

FACET BLOCK INJECTIONS

(Zygapophysial Joint Block Techniques)

Back and neck pain can be caused by a number different culprits. The problem may be the intervertebral disc, the spinal nerve roots, the joint, ligaments, or muscles involved. Zygapophysial Joints (Z-Joints) have been implicated as a source of low back pain since 1911. These posterolateral, paired joints of the spine are commonly called the facet joints. The facet joints are innervated by the medial branches of the dorsal ramus of the spinal nerves except at the L5 level. The 5 dorsal ramus divides into medial and lateral branches, with the medial branch continuing medially, innervating the sacroiliac joint. Each segmental medial branch of the dorsal ramus supplies at least two levels.

There is controversy in the literature regarding fluoroscopically guided z-joint injections. Some investigators argue that short-term pain relief from local anesthetic or steroid injected may facilitate a rehabilitation program with lasting decreased pain, while others have shown no lasting benefit from z-joint injections. Further research is needed to address this controversy.

Anatomical Considerations:

The z-joints are true synovial joints with a joint space, hyaline cartilage, synovial membrane, and a fibrous capsule. The z-joints may illicit pain in the lumbar, cervical or thoracic spine. Areas most commonly involved include C2/C3, C5/6, L4/5 and L5/S1.

Biomechanics:

In the lumbar region, the z-joints are weight bearing and resist compressive forces. Maximal pressure in the lumbar z-joints occurs with extension. An overloaded z-joint can stretch and even rupture the joint capsule. The alignment of the cervical z-joints caused them to bear more weight and resist torsion less than the lumbar region. The thoracic region is the most stable region of the spinal column and allows the least motion of the spinal axis z-joints.

Pathophysiology:

The precise cause of most z-joint pain remains unknown. The most common causes for pain are trauma and degeneration. Some other possible causes include Osteoarthritis, inflammation from rheumatoid arthritis or ankylosing spondylitis. Other conditions such as villo-nodular synovitis, synovial cysts and infection may also cause pain in the z-joint area. The theories on the etiology of z-joint pain

include meniscoid entrapment and extrapment, synovial impingement, chondromalacia facetae, capsular and synovial inflammation.

Patient Selection:

Studies involving patients who experience post injection relief after facet blocks have shown that older age, prior history of low back pain, absence of leg pain, absence of exacerbation by cough, normal gait, absence of muscle spasm and maximal pain on extension after forward flexion correlate with the best results. Typically patients with lumbar facet pain usually have pain on lumbar extension and hip hyperextension. Other studies have shown that these patients also have pain aggravated by sitting and bending, associated with straight leg raising causing back but not leg pain.

Indications/Contraindications for Z-Joint Injections:

With the use of CT scanning, magnetic resonance imaging (MRI), bone scan, laboratory studies, and electrodiagnostic testing, the physician can exclude painful pathologic entities such as fractures, infection, radiculopathy, and neoplasm. Selective spinal injections may help to clarify whether a patient's pain is a product of disc disease, nerve root compression, sacroiliac joint syndrome, primary or secondary myofascial syndrome, or the z-joints. Imaging studies only provide anatomical information and cannot independently determine whether or not a particular structure is painful.

Patients selected for z-joint injection procedures must be screened for infections, bleeding disorders and drug allergies. Typically patients on anti-inflammatory agents discontinue these medications 72 hours before injection. For aspirin products, the patient discontinues the use 7-10 days before the procedure. For patients using anticoagulants, the benefits of a z-joint injection must be weighed against the increase risk of bleeding. Patients with diabetes mellitus may experience an increase in blood sugar after steroid injection. A patient undergoing a facet block must be afebrile at the time of injection. Also medically unstable patients are generally not candidates for injections.

Lumbar Intra-Articular Injections:

The patient is typically in a prone position on a fluoroscopy table. Pillows are usually placed under the abdomen to facilitate needle entry into the joints. Once the target joint is visually identified on x-ray, local skin anesthetic is injected. Care is taken to avoid deep infiltration with this local anesthetic so as not to limit the diagnostic information. A 22 or 25 gauge, 3.5-inch spinal needle is then directed in the plane of the x-ray beam toward the joint. Contrast medium is usually injected for proper placement of the needle. Generally 0.2-0.3ml of contrast allows adequate visualization of the joint capsule. After confirmation either local anesthetic or a

mixture with steroids is injected into the joint space. The volume should only be approximately 2 ml.

Post injection Assessment:

After injection of the z-joint, sufficient time should elapse before one assesses the effects of the local anesthetics. The degree of pain relief is typically recorded. The patient should be observed in a well-equipped recovery room for 15-60 minutes. Some patients experience an increase in their pain for 24-72 hours after steroid injection. If fever, headaches, or neurological symptoms develop; the patient should be promptly evaluated by the physician. Physical or manual therapy programs should be resumed immediately after the injection process.

Potential Complications:

Complications associated with Z-joint injections are rare, especially when the needle is guided by fluoroscopy. There have been two cases of spinal anesthesia after excessive volume injections following facet blocks. Other potential complications include bleeding and infection. If light sedation is used, the risks associated with anesthesia are to be considered.