

# Contrast Spread for Diagnostic Medial Branch Blocks

Elena Karras BA<sup>1</sup> and Jessin John MD<sup>2</sup>

<sup>1</sup>University of Queensland Ochsner Clinical School in New Orleans, LA

<sup>2</sup>Ochsner Medical Center in New Orleans, LA

## INTRODUCTION

The diagnostic specificity of lumbar medial branch blocks (MBBs) can be affected by injectate volume. Prior studies support the use of smaller volumes to avoid confounding diagnostic outcomes and reduce the risk of complications such as inadvertent epidural or intravascular spread. 1-4 We present a case with fluoroscopic imaging that demonstrates how adjusting contrast volume impacts diagnostic accuracy in facet-mediated low back pain.

## MATERIALS AND METHODS

A 74-year-old woman with chronic low back pain underwent bilateral fluoroscopic MBBs at L3-L5. Each site received 0.5 mL bupivacaine 0.25%. To examine spread patterns, contrast volume was varied: 1.0 mL on the left and 0.5 mL on the right. The intervention was performed per standard of care. When contrast is used during MBBs, volumes are titrated as needed to confirm the absence of intravascular uptake under fluoroscopy. This approach aligns with safety measures recommended in the literature to reduce false negatives and complications due to inadvertent vascular injection. This study was determined to be non-human research by the Ochsner Medical Center IRB. Patient informed consent was obtained for submission of this case report.

## RESULTS

The patient reported complete pain relief, with a pre-procedure pain score of 10/10 dropping to 0/10. Fluoroscopic imaging showed that the 0.5 mL contrast on the right remained confined to the medial branch region, while the 1.0 mL contrast on the left extended toward the epidural space. Both sides yielded equivalent clinical relief, but the right side demonstrated more focused anesthetic spread.

## DISCUSSION

This case highlights that reduced contrast volume during MBB may improve diagnostic specificity by limiting unintended spread. Larger volumes risk extension to adjacent structures, potentially leading to false positives and inappropriate eligibility for radiofrequency ablation (RFA). Using lower injectate volumes during diagnostic MBBs may enhance diagnostic precision without compromising therapeutic benefit. Volume selection should be carefully considered when using MBBs to determine suitability for RFA.



**Figure 1.** 0.5 mL 0.25% Bupivacaine and 1.0 mL of contrast targeting L3-L5.



**Figure 2.** 0.5 mL 0.25% Bupivacaine and 0.5 mL of contrast targeting L3—L5.

Using **lower** injectate volumes during diagnostic MBBs may **enhance** diagnostic precision **without compromising** therapeutic benefit.



## REFERENCES

1. Cohen SP, Bhaskar A, Bhatia A, Buvanendran A, Deer T, Garg S, Hooten WM, Hurley RW, Kennedy DJ, McLean BC, Moon JY, Narouze S, Pangarkar S, Provenzano DA, Rauck R, Sitzman BT, Smuck M, van Zundert J, Vorenkamp K, Wallace MS, Zhao Z. Consensus practice guidelines on interventions for lumbar facet joint pain from a multispecialty, international working group. *Reg Anesth Pain Med.* 2020 Jun;45(6):424-467. doi: 10.1136/rapm-2019-101243. Epub 2020 Apr 3. PMID: 32245841; PMCID: PMC7362874.
2. Wahezi SE, Alexeev E, Georgy JS, Haramati N, Erosa SA, Shah JM, Downie S. Lumbar Medial Branch Block Volume-Dependent Dispersion Patterns as a Predictor for Ablation Success: A Cadaveric Study. *PM R.* 2018 Jun; 10(6):616-622. doi: 10.1016/j.pmrj.2017.11.011. Epub 2017 Nov 22. PMID: 29174073.
3. Cohen SP, Strassels SA, Kurihara C, Forsythe A, Buckenmaier CC 3rd, McLean B, Riedy G, Seltzer S. Randomized study assessing the accuracy of cervical facet joint nerve (medial branch) blocks using different injectate volumes. *Anesthesiology.* 2010 Jan;112(1):144-52. doi: 10.1097/ALN.0b013e3181c38a82. PMID: 19996954.
4. Lee HI, Park YS, Cho TG, Park SW, Kwon JT, Kim YB. Transient adverse neurologic effects of spinal pain blocks. *J Korean Neurosurg Soc.* 2012 Sep;52(3):228-33. doi: 10.3340/jkns.2012.52.3.228. Epub 2012 Sep 30. PMID: 23115666; PMCID: PMC3483324.
5. Lee CJ, Kim YC, Shin JH, Nahm FS, Lee HM, Choi YS, Lee SC, Ko JS, Kim TH, Sim WS, Kim CS, Cho HS. Intravascular injection in lumbar medial branch block: a prospective evaluation of 1433 injections. *Anesth Analg.* 2008 Apr; 106(4):1274-8, table of contents. doi: 10.1213/ane.0b013e318162c358. PMID: 18349205.