Lumbar Facet (Intraarticular) Block

15

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Equipment and Monitoring

- Standard ASA monitoring
- Fluoroscopy
- Sterile prep, and drape
- Skin local anesthesia prior to any needle larger than 25G (unless sedation is used)
- Coaxial view is always used to advance the needle, unless otherwise specified
- CPR equipment and medications available
- 22–25G, 3.5 inch (90 mm)–6 inch (150 mm) needle, curved to facilitate steering
- Extension tubing
- Nonionic contrast
- Medication for injection (local anesthetic +/− steroid)

Anatomy

- C-arm AP view for identification of level (count from T12 rib down)
- Superior articular process (SAP) and inferior articular process (IAP) make up the joint, which are held together by the facet capsule
- Ipsilateral oblique for "Scotty dog" appearance of the vertebra
- Target the inferior recess (lower third) of the facet opening, as it has no direct relation with neural elements
- Note that while the T12-L1 facet joint opening faces posteriorly, as we proceed to L5-S1, the opening faces gradually more and more laterally (Fig. 15.1)
- Angle the C-arm ipsilaterally to open the joint

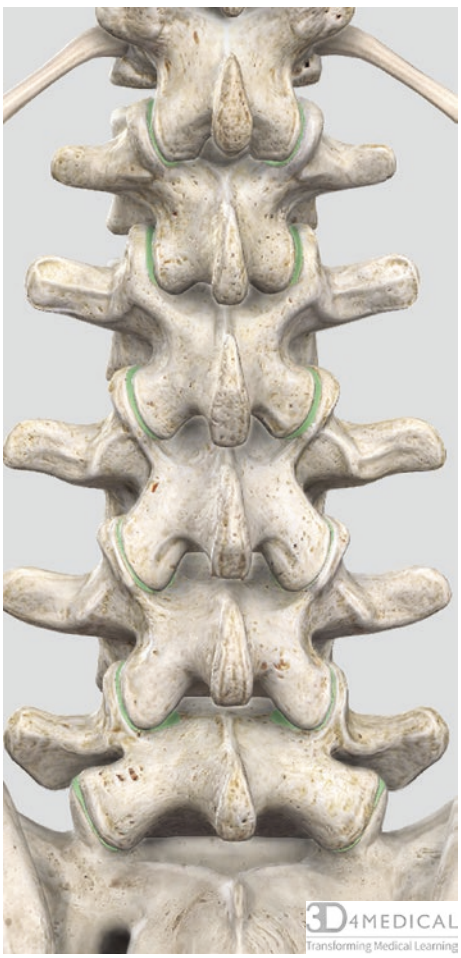

Fig. 15.1 Posterior view of the lumbar spine demonstrates the orientation of the facet joints. Complete Anatomy image

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Structures to Keep in Mind and Possible Complications

- Bony surfaces → bleeding/pain
- Sliding off the superior articular process → possibility of nerve root damage
- Epidural, subdural, intrathecal space → intrathecal, epidural medication administration, high spinal anesthesia, spinal cord injury, paralysis, death
- Infection
- Bleeding
- Postprocedure pain
- Vasovagal reaction
- Allergic reaction

Fluoroscopy Technique, Target Localization

- Patient in prone position
- Anteroposterior (AP) view to identify the spinal level by counting from the T12 vertebra
- Square off vertebra
- Ipsilateral oblique the C-arm until the desired facet joint is opened up (all facet joints may appear at once or in different oblique angles) (Fig. 15.2a–d)
- Skin entry is at the lower third of the facet joint (inferior recess)

Procedure Steps

- Needle entry at the inferior portion of the joint with coaxial technique in ipsilateral oblique view (Fig. 15.2a–d)
- Entry into the facet joint can be felt as a "pop" or a "giving way"
- Confirm intra-articular position with no more than 0.2–0.5 ml contrast material (to prevent rupture) (Figs. 15.2b and 15.3a, b)
- AP and lateral view also confirms optimal (not too anterior) position of the needle (Fig. 15.3a, b)

Clinical Pearls

- Ipsilateral oblique should demonstrate posterior facet joint line; tilting further will demonstrate anterior facet joint line and eventually cause difficulty in needle entry in the joint (upper lumbar levels may require tilting up to 30° and lower lumbar levels up to 60°)
- Minimal contrast volume (0.2–0.5 ml) is recommended to confirm the intra-articular position, to avoid filling the facet joint with contrast (leaving no room for the therapeutic mixture of local anesthetic and steroid)
- Avoid pushing the contrast under pressure/resistance as this may rupture the facet joint capsule, leading to reduced therapeutic effect

Unacceptable, Potentially Harmful Needle Placement on Exam

- Placing needle through the joint into the spinal canal
- Not checking AP/lateral view
- Any proof of lack of understanding of lumbar spine anatomy, for example, the needle placed in the vertebral body or disc and believing it is in the right place

Unacceptable, But Not Harmful Needle Placement on Exam

- The procedure was abandoned after unsuccessful attempts, but it was clear that the examinee was cognizant of the safety aspects of the procedure, the needle did not compromise vital structures
- Rough needle manipulation

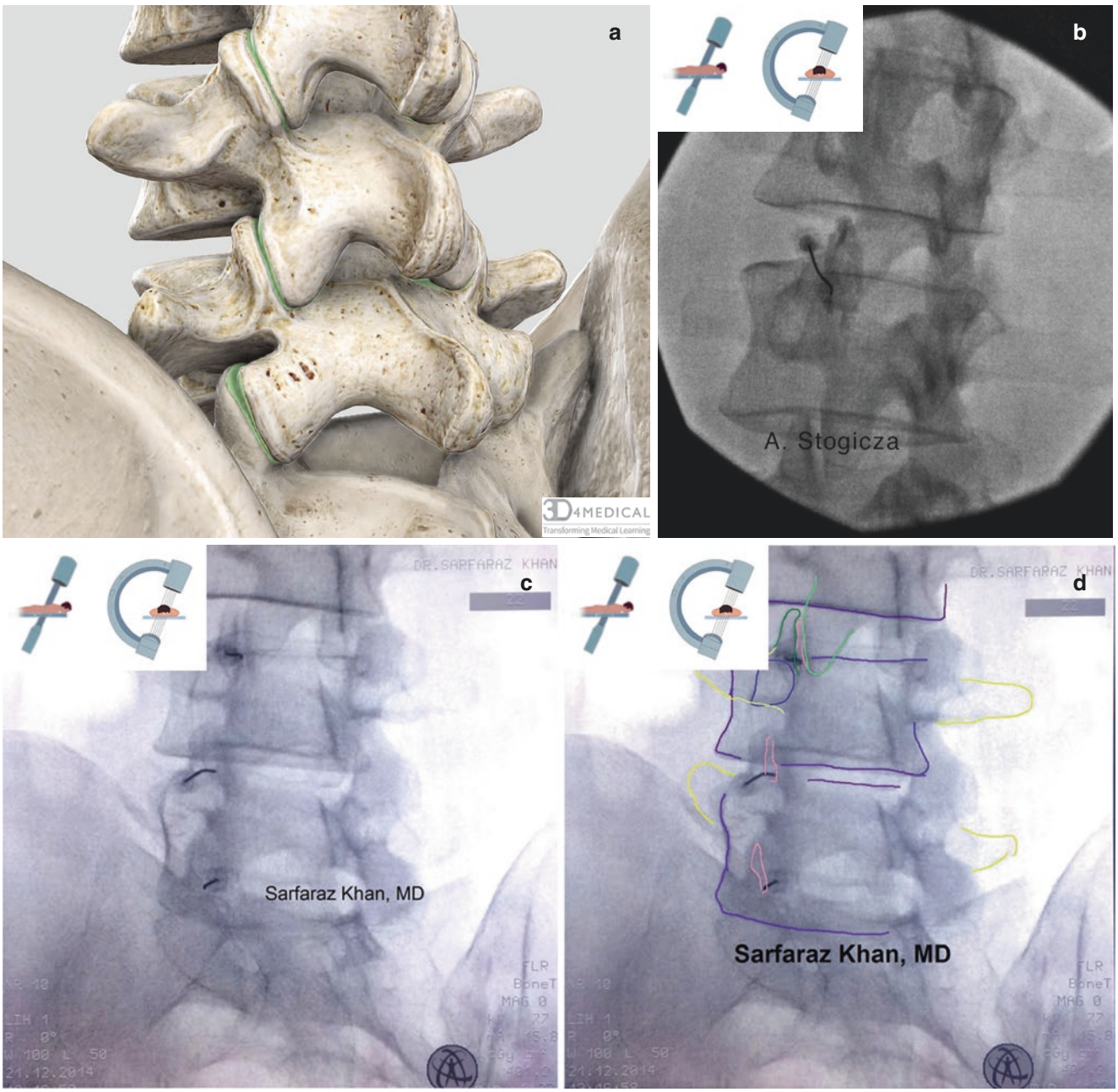

Fig. 15.2 Ipsilateral oblique view showing the facet joint lines, with the needles in the left facet joints. Contrast outlines the L1-2 facet joint (**b**). Yellow = transverse process; dark green = superior articular process; light green = inferior articular process; dark blue = pedicle; purple = vertebral body; pink = facet joint. Complete Anatomy image (**a**), native (**b**, **c**) and edited (**d**) fluoroscopy image, contrast in joint space (**b**)

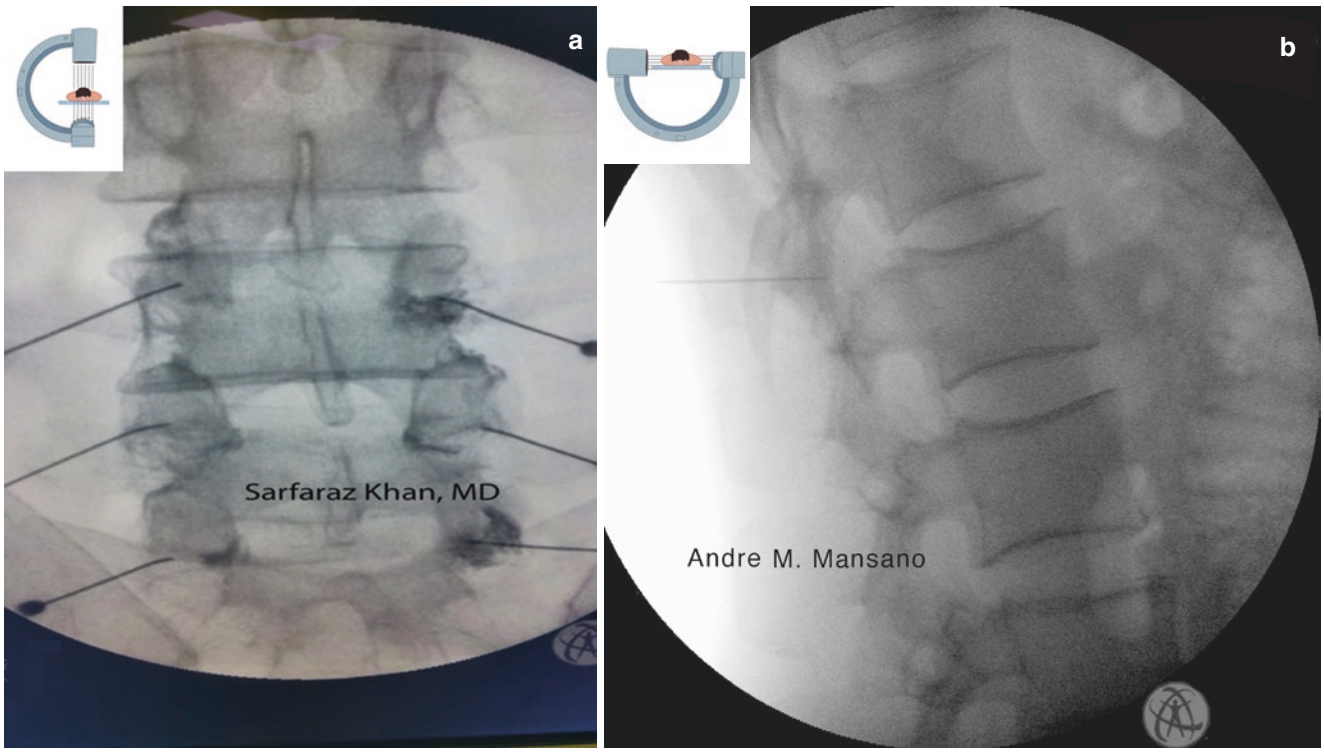

Fig. 15.3 AP fluoroscopy image with needles and contrast in L3–4, L4–5, L5–S1 facet joints bilaterally (**a**). Lateral view also confirms optimal needle position (**b**)

Evidence

Table 15.1 Level of evidence and recommendations by the Benelux section of the World Institute of Pain
These recommendations are based on both a review of the literature in 2015 by an independent third party (Kleijnen Systematic Reviews LTD) and the previous published guidelines published in Pain Practice. The recent literature, the potential risk for complications, and the grade of invasiveness were considered when deciding to upgrade or downgrade the recommendation.

Indication	Procedure	Recommendation 2009[1]	Grade 2015[2]	Recommendation 2018[3,4]
Low back pain originating from the lumbar facet joints	Radiofrequency treatment (ablation) of the lumbar medial branch (ramus medialis of the ramus dorsalis)	1B+	Low	Weak
Low back pain originating from the lumbar facet joints	Pulsed radiofrequency treatment of the lumbar medial branch (ramus medialis of the ramus dorsalis)		Low	Very weak against

[1]van Kleef M, Vanelderen P, Cohen SP, Lataster A, Van Zundert J, Mekhail N. 12. Pain originating from the lumbar facet joints. Pain Pract. 2010;10:459–69
[2]Kleijnen Systematic Reviews Ltd.: Search and evaluation of the literature. 2015
[3]Huygen F, Kallewaard JW, van Tulder M, Van Boxem K, Vissers K, van Kleef M, et al. "Evidence-based interventional pain medicine according to clinical diagnoses": update 2018. Pain Pract. 2019;19:664–75
[4]https://www.anesthesiologie.nl/publicaties/praktische-richtlijnen-anesthesiologische-pijnbestrijding

Table 15.2 Level of evidence based on the American Society of Interventional Pain Physicians (ASIPP) review of the literature

Lumbar facet joint interventions[1]	Evidence
Diagnostic lumbar facet joint nerve blocks	Level I
Therapeutic lumbar facet medial branch blocks	Level II
Therapeutic lumbar facet medial branch neurotomy	Level II

[1]Manchikanti L, Schultz DM, Falco FJE, Singh V. Lumbar facet joint interventions. In: Manchikanti L, Kaye AD, Falco FJE, Hirsch JA, editors. Essentials of interventional techniques in managing chronic pain. Springer International Publishing; 2018. p, 349–368

Suggested Reading

Ackerman WE, Ahmad M. Pain relief with intraarticular or medial branch nerve blocks in patients with positive lumbar facet joint SPECT imaging: a 12-week outcome study. Southern Medical Journal. 101(9):931–934.
Cohen SP, et al. Effectiveness of lumbar facet joint blocks and predictive value before radiofrequency denervation. Anesthesiology. 2018;129:517–35.
Cohen SP, Moon JY, et al. Medial branch blocks or intra-articular injections as a prognostic tool before lumbar facet radiofrequency denervation. Regional Anesthesia and Pain Medicine. 40(4):376–383.
Kennedy DJ, Fraiser R, Zheng P, et al. Intra-articular steroids vs Saline for lumbar Z-joint pain: a prospective, randomized, double-blind placebo-controlled trial. 2019;20(2):246–251.
Manchikanti L, Kaye AD, Soin A, et al. Comprehensive evidence-based guidelines for facet joint interventions in the management of chronic spinal pain: American Society of Interventional Pain Physicians (ASIPP) Guidelines Facet Joint Interventions 2020 Guidelines. Pain Physician. 2020;23(3S):S1–S127.
Patel VB. Intra-articular injections medial branch blocks and radiofrequency ablations. In: Diwan S, Staats PS, editors. Atlas of pain medicine procedures. New York: McGraw-Hill; 2015.
Peh W. Image-guided facet joint injection. Biomed Imaging Interv J. 2011;7:e4.

The Lumbar Intra-articular Facet chapter was reviewed by Amitabh Gulati; Andrea M. Trescot; Milan Stojanovic; Peter S. Staats; Agnes R. Stogicza; Andre M. Mansano; Athmaja Thottungal and Raja Reddy.