



Commentaries

In vivo measurements of medial branch nerve depth and adjacent osseous structures for ablation of facet-related back pain: Predictors for patient candidacy

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Zwiebel et al. present an anatomic and radiographic study on depth of osseous structures as a guide for performance of a novel technique for medial branch ablation. While not routinely performed in the United States, focused ultrasound is a procedure that is being studied for medial branch ablation. However, acoustic penetration may be a limiting factor leading to exclusion of certain patients based on body habitus. As part of their conclusion, the authors state obese women of shorter stature could be excluded from focused ultrasound ablation as a treatment option based on acoustic penetration and inability to target structures due to depth. Their mathematical model equation provides guidance on whether needles or ultrasound beams can penetrate to the required depth.

While these measurements may be helpful for focused ultrasound (which rely on adjacent bone heating), the measurements may not be as helpful for lumbar medial branch thermal radiofrequency neurotomy (lumbar RF). While there is no exact measurement, certain features of the lumbar spine anatomy and the coagulation effect of various needles can impact the results of lumbar RF¹. In order to target the nerve for ablation and avoid the maamillo-accessory ligament, the needle is inserted at an angle typically recommended as 25° oblique from the midline sagittal plane. Due to the size and shape of lesion created by the lumbar RF probe, it is recommended that the needle be placed parallel to the target nerve. There is no universal angle or unique skin point that

identifies where the needle should be inserted. The practice guidelines and teaching recommendations (including NASS Lumbar Spinal Injection courses) is that the electrode should pass lateral to the superior articular process at about 45° from a caudal to cephalad direction in the transverse plane. The actual angle depends on the inclination of the target segment and/or sacrum based on degree of lumbar lordosis.

The authors should be commended for providing additional information and verification of target points when addressing medial branch neurotomy. This information is primarily provided for the emerging technology of focused ultrasound ablation with body habitus data providing some pre-procedure information on likelihood of success. Because the ablation technique and needle trajectory of lumbar RF is different than medial branch blocks using local anesthetics, these measurements and depth calculation may be more appropriate to consider for the latter than the former. Knowledge of appropriate needle size prior to initiation of the procedure is helpful for patient comfort and physician/practitioner efficiency.

1. Practice Guidelines for Spinal Diagnostic and Treatment Procedures, Second Edition, Edited by Nikolai Bogduk, International Spine Intervention Society, San Francisco, 2013.
2. "Medial Branch Neurotomy", *SPINE*, Vol 5, Number 2, pg 193-200, March/April 1980.

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