



Noncancer Pain: Facet Arthropathy and Axial Low Back and Neck Pain

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Introduction

- Facet arthropathy of the thoracic or lumbar spine usually presents with low back pain that is primarily localized to the **midline** but **may radiate to the hip or ipsilateral posterior thigh**; pain usually does not radiate past the knee (Fig. 44.1a) [1].
- Facet arthropathy often coexists with intervertebral disc degeneration (**spondylosis**). Symptoms are typically **worse in the morning** and are increased by stress, exercise, lumbar spine extension, rotary motions, and prolonged standing or sitting.
- Cervical facet arthropathy presents with primarily axial neck pain which **may radiate into the shoulders (C6/C7 joint, Fig. 44.1b)** or even present as **headaches (C2/C3 joint)**. **Pain may be aggravated by neck rotation or lateral flexion** [1].
- Occurs due to degenerative changes in the facet (zygapophyseal) joints.
- Physical examination usually reveals paraspinous tenderness and **exacerbation of pain with extension and/or lateral rotation** of the back or neck [2].
- Sensory innervation to the facet joint is provided by the **medial branch of the posterior division (ramus)** of the spinal nerves (Fig. 44.2) [2].
 - Each facet joint is innervated by **two medial branches**, the medial branch at the same level and the branch at the level above. For example, L4/5 facet joint is innervated by the L4 and L3 medial branch nerve [3].
 - In the **thoracic** and **lumbar** spine, nerve roots exit the foramina **below** the vertebral bodies for which they are named (example: T10 nerve root exits the foramen below the T10 vertebral body).
 - In the **cervical** spine, nerve roots exit the foramina **above** the vertebral bodies for which they are named **until the level of C7**. The C7 nerve root exits above C7 through the **C6-C7 neural foramen** and C8 exits in between **T1 and C7 neural foramen** [1].

Diagnosis

- Limited utility of radiologic studies in diagnosing facet syndrome
- Local anesthetic may be injected directly into the facet joint itself or may be targeted to

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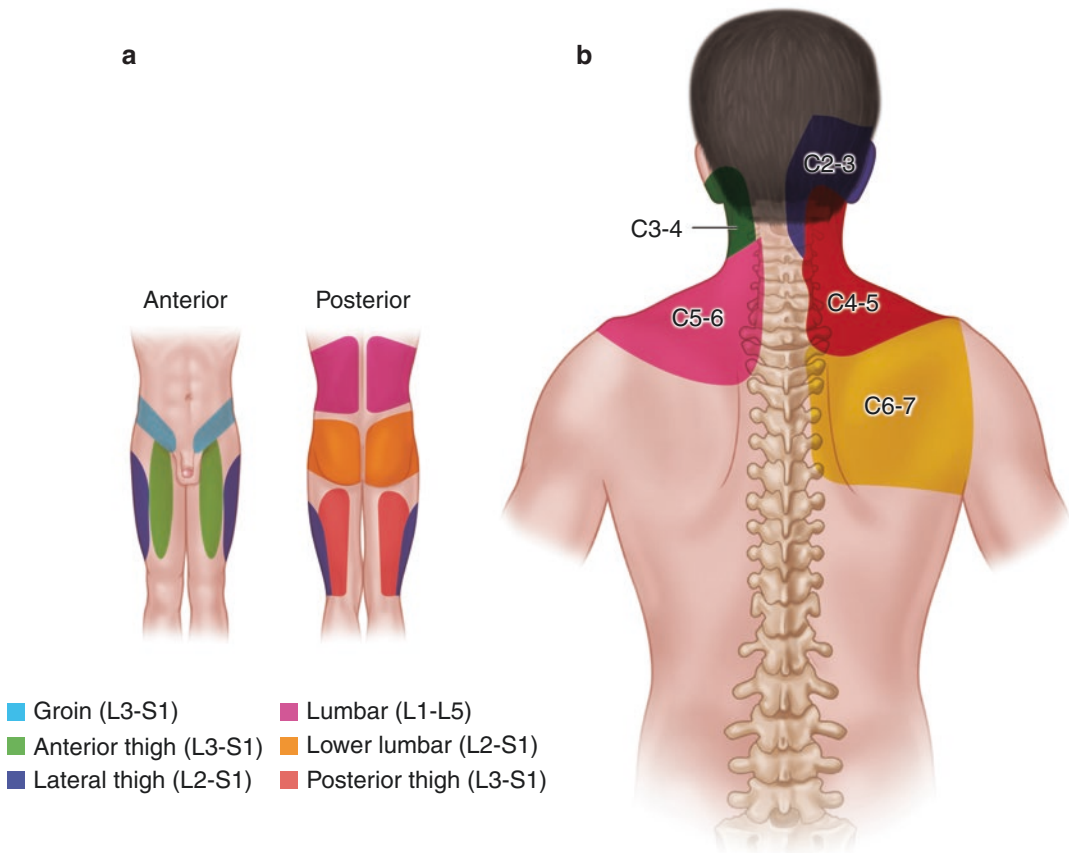


Fig. 44.1 Pain distribution of lumbar (a) and cervical (b) facet joints

block the medial branches which innervate the facet joint [4].

- Clinically meaningful pain relief of at least 50% following either of these two procedures is the **gold standard** for diagnosing facet arthropathy.
- High rates of false positive results occur after both facet joint injections and medial branch blocks.

Treatment

- Conservative management of axial back or neck pain involves use of nonsteroidal anti-inflammatory medications, muscle relaxants, antidepressants, weight loss, and physical therapy for core strengthening [1, 2].
- The patients who had >50% pain relief with diagnostic intra-articular injections or medial branch blocks can be offered for percutaneous radiofrequency ablation of medial branch nerves.

Technique

- Place the tip of a radiofrequency needle at the location of the targeted nerve under fluoroscopic guidance.
- In the cervical facets, the medial branches often cross the middle of the articular pillars (Fig. 44.3) [5].
- In the lumbar facets, the medial branches are generally located at the intersection of the superior articular process and the transverse process (Fig. 44.4) [5].

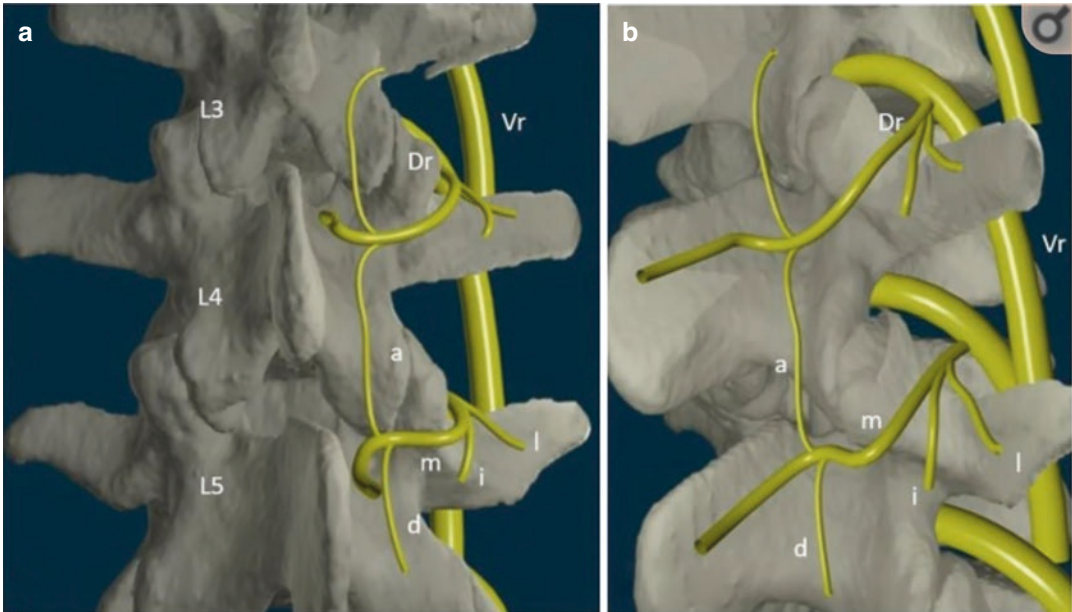


Fig. 44.2 Innervation of lumbar facet joints. A: AP view. b: anterolateral view. Vr: ventral ramus. Dr: Dorsal ramus. m: medial branch. i: intermediate branch. l: lateral branch a: ascending branch. d: descending branch. Posterior (a) and posterolateral (b) view of the lumbar spine. (From

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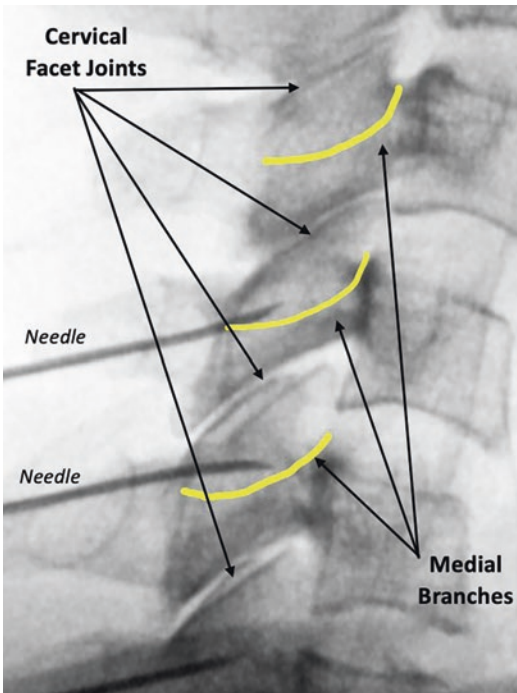


Fig. 44.3 Lateral radiograph of cervical spine to show the articular pillars, demonstrating location to cervical medial branch nerves (yellow lines)

- Sensory and motor stimulation is often performed prior to denervation.
- Local anesthetic and/or steroids are usually injected prior to denervation to enhance lesion size and to reduce the incidence of procedure-related pain and neuritis [5].

Complications

- Accidental intravascular injection of local anesthetic or steroid
- Thermal damage to the ventral nerve root
- Post-denervation neuritis [4]

Clinical Pearls

- Axial back and neck pain are primarily localized to the **midline** and may involve the facet joints, intervertebral discs, spinal nerve roots, paraspinal muscles and ligaments.
- Lumbar facet arthropathy may radiate down the **hip, buttock, and posterolateral thigh**

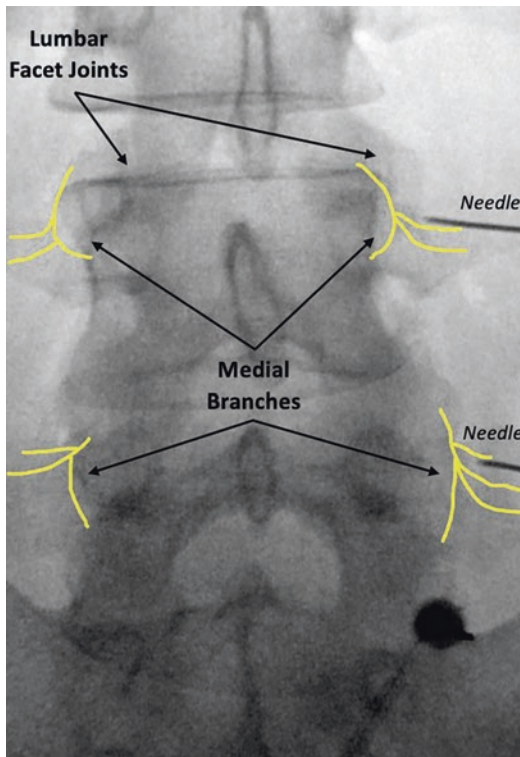


Fig. 44.4 Anterior-posterior radiograph of lumbar spine to show location to lumbar medial branch nerves

(Fig. 44.1a) whereas cervical facet arthropathy may radiate down **the shoulders or cause headaches** (Fig. 44.1b) [3].

- Medial branch blocks are the gold standard for diagnosing facetogenic back or neck pain [1].
- In the cervical spine, nerve roots exit the foramina above the corresponding vertebral bodies until the level of C7. For example, C7 nerve root exits above C7 through the C6-C7 neural foramen but C8 exits in between **T1 and C7 neural foramen** [1].
- In the thoracic and lumbar spine, nerve roots exit the foramina below the corresponding vertebral bodies. L4 nerve root exits **below the L4 vertebral body** [3].
- Radiofrequency denervation of the medial branches of the posterior ramus is indicated for patients who experience >50% pain relief following medial branch blocks.

Practice Questions

1. A 71-year-old man presents with new onset back pain. He is being evaluated in clinic for a medial branch block. Which of the following would be an indication for medial branch block in this patient?
 - A. Inability to void
 - B. Pain with standing that is relieved with lying down
 - C. Paresthesia of the S3–5 dermatomes
 - D. Pain localized to the left paraspinous muscles
2. A 67-year-old woman presents with midline neck pain which radiates to her left shoulder. Extension of her neck while turning her head to the left exacerbates her pain. What is the gold standard for diagnosing her condition?
 - A. Cervical MRI without contrast
 - B. Cervical MRI with contrast
 - C. Cervical X-ray
 - D. Cervical medial branch block
3. Which nerve root emerges between the C7 and T1 vertebrae?
 - A. C6
 - B. C7
 - C. C8
 - D. T1
4. A 65-year-old man complains of pain in his lower back and buttocks which is worsened when he walks downhill and improves with sitting. He has a normal ankle-brachial index (ABI). What is his most likely diagnosis?
 - A. Spinal stenosis
 - B. Lumbar facet arthropathy
 - C. Peripheral vascular insufficiency
 - D. Sacroiliac (SI) joint pain
5. Sensory innervation to the facet joint is provided by which division of the spinal nerves:
 - A. Lateral branch of the anterior ramus
 - B. Medial branch of the anterior ramus
 - C. Lateral branch of the posterior ramus
 - D. Medial branch of the posterior ramus

Correct Answers

1. B, 2. D, 3. C, 4. A, 5. D

References

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