Department of Radiology
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

Musculoskeletal Imaging and Intervention Section Procedures
Intra-articular Thoracic Facet Joint Corticosteroid Injection

INDICATIONS
- Clinical diagnosis/'facet syndrome' – localized tenderness, pain with hyper-extension
- Diagnostic injection

RISKS
- Bleeding
- Infection
- Pain
- Transient Paralysis

MODALITY
- Fluoroscopy

PRE-PROCEDURAL WORKUP
- AP & lateral views of the spine (cross-sectional imaging preferred)
- Informed consent

MATERIALS
- Alcohol, betadine, sterile drape
- 10 mL syringes for skin anesthetic and steroid/anesthetic mixture
- 5 mL syringe for Omnipaque 300 (5 mL)
- 1% lidocaine (for skin numbing); buffered with 8.4% sodium bicarbonate
- 1 mL triamcinolone acetonide (Kenalog 40 mg/mL)
- Ropivacaine HCL 0.5% (Naropin 5 mg/mL)
- 30G 0.5", 22G 1.5" & 3.5" needles

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PREAMBLE

1. Pertinent anatomy:
    a. The facet joints are rotated horizontally and medially in comparison to the lumbar spine. The most anterior aspect of the joint is lateral, while the posterior aspect is medial.
    b. Thoracic facet injections are usually performed in tandem, as facet syndrome in the thoracic spine may result from the level in question, or represent referred pain originating from a level above or below.
2. Position the patient prone. Prep and drape as per usual and perform local anesthesia.
3. A relatively steep cranial tilt of the tube is necessary to obtain the trajectory view due to the relatively significant coronal orientation of the facet joint.
    a. The AP view allows visualization of the needle tip to travel along the mid-pedicular line. This view is only used to assess the medial-lateral and super-inferior needle tip position to avoid causing a pneumothorax by travelling too lateral, or puncturing the neurovascular structures medially.
    b. The contralateral oblique view allows visualization of the posteroinferior joint space. This view is used when the needle tip in the AP view begins to come close to the pedicle of the superior articular process of the targeted facet joint. The orientation of the tube is such that a clear view of the facet joint is obtained to assess needle tip location relative to the posteroinferior joint space.

TECHNIQUE

1. Tilt the tube to align the endplates. Mark the skin over the mid-inferior aspect of the pedicle one level below the targeted facet joint. For example, the mid-inferior aspect of the T6 pedicle should be marked as the skin site if targeting the T4-T5 facet joint. This is because the inferior facet joint border overlies the superior aspect of the T5 pedicle. The goal of this orientation and skin entry site is to get the needle tip into the posteroinferior facet joint space. We are limited in obtaining a real trajectory view due to the considerable coronal orientation of the joint.
    a. Consider marking the skin entry site even more caudal in larger patients to take into account the increased distance the needle must traverse.
2. Pass the 22G 3.5” needle at approximately a 60° angle towards the targeted facet joint one level above. Keep the needle tip aligned between the medial and lateral borders of the pedicle. Aim for the medial aspect of the joint, which is the most posterior/superficial aspect.
3. Advance the needle until it contacts the lamina at the base of the superior articular process. Switch between the AP and contralateral oblique views while advancing to confirm the needle tip remains centered and does not advance too far anteriorly.
    a. The contralateral oblique view should visualize the needle tip near the inferior joint space, after which it can be directed intra-articular. This last stage of direction should be done in the contralateral oblique view after contacting the lamina.
4. Confirm intra-articular placement with a drop of Omnipaque 300.
5. Once confirmed, inject 0.5 mL of a mixture containing 1 mL Kenalog and 1 mL ropivacaine.
    a. If injecting two joints, inject 0.5 mL into each joint.

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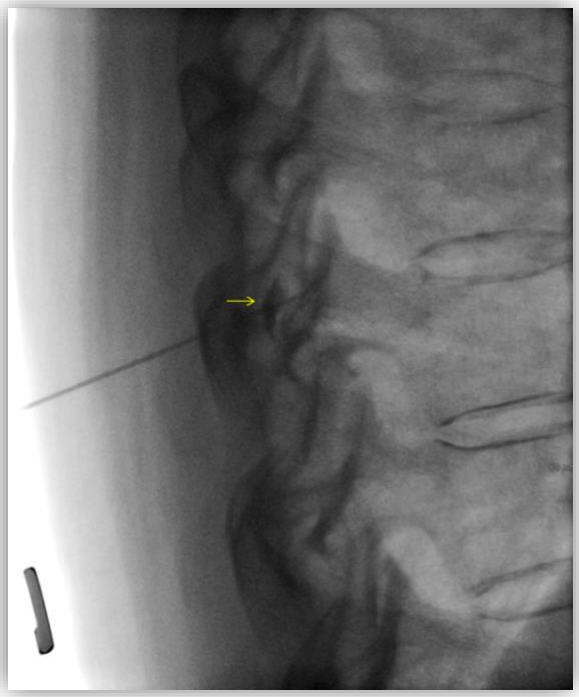

Fig 1. Lateral view demonstrating needle tip placement too far posterior in attempt to inject the T7-T8 facet joint. Yellow arrow points to contrast pooling posterior to the facet joint.

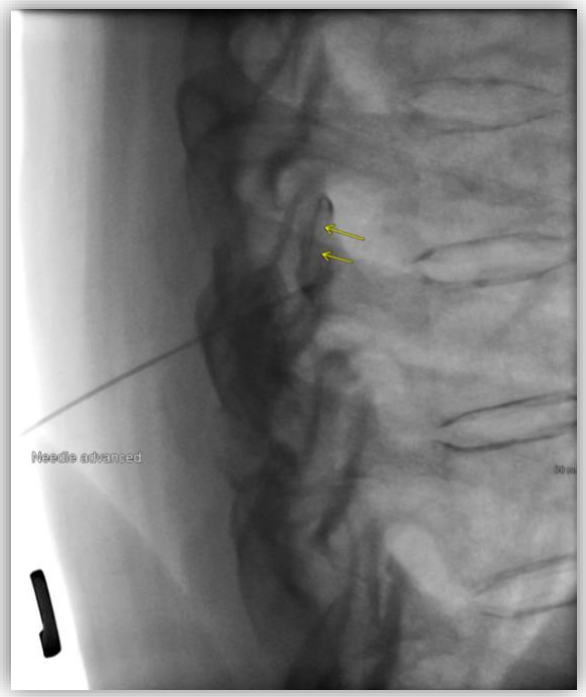

Fig 2. The needle tip has been advanced slightly to within the T7-T8 joint space. The yellow arrows denote contrast pooling intra-articularly.

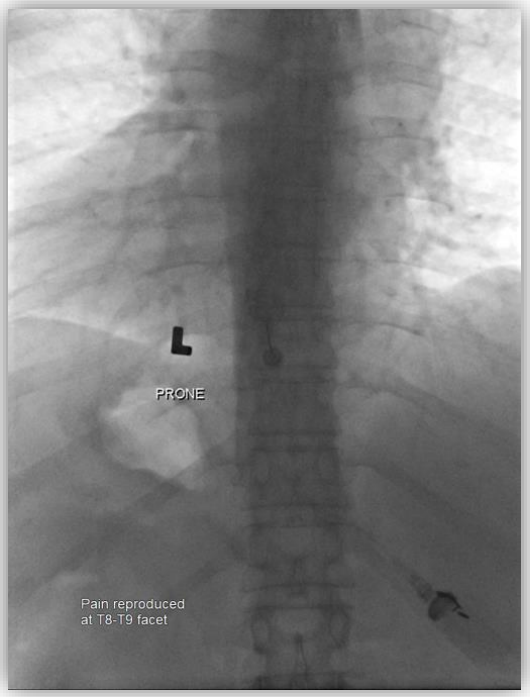

Fig 3. AP view of the thoracic spine with needle tip in position for injection of the left T8-T9 facet joint.

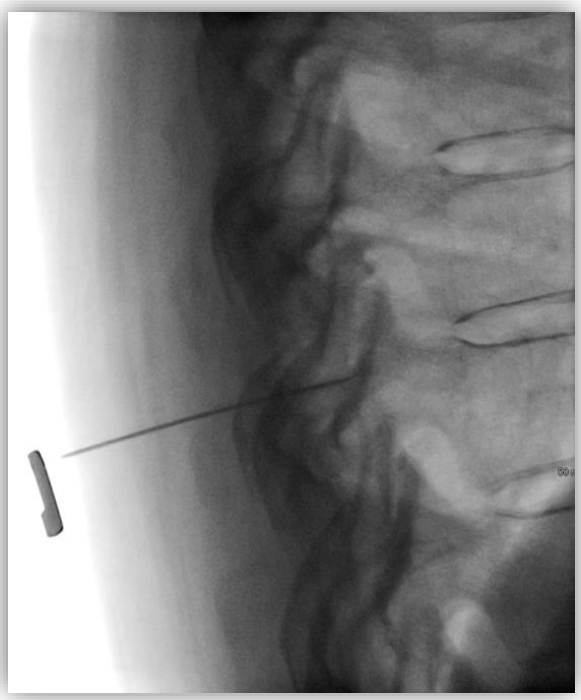

Fig 4. Lateral view demonstrating proper needle positioning within the left T8-T9 facet joint.

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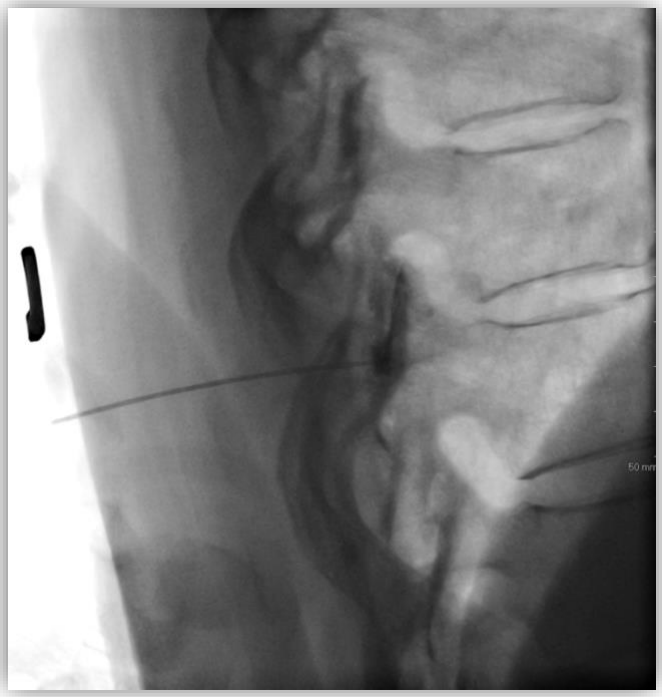

Fig 5. Lateral view demonstrating proper needle tip positioning for injection of the left T9-T10 facet joint. Note the presence of intra-articular contrast within the joint space.

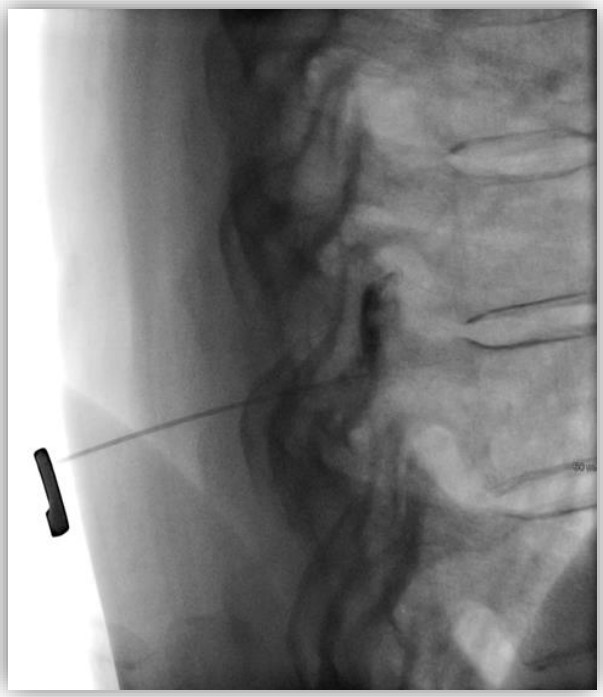

Fig 6. Further pooling of contrast within the left T9-T10 facet joint space.

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