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# A Critical Look at the Data Supporting Ultrasound Guided Cervical Medial Branch Blocks

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According to guidelines published by the American Society of Interventional Pain Physicians in 2013 [1, 2], the current evidence for cervical facet joint injections is fair. Yet the volume of these procedures continues to rise [3]. There is a need for a more critical appraisal of the benefit, technique and adverse effects associated with cervical spine injections. The systematic review and meta-analysis by Paredes et al [4] seeks to better assess the evidence for use of ultrasound (US) guidance with cervical medial branch blocks.

This article is also a response to a recently published critique by Schneider et al [5] raising concerns about the paucity of evidence evaluating the safety, accuracy, and effectiveness of US-guided cervical spine procedures. US guidance for spine procedures is a relatively new technique and has not been fully embraced by many in the pain community. As Schneider points out, there are limitations to the use of US, chiefly surrounding the issues of visualization. Visualizing the entire cervical spine with US is challenging and this incomplete visualization makes it difficult locate the correct cervical level with precision and accuracy. Visualization of the needle tip can also be difficult, leading to safety concerns as in the case report of a myelopathy that occurred during a C7 medial branch block performed with ultrasound guidance [6].

While these two critiques are significant, Paredes et al note in their systematic review [4] that the benefit of US lies in decreased radiation to the patient, and potentially decreased costs in terms of equipment acquisition to perform the procedure, and decreased procedure time. They also note that they did not observe a difference between ultrasound guided injections and traditional techniques in terms of their outcomes – the ability to block an intended target, defined as procedural success, and pain relief. While a lack of observed difference does not definitely demonstrate non-inferiority, the results are reassuring and promising. Additionally, they showed reduced performance time and reduced rates of vascular injection, an important adverse event. This is not saying that everyone should expect these results immediately. Ultrasonography is a learned skill, and it will likely take providers new to the techniques some time to achieve the results obtained in expert centers where US guided procedures are commonplace. With direct real time visualization of the cervical medial branches as observed by US, it appears that

similar results can be obtained when compared to cadaveric studies examining needle placement based on anatomical landmarks where anatomic variability has been well described [7]. The efficacy across imaging modalities supports the notion that we are improving clinical outcomes by treating our intended targets.

It is important to recognize that the data for cervical facet interventions has been graded as fair in the past when using fluoroscopy or CT guidance. If we followed similar grading schema when assessing the evidence supporting the use of ultrasound guidance in isolation for cervical medial branch blocks it also likely would be considered fair [1, 2]. Additionally, the findings from studies supporting the use of ultrasound guidance in cervical spine procedures strengthen the overarching evidence behind the use of therapeutic cervical facet interventions.

With the currently available evidence that has been well assessed by Paredes et al [4] and the concerns raised by Schneider et al [5], best practice may be the use of fluoroscopy to identify levels that are hard to clearly visualize with US alone, as well as utilizing an in-plane approach for direct visualization of the needle tip to help minimize the risk of inappropriate needle placement. It will be important to continue investigations into the use of ultrasound guidance in cervical spine facet interventions by comparing the effectiveness of different imaging modalities in blinded parallel-randomized control trials. Third occipital nerve ablations after positive diagnostic blocks would make logical sense given the relative ease of identifying the C2-3 level with ultrasound guidance.

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