

## Facet Injection & Facet Rhizotomy

### advanced level

#### Overview

A facet injection is a minimally invasive procedure that can temporarily relieve neck or back pain caused by inflamed facet joints. The cause of facet joint pain (arthritis, injury, degeneration) is not well understood and can be similar in nature to disc pain. The procedure has two purposes. First, it can be used as a diagnostic test to see if the pain is actually coming from your facet joints. Second, it can be used as a treatment to relieve inflammation and pain caused by various spine conditions. The effects of facet injections tend to be temporary – providing relief for several days or even years. The goal is to reduce pain so that you may resume normal activities and a physical therapy program.

#### What is a facet injection / rhizotomy?

A facet injection includes both a long-lasting corticosteroid (e.g., triamcinolone or methylprednisolone) and an anesthetic numbing agent (e.g., lidocaine or bupivacaine). The drugs are delivered to the painful facet joint, either inside the joint capsule or in the tissue surrounding the joint capsule. Each vertebra has four facet joints, one pair that connects to the vertebra above (superior facets) and one pair that connects to the vertebra below (inferior facets) (see Anatomy of the Spine).

Corticosteroid injections can reduce inflammation and can be effective when delivered directly into the painful area. The pain relief can last from days to years, allowing you to improve your spinal condition with physical therapy and an exercise program.

Facet injections also provide diagnostic information for your physician. The injection “blocks” the pain in the same way a dentist uses an anesthetic injection to block pain in your jaw before working on your teeth. Injections into joints or nerves are sometimes called “blocks.” Successful facet injections may indicate that you could benefit from a **facet rhizotomy** – a procedure that uses an electric current to permanently destroy the nerve fibers carrying pain signals to the brain.

#### Who is a candidate?

If you have neck, arm, low back, or leg pain (sciatica) stemming from inflammation of the facet joints you may benefit from a facet injection. Typically, it is recommended for those who fail to

respond to other conservative treatments, such as oral anti-inflammatory medication, rest, back braces or physical therapy. The doctor may wish to perform the injection as a diagnostic test to determine if the facet joint is causing your pain. Facet injections may be helpful in treating inflamed facet joints caused by:

- **Spinal stenosis:** A narrowing of the spinal canal and nerve root canal can cause back and leg pain, especially when walking.
- **Spondylolysis:** A weakness or fracture between the upper and lower facets of a vertebra. If the vertebra slips forward (spondylolisthesis), it can compress the nerve roots causing pain.
- **Sciatica:** Pain that courses along the sciatic nerve in the buttocks and down the legs. It is usually caused by compression of the 5<sup>th</sup> lumbar or 1<sup>st</sup> sacral spinal nerves.
- **Herniated disc:** The gel-like material within the disc can bulge or rupture through a weak area in the surrounding wall (annulus). Irritation, pain, and swelling occur when this material squeezes out and comes in contact with a spinal nerve.
- **Arthritis:** Joint inflammation caused by degeneration of the cartilage; causes pain, swelling, redness, and restricted movement.
- **Postoperative pain:** Acute pain following discectomy or spinal decompression caused by disruption of the facet joint or spine muscles.

Facet injections should NOT be performed on people who have an infection, are pregnant, or have bleeding problems. It may slightly elevate the blood sugar levels in patients with diabetes, typically for less than 24 hours. It may also temporarily elevate blood pressure.

#### Who performs the procedure?

The types of physicians who administer facet injections include physiatrists (PM&R), radiologists, anesthesiologists, neurologists, and surgeons.

#### What happens before treatment?

The doctor who will perform the injection reviews your medical history and previous imaging studies to plan the best location for the injections. Be prepared to ask any questions you may have at this appointment.

Patients who are taking aspirin or blood thinning medication may need to stop taking it several days before the facet injection. Discuss any medications with your doctors, including the one who prescribed them and the doctor who will perform the injection.

The injection is usually performed in an outpatient Special Procedures suite that has access to fluoroscopy. Make arrangements to have someone drive you to and from the office or outpatient center the day of the injection.

### What happens during treatment?

At the time of your injection, you will be asked to sign consent forms, list medications you are presently taking, and if you have any allergies to medication. Depending on the number of facet joints being treated, the brief procedure may last 15-30 minutes followed by a recovery period.

#### Step 1: prepare the patient

Patients can remain awake for the entire process. Sedatives can be given to help lessen anxiety. Lying face down on the table, the patient receives a local anesthetic, which will numb the skin before the injection is given. If IV sedation is used, your blood pressure, heart rate and breathing are monitored during the procedure.

#### Step 2: insert the needle

With the aid of a fluoroscope (a special X-ray), the doctor directs a hollow needle through the skin and muscles of your back to the sensory nerves located in the facet joints. Fluoroscopy allows the doctor to watch the needle in real-time on the fluoroscope monitor to make sure that the needle goes to the specific facet joint (Fig. 1). Contrast may be injected into the facet joint to confirm entry. Some discomfort occurs but patients typically feel more pressure than pain.

#### Step 3: inject the medication

When the needle is in correct position, the doctor injects the anesthetic and corticosteroid medication into your facet joint capsule (Fig. 2). The needle is then removed. One or several joints may be injected depending on the location of the pain.

### What happens after treatment?

Most patients can walk around immediately after the procedure. After being monitored for a short time, you can usually leave the office or suite. Someone must drive you home.

Typically patients resume full activity the next day. Soreness around the injection site may be relieved by using ice and taking a mild analgesic (Tylenol).

The doctor's office may want to follow up 7 to 10 days after the procedure to ask about your symptoms and the level of pain relief obtained. You may want to record your levels of pain during the next couple of weeks in a diary. You may notice a



Figure 1. Fluoroscopic x-ray of a needle inserted into the facet joint.

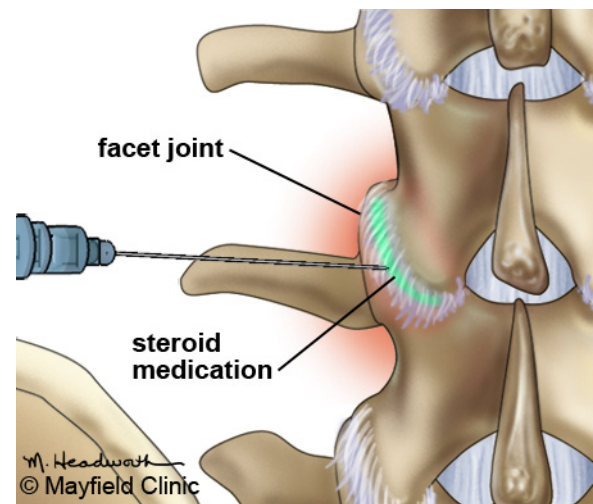


Figure 2. Anesthetic and corticosteroid mixture (green) is injected into the inflamed facet joint to relieve pain.

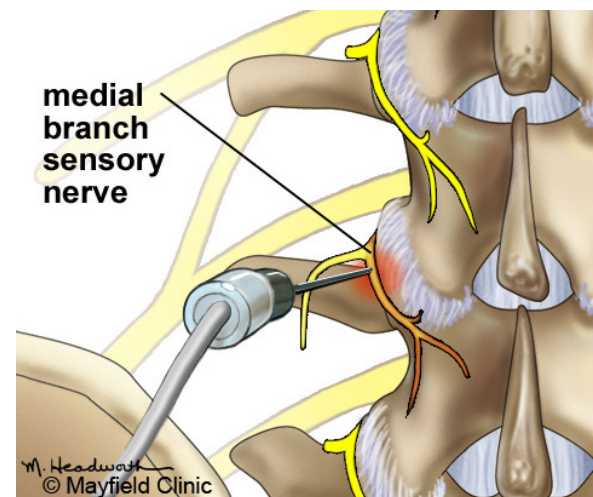


Figure 3. A heating current is passed through an electrode to destroy the medial branch of the sensory nerve to block the transmission of pain signals.

slight increase in pain as the numbing medicine wears off and before the corticosteroid starts to take effect. If the facet joints that were treated are the source of pain, you may begin to notice pain relief starting two to seven days after the injection. If after 10 days there is no improvement, a second injection may be given. If after three injections there is little pain relief, then you are unlikely to gain any benefit from more injections. Further diagnostic tests may be needed to accurately diagnose your pain.

After the local anesthetic has worn off, you may continue to take your regular pain medicine. However, pain medication can mask the pain and interfere with accuracy of the diagnostic information obtained.

### What are the results?

About 50% of patients experience some degree of pain relief [1]. The pain may be relieved for several days to several months – allowing you to participate in physical therapy. If prior injections were helpful and you experience a recurrence of pain, the procedure can be repeated up to 3 times a year. If you don't experience any pain relief, further injections won't be helpful.

If you suffer recurrent back pain and you've experienced good pain relief with facet injections, you may be a candidate for a **facet rhizotomy** (Fig. 3). Facet rhizotomy is a procedure that uses a radiofrequency probe to destroy some of the nerve fibers causing pain. During this procedure, an electrode is passed through the skin to the sensory nerves surrounding the facet joint. Once the electrode is in the exact position a radiofrequency heating current is applied to deaden the nerve fibers that carry pain signals to the brain.

### What are the risks?

With few risks, facet injections are considered an appropriate nonsurgical treatment for some patients. The potential risks associated with inserting the needle include bleeding, infection, allergic reaction, headache, and nerve damage (rare). Corticosteroid side effects may cause weight gain, water retention, flushing (hot flashes), mood swings or insomnia, and elevated blood sugar levels in diabetics. These usually disappear within 3 days. Patients who are being treated for chronic

conditions (e.g. heart disease, diabetes, rheumatoid arthritis, or those who cannot temporarily discontinue anti-clotting medication) should consult their personal physician for a risk assessment.

### Sources & links

If you have more questions, please contact the Mayfield Clinic & Spine Institute at 800-325-7787 or 513-221-1100.

#### Sources

1. Bani A, Spetzger U, Gilsbach JM. Indications for and Benefits of Lumbar Facet Joint Block. *Neurosurg Focus* 13(2), 2002.

#### Links

[www.spineuniverse.com](http://www.spineuniverse.com)  
[www.spine-health.com](http://www.spine-health.com)

### Glossary

**anesthetic:** an agent that causes loss of sensation with or without the loss of consciousness.

**corticosteroid:** a hormone produced by the adrenal gland or synthetically. Regulates salt and water balance and has an anti-inflammatory effect.

**facet joints:** joints located on the top and bottom of each vertebra that connect the vertebrae to each other and permit back motion.

**facet rhizotomy:** a procedure that uses a radiofrequency current to deaden the nerves surrounding the facet joint and prevent pain signals from reaching the brain.

**fluoroscopy:** an imaging device that uses x-ray or other radiation to view structures in the body in real time, or "live". Also called a C-arm.

**herniated disc:** a condition in which the gel-like center of an intervertebral disc ruptures through the tough disc wall irritating surrounding nerves and causing pain.

**sciatica:** pain that courses along the sciatic nerve in the buttocks and down the legs. Usually caused by compression of the 5<sup>th</sup> lumbar or 1<sup>st</sup> sacral spinal nerves.

**spinal stenosis:** the narrowing of the spinal canal and nerve-root canal along with the enlargement of the facet joints.

**spondylolysis:** a weakness or fracture between the upper and lower facets of a vertebra, an area called the pars interarticularis.

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