generated confusion when first trying to visualize the anatomy, and that being able to use the 3D models to correlate these significantly improved their understanding.

Our next steps for this project will be to formally integrate it into the ultrasound curriculum at our school and study its impact on learner-centered outcomes such as quality and time-to-acquisition of images that could be used to make clinical decisions.

Figure 1.

Figure 2.

10 Arterial Transduction: From the Kitchen to the Classroom

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Learning Objectives: To help residents become more self-sufficient and educated clinicians when it comes to placement, setup, and management of an arterial catheter.

To teach this seemingly simple procedure to completion while making it as realistic as possible without having to cannulate a patient or volunteer.

Abstract:

Introduction/Background: Arterial cannulation is a common emergency medicine and critical care procedure. Placement of the catheter is fairly straightforward and the technique is quite similar to most other vascular access procedures. But placing the catheter is only half of the procedure. We typically leave the ensuing tubing connections for transduction to our nursing colleagues, yet physicians are the ones asked to help troubleshoot when it is no longer functioning properly. Having the ability to practice and troubleshoot a simulated setup complete with waveform transduction would build confidence and proficiency.

Curricular Design: Most new residents quickly become proficient in vascular access techniques including arterial cannulation (A-line). However, tubing connections and setup are rarely the responsibility of the proceduralist. This A-line simulation was designed to teach this procedure from the start all the way through to waveform transduction and troubleshooting of the setup. Using simple cooking gelatin, a turkey baster, silicon caulking, a baking tin, and rubber tubing we were able to crudely simulate an artery, as well as generate a pulse wave through this closed system. The mechanical energy was then converted to electrical pulsations as reflected on the monitor. Steps included: cannulate the artery, get pulsatile flow up the catheter, connect the tubing and learn how to zero the line for accurate measurements, and finally generate a pressure waveform through the column of water within the tubing.

Impact/Effectiveness: This multiuse arterial simulator was perfect for resident procedure skill sessions and can be made in minutes for dollars. Now anyone can repeatedly simulate cannulating an artery, complete the ensuing steps to obtain a transducible pressure, and troubleshoot the A-line tubing setup and monitor connections. Modification to the consistency of the gelatin and trying other materials may make this even more life-like.

Figure.