A Proposed Educational Curriculum for Lumbar Puncture Success

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BACKGROUND

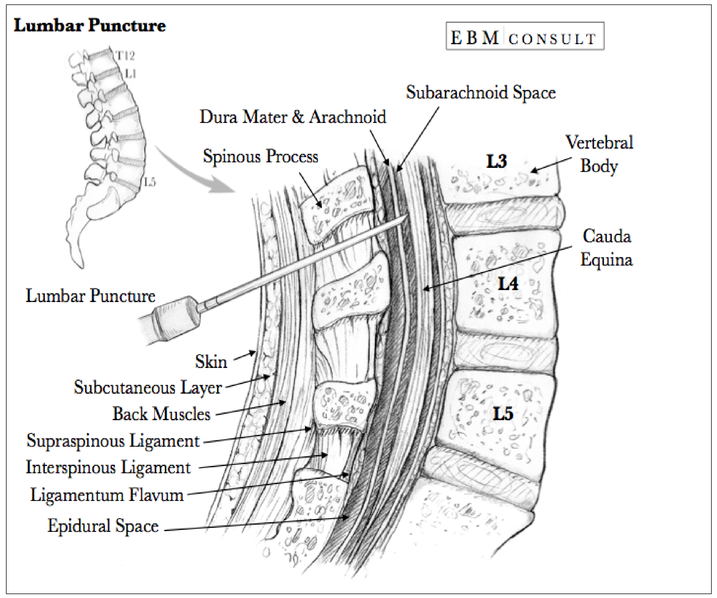
Lumbar punctures are performed regularly by residents to diagnose life-threatening medical conditions in a timely fashion. Certain patient or operator characteristics have impacted success rate resulting in LP failure, complications, and length of stay. Studies have shown higher LP success rates when using ultrasound guidance particularly in patient population with higher BMI or a difficult anatomy.

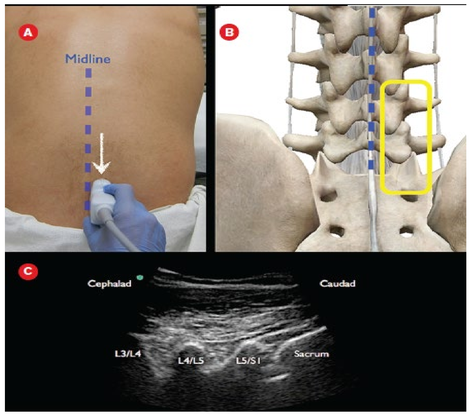
OBJECTIVES

To implement an educational curriculum (simulation training, lectures, alternative techniques, modules) to train residents skill set for success in performing lumbar punctures.

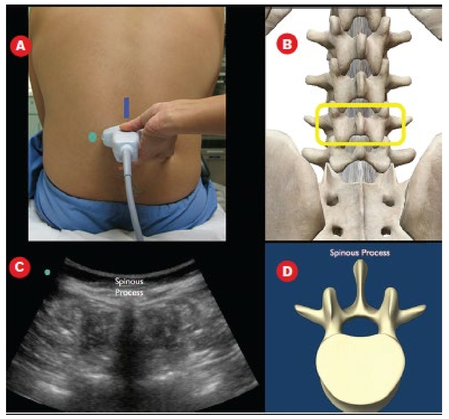
METHODS

Train neurology residents through dedicated lectures and simulation-based education of US guidance and techniques in lumbar puncture. Create a pre and post survey to assess feedback based on LP knowledge and understanding, comfortability/ confidence, and likelihood of improved outcome. Use of Slice Dicer function to identify lumbar puncture procedures performed by residents, their success rate, and patient demographics in the prior year. Perform retrospective analysis of LP performed from participating trainees and compare to previously performed non-US guided LP.





Longitudinal Midline View



Transverse Midline View

RESULTS

Data analysis and collection is ongoing.

CONCLUSIONS

Does an established educational curriculum improve resident understanding of US-guided lumbar puncture and the success rate.

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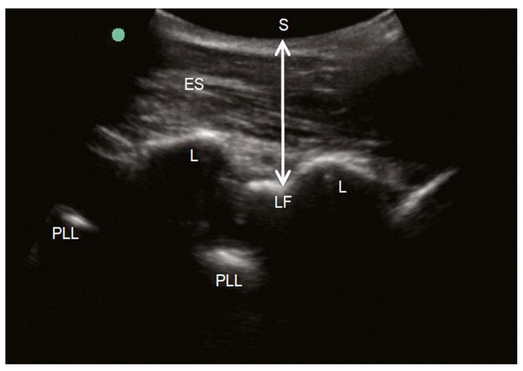
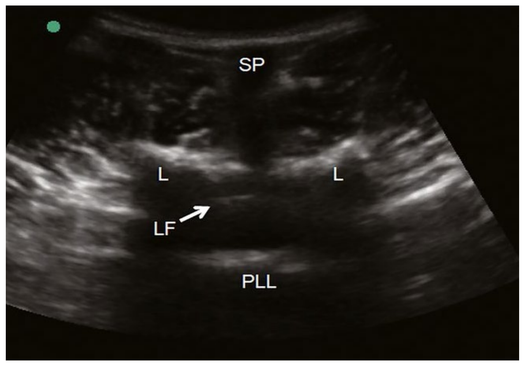
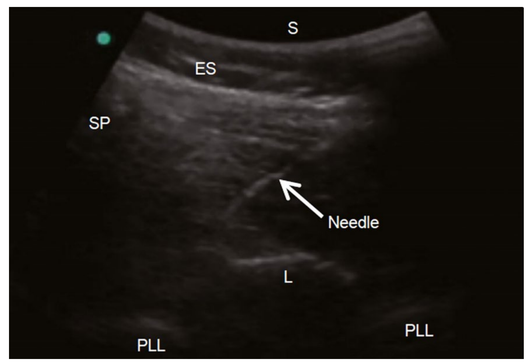


Paramedian view:
Erector spinae (ES) muscles are superficial to the lamina (L).The ligamentum flavum (LF) and the skin (S)–LF distance (double-headed arrow) can be measured. The posterior longitudinal ligament (PLL) is deep to the ligamentum flavum.



Transverse Midline View:
Sliding the transducer along the midline allows visualization of the spinous processes (SP), lamina (L), posterior longitudinal ligament (PLL), and ligamentum flavum (LF)



Oblique Paramedian View:
A Spinal needle is inserted toward the lamina-ligamentum flavum junction. The transducer is oriented obliquely from the SP of the superior vertebra to the L of the inferior vertebra. The needle is inserted underneath the transducer in a lateral to medial direction.