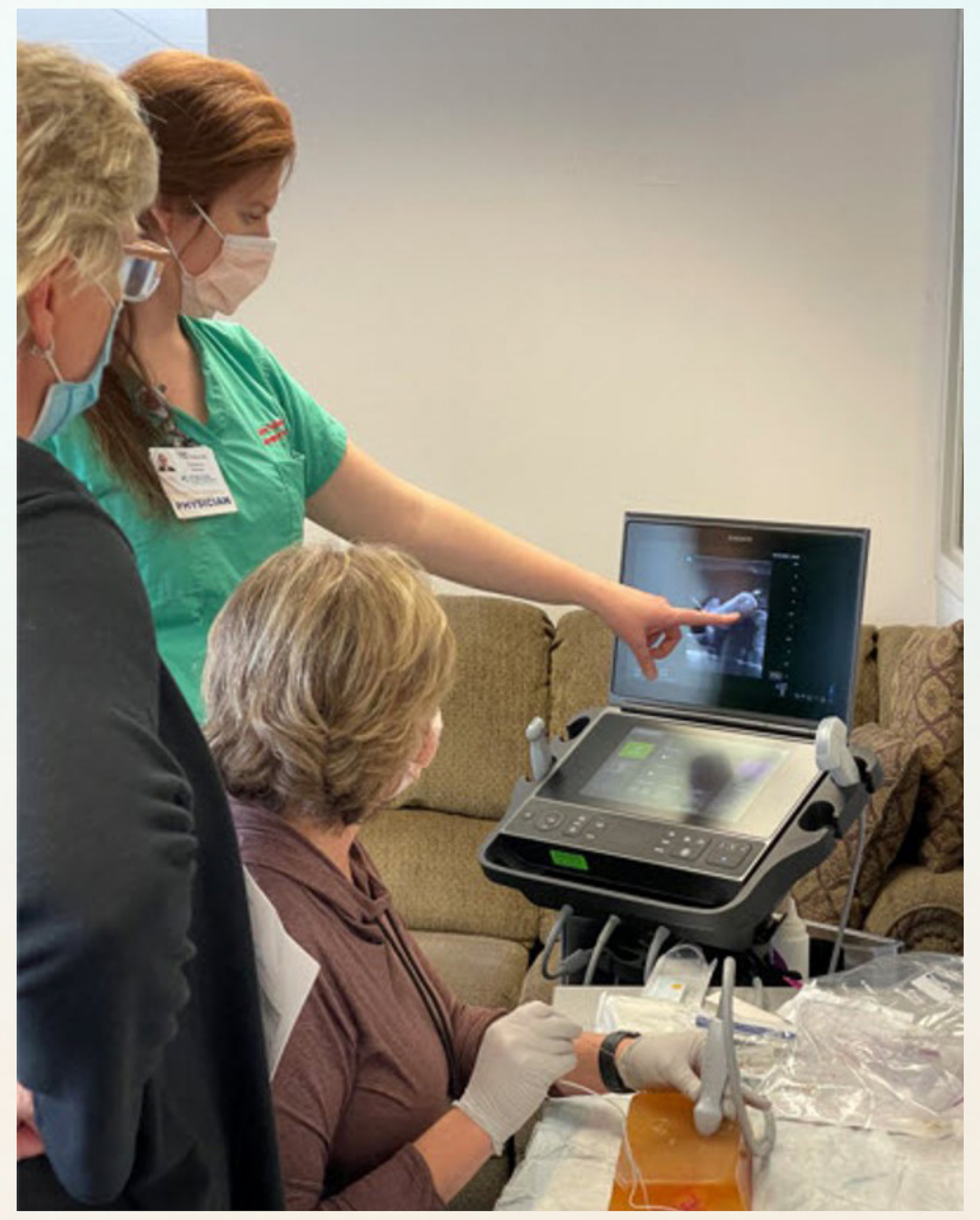

Figure 3: Learner practicing placement of echogenic needle under ultrasound guidance on gel phantom models. *Photo Credit: Timothy J. Batchelor, MD*

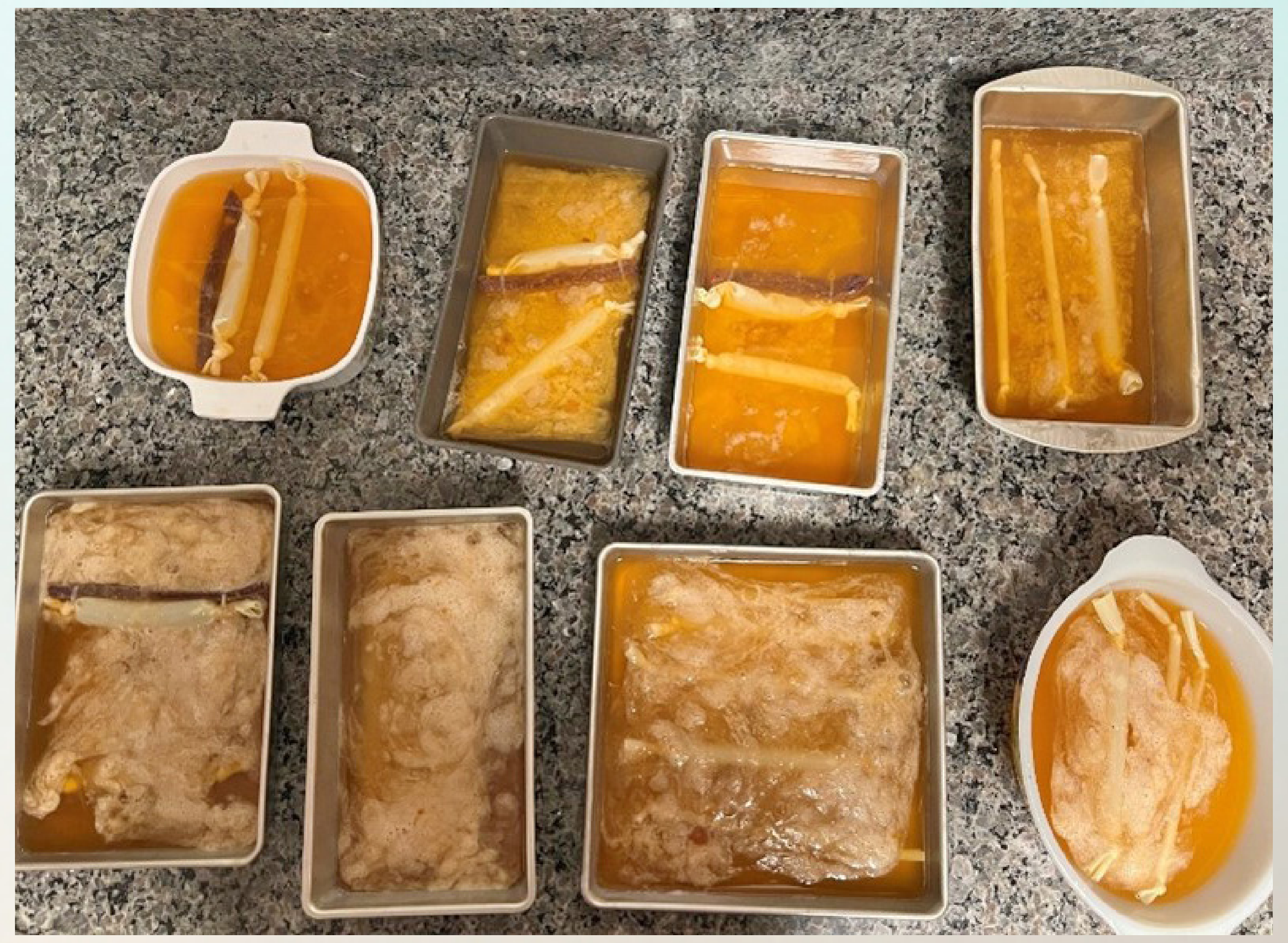

Figure 4: Gel-based phantom models used to practice needle placement on variable anatomies.

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