A Novel Approach to Teaching Amniotic Fluid Index Measurement

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Study Objective: To develop a unique approach for teaching medical students and residents how to perform and calculate an amniotic fluid index (AFI), as well as understand 3D to 2D representation of fluid-filled areas.

Methods: We created an opaque, concave, gelatin model containing multiple fluid-filled areas to represent the quadrants of amniotic fluid. We incorporated 4 fluid-filled target areas, at varying depths and locations, to represent the four quadrants of an AFI. After a brief didactic, 16 OB-GYN residents calculated the AFI using a SonoSite ultrasound machine and documented the location of the fluid filled areas in the coronal and sagittal planes.

Results: Sixteen residents participated in the didactics and simulation. Compared to the objective AFI measurement of 22 cm, the mean resident AFI was $19.73 \pm 2.04$ cm ($p=0.09$), with 87.5% (n=14) correctly identifying all 4 areas. With respect to localization of the areas, 50% (8/16) residents correctly localized areas in the coronal plane and only 12.5% (2/16) in the sagittal plane.

Conclusions: AFI calculation is an essential technical skill for OB-GYN medical students and OB-GYN and Family Medicine residents. Additionally, localization of fluid pockets is important skill for performing procedures such as amniocenteses. Using a high-fidelity, low-cost gelatin model, residents were competent in AFI evaluation but had difficulty in 2D to 3D rendering of the fluid areas. The simplicity of the model allows for it to be stored on L&D for AFI and amniocentesis practice.

Key Words (3): Amniotic Fluid Index, Simulation, Resident teaching