

Epidural Steroid Injection

Epidural steroid injections (ESI) are performed to place anti-inflammatory medication (steroid) and local anesthetic in the epidural space to target irritated nerves and relieve pain. They are most commonly performed for patients with spine pain and radiating pain into either the arms or legs. Injections are performed under X-ray guidance.

There are three different ways to perform an ESI and your physician will choose the route that offers the best chance of relieving your pain based on several factors. The three methods of ESI are described below:

- **Caudal ESI:** the Caudal approach involves an injection at the base of the spine near the tailbone. An advantage of this approach is that it can be performed even if you have had major spine surgery.
- **Interlaminar ESI:** the Interlaminar approach can be performed at all levels of the spine from the low-back to the neck. This approach may not be possible if you have had spine surgery in the injection area. An advantage of this approach is that medication may be delivered closer to the area of pain.
- **Transforaminal ESI:** the Transforaminal approach involves placement of the needle into the area where your spinal nerve exits the spine. It can be done throughout the spine, but is done most frequently in the low-back. This approach can be used in areas of prior surgery, and may deliver medication most accurately to the area of nerve irritation.

How long does an ESI take?

ESIs of any approach usually take about 10 to 15 minutes. Your procedure may take slightly longer if your physician recommends an approach at two different levels of your spine.

How will I feel afterwards?

The main benefit from the steroid usually takes effect in 48-96 hours. Some patients feel improvement right away. There may be a temporary sensation of pressure at the site of injection in some cases.

How long will the relief last?

Relief from an ESI or series of ESIs varies between one to six months, but on average nearly two months.

Facet Joint Injection and Radiofrequency Ablation

The facet joints are small joints on the back of the spine, and are found in all levels from the low-back to the neck. Facet joint pain is usually due to arthritis or degeneration of the joints, and is described as an ache that stays along the spine and is worsened with prolonged sitting, standing or driving. If your pain condition is consistent with facet joint pain, your physician will likely recommend one of the following procedures:

- **Facet Joint Injections:** one method for relieving facet joint pain is to directly inject steroid and local anesthetic into the affected joints. Facet joint injections are performed with x-ray guidance.
- **Medial Branch Blocks:** the small nerve which transmits pain impulses from the facet joint is called the *medial branch nerve*. This nerve can be blocked by the injection of local anesthetic and steroid under x-ray guidance.
- **Medial Branch Radiofrequency Ablation (RFA):** in cases where either medial branch blocks or facet joint injections provide short term relief, radiofrequency ablation may be performed to provide long lasting pain relief. RFA also targets the medial branch nerve, but uses radiofrequency energy (a type of heat) to stun the nerves. This procedure can provide pain relief for up to 6- 12 months.

How long do Facet Joint procedures take?

Facet joint injections are usually done at up to six sites at a time and take 10 to 15 minutes. Radiofrequency ablation usually takes roughly 30 minutes.

Is Radiofrequency Ablation permanent?

Radiofrequency ablation does not permanently destroy (or “burn”) the medial branch nerves. The nerves will slowly regenerate/grow back over time, which is why this procedure may need to be repeated.

How will I feel afterwards?

The majority of patients feel relief of their usual pain shortly after the procedure due to the injection of local anesthetic on the medial branch nerves. However, some patients will experience temporary muscle stiffness.

How long will the relief last?

Relief from Facet injections is highly variable and can range from weeks up to two months. Relief from RFA is more predictable and typically lasts up to 12 months.

Sacroiliac Joint Injection and Radiofrequency Ablation

The sacroiliac joint (SIJ) is formed where the pelvic bones join to the base of spine, or sacrum. This joint can be a source of pain like any other joint, and it may cause hip, low-back or buttock pain. Sacroiliac joint dysfunction may also be associated with radiation of pain into the groin and/or back of the thigh. Your physician may recommend one of the following:

- **Sacroiliac Joint Injection:** x-ray guidance is used to insert a thin needle into one or both SI joints and steroid and local anesthetic are carefully injected.
- **Lateral Branch Block/Radiofrequency:** an alternate method of treating SI joint pain is to target the nerves which provide pain sensation from the joint. These nerves are called the *lateral branches*. X-ray is used to precisely place steroid and local anesthetic onto these nerves to relieve pain. Radiofrequency can be used in cases where nerve blocks are successful but the duration of pain relief is too short. Radiofrequency can provide pain relief for up to 12 months.

How long does an SIJ injection take?

SIJ injections usually take up to 10 to 15 minutes when both sides are injected.

Is Radiofrequency Ablation permanent?

Radiofrequency ablation does not permanently destroy (or “burn”) the lateral branch nerves. The nerves will slowly regenerate over time, which is why RFA may be repeated.

How will I feel afterwards?

You will likely feel a quick relief after a SIJ injection due to injection of local anesthetic into the joint. The full effect of the steroid is usually experienced within 48-96 hours.

How long will the relief last?

Relief after injections usually lasts up to 2 months, while relief from lateral branch RFA can last up to one year.

Trigger Point Injection

This procedure, which does not require x-ray or ultrasound guidance, is for the treatment of painful areas of muscle tension or spasm. Muscle spasms in the neck, low or middle back can be quite painful and may persist for weeks to months. Trigger point injections involve the placement of a thin needle directly into the worst areas of pain for injection of local anesthetic and sometimes steroid. They can provide pain relief from weeks to months, and can also be useful for treating pain associated with Fibromyalgia or tension-type headaches.

How long do Trigger Point Injections take?

Trigger point injections usually take no more than 5 minutes to perform, and do not need to be done in the procedure suite.

How will I feel afterwards?

You will probably feel relief of pain and tension within minutes of your injection.

How long will the relief last?

Relief is variable but can last from weeks to roughly 1 month or more.

Joint Injections (knee, hip, shoulder)

If you have joint pain due to osteoarthritis your physician may recommend joint injections as part of your treatment plan. Injections of steroid and local anesthetic can provide lasting relief of pain arising from the knees, hips, shoulders and elbows. Some joint injections are best performed with x-ray guidance, while others are performed with ultrasound guidance.

How long does a joint injection take?

Injections of the peripheral joints usually take 10 to 15 minutes.

How will I feel afterwards?

The use of local anesthetic in the joint will likely improve your pain symptoms within minutes, but you may have a temporary pressure sensation.

What is “viscosupplementation”?

Viscosupplementation is the injection of artificial joint fluid into your affected joint. Your physician may recommend this technique if you have arthritis and steroid injections do not provide long lasting relief

How long will the relief last?

Relief from steroid injections can last up to several months, while relief from viscosupplementation may last longer.

Greater Trochanter Injection

The greater trochanter is located on each side of your hip. The trochanter has a cushioning bursa that overlies it, and this bursa may become inflamed causing *trochanteric bursitis*. This pain is typically felt as a severe tenderness over the hip pointer that gets worse with pressure or when lying on the affected side. Injections of local anesthetic and steroid under either x-ray or ultrasound guidance can provide lasting relief of this pain, and may be done every several months.

How long does trochanteric bursa injection take?

Bursa injections usually take roughly 5 minutes per side.

How will I feel afterwards?

You may have a temporary sensation of pressure in the area, but you will begin to experience relief of your pain within 10 to 15 minutes.

How long will the relief last?

Relief usually lasts from 1 to 2 months.

Piriformis Muscle Injection

The piriformis muscle runs from the base of your spine to the greater trochanter of your hip on each side. Tightness and inflammation of this muscle can cause back or buttock pain that is usually worse with prolonged sitting. Additionally, the sciatic nerve may be irritated by tightness of the piriformis muscle, and this can cause nerve pain in the leg that mimics that caused by a herniated lumbar disc. Injections of steroid and local anesthetic directly into the piriformis muscle with x-ray guidance can relax this muscle and relieve painful symptoms.

How long does the Piriformis injection take?

Injections into the piriformis muscle usually take 10 to 15 minutes.

How will I feel afterwards?

Relief of buttock and sciatica pain is usually noticed shortly after the injection due to the use of local anesthetic, but steroids take effect in 48-96hrs.

How long will the relief last?

Pain relief is variable, but typically lasts up to 2 months.

Occipital Nerve Procedures

The greater and lesser occipital nerves originate at the base of the skull and run onto the back of the head. Occipital neuralgia is pain that arises from these nerves, and is usually felt as pain in the back or sides of the head. There is also a strong association between occipital nerve pain and migraine headaches. Ultrasound or x-ray guidance may be used to inject steroid and local anesthetic into the areas of these nerves to provide relief of both neck pain and headaches. Radiofrequency can also be used to provide longer relief if blocks provide good but temporary relief.

How long does an occipital nerve procedure take?

Occipital nerve blocks are very quick and usually take no more than 5 minutes per side, even when x-ray is not used. Radiofrequency ablation of the occipital nerves takes 15-20 minutes.

How will I feel afterwards?

You will probably feel relief starting within an hour of your injection or procedure, but some patients note a pressure sensation at the injection site or sites.

How long will the relief last?

Nerve blocks may last up to 2 months, but use of radiofrequency may provide relief for 6 to 12 months.

Sympathetic Nerve Blocks

The sympathetic nervous system helps control many functions in your body (blood pressure, sweating, peripheral blood flow) and is usually not involved in pain sensation. However, in some pain conditions, such as Complex Regional Pain Syndrome (CRPS) or Reflex Sympathetic Dystrophy (RSD), the sympathetic nerves become activated in an abnormal way and begin to transmit pain. Blocking these sympathetic nerves can improve pain and a positive response is also useful in helping to provide a diagnosis for the pain. Sympathetic blocks are done with either x-ray or ultrasound guidance, and all involve the injection of local anesthetic around bundles of nerves. The blocks may be done initially in a series of three over a 6 week period, but in some patients may be repeated several times per year. Sympathetic blocks can be done at five different levels of the spine, depending on the area and type of pain involved:

- **Stellate Ganglion Block:** the Stellate Ganglion is a bundle of sympathetic nerves that lies roughly at the C7 level, or at the base of the neck. This block may be recommended if there is nerve pain in one or both arms that is difficult to treat with other methods.
- **Lumbar Sympathetic Block:** the lumbar sympathetic plexus is located at roughly the L3 level. Painful conditions in one or both legs, to include CRPS and some peripheral vascular disease, may respond to blockade of this plexus with local anesthetic.
- **Superior Hypogastric Plexus Block:** located at the L5 level, the hypogastric plexus receives pain signals from most pelvic organs. This block may be recommended if you have pelvic or low-abdominal pain.
- **Ganglion Impar Block:** the lowest collection of sympathetic nerves is found in the Ganglion Impar, which lies near the junction of your sacrum and coccyx. Blocks at this level may be helpful if you have coccydynia, or tail-bone pain.

How long does a sympathetic block take?

Sympathetic blocks usually take no more than 30 minutes.

How will I feel afterwards?

Relief from sympathetic blocks is usually noticed with 15 minutes of your procedure. You may also note rapid improvement in blood flow to the area, with increase in temperature and decreased sensitivity.

How long will the relief last?

Relief is variable and you may require a series of injections over several weeks to provide lasting results.

Spinal Cord Stimulation

Spinal cord stimulation (SCS) is an advanced procedure that has evolved in clinical use since the late 1960's. It involves the placement of programmable electrodes into the epidural space where they emit signals to the spinal cord to mask pain signals. If SCS is recommended, the patient will first undergo a trial placement in an outpatient clinic setting. Electrodes will be placed with x-ray guidance and custom programmed to provide relief of the particular pain condition. Over the next 3-5 days, the patient will be able to test the SCS system to see how much it relieves the pain and improves function. If the trial is successful, the patient will be scheduled to undergo surgical implantation at an area hospital. The implantation is similar to that required for placement of a pace-maker and does not require an overnight stay in-hospital.

Conditions treated with SCS:

- Failed Back Surgery Syndrome (FBSS) , post-laminectomy pain
- Neuropathic pain from diabetes or peripheral vascular disease
- Neuralgia/Neuritis
- Radicular pain syndrome or radiculopathies resulting in pain secondary to FBSS or herniated disk
- Degenerative Disk Disease (DDD)/herniated disk pain refractory to conservative and surgical interventions
- Epidural fibrosis
- Arachnoiditis or lumbar adhesive arachnoiditis
- Complex Regional Pain Syndrome (CRPS), Reflex Sympathetic Dystrophy (RSD), or causalgia

How long does a SCS trial placement take?

A SCS trial typically takes roughly 60 minutes.

How does spinal cord stimulation work?

The spinal cord stimulator provides a signal to the spinal cord that competes with pain signals to block or masks the pain signals from being sent to the brain.

How long will the trial be?

Spinal cord stimulator trials usually last between 3 to 5 days.

How will I feel during my trial?

Most patients describe a pleasant tingling in place of their usual pain. You may notice you require less pain medication or that you can walk further or sleep better.

My trial went well, what is my next step?

After a successful trial, your physician will begin the process of scheduling you for outpatient surgery to have a system implanted.

Do I have to stop taking my pain medications for this procedure?

You are encouraged to continue taking your pain medications as prescribed.

Kyphoplasty/Vertebral Augmentation

Kyphoplasty is a treatment for pain associated with compression fractures of the vertebrae. In patients with osteoporosis or osteopenia, these fractures may occur after a minor injury, such as a fall, but they can also occur in younger patients following major trauma such as a car accident. Pain following compression fractures is usually along the spine in the area of the fracture. The kyphoplasty procedure involves the placement of a needle into the fractured bone with x-ray guidance to allow injection of cement. The cement is the same type used in total joint replacement surgeries, and it stabilizes the area of vertebral fracture. Kyphoplasty is performed in an outpatient clinic setting.

How long does a Kyphoplasty take?

Kyphoplasty usually takes 30 to 45 minutes depending on spinal levels involved. It may take longer if a level must be approached from both sides.

Are Kyphoplasty and Vertebroplasty the same thing?

Kyphoplasty and vertebroplasty are similar, but kyphoplasty has an advantage in that it allows for creation of a cavity in the bone first. This cavity is then filled allowing for spread of cement.

How will I feel afterwards?

You will likely feel tightness or tenderness at the site, but your spine pain may be improved almost immediately.

How long will the relief last?

Kyphoplasty is a one-time per level procedure under most circumstances, and the cement that is placed is permanent. Your relief will therefore be long-lasting.

Platelet-Rich Plasma (PRP) Therapy

Platelet-Rich Plasma (PRP) therapy is an innovative approach to promote healing from a tissue and bone injury using the body's own cells (autologous). PRP is blood plasma that is rich in concentration of platelet cells. Platelets are the "first responders" of the body to the injury location, contain growth factors, and other cell types called cytokines that start the healing process. Several clinical trials have shown this therapy to be effective and safe to treat various forms of muscle, tissue and joint disorders. PRP is used to target pain generating from arthritis of the shoulder, knee, elbow and spine. It is also now commonly utilized to target soft tissue and fascia related pain in the neck, feet, and lower back.

PRP Therapy is a FDA approved, non-surgical treatment that is safely performed in an office setting without the need of sedation or anesthesia.

Benefits of treating chronic pain with PRP therapy may include:

- Pain relief from healing of underlying injury
- Use of the body's own cells (autologous)
- Avoidance of a major surgery
- Improved quality of life and increased ability to perform activities of daily living
- Reduced need for oral medications for pain and avoidance of side effects such as nausea, vomiting, sedation, and constipation

How long does PRP therapy take?

The whole procedure takes about an hour to hour and a half. The patient's blood is drawn into a tube and spun down in a special centrifuge machine. The plasma, which is rich in platelets, is collected and injected into the injured tissues under ultrasound guidance using universal sterile precautions. Patients are discharged from the office the same day and may resume their normal activities and return to work.

Do I have to take special precautions for this procedure?

No. We recommend patient's to continue their usual medications and speak to their provider for specific questions.

How many treatments do I need?

In general, most patients require 2-3 treatments to have the maximum benefit from this therapy. These treatments are performed 3-4 weeks apart. It is also possible that patients may feel better after the first treatment and the subsequent treatments are performed only if absolutely needed.

Prolotherapy

Prolotherapy is an effective treatment to target various pain generating disorders which includes joint sprains, tendon injuries, arthritis of major joints, neck, and low back pain. It involves injection of a non-irritant solution (dextrose) and a local anesthetic (lidocaine) into the body with the purpose of strengthening weakened tissue and alleviating pain. The injected solution theoretically washes away the “bad” inflammatory markers causing pain and promotes healing in a natural way by utilizing body’s innate healing mechanism.

Prolotherapy is a non-surgical treatment that is safely performed in an office setting without the need for sedation or anesthesia.

Benefits of treating acute and chronic pain with Prolotherapy may include:

- Pain relief from underlying injury
- Avoidance of a major surgery
- Improved quality of life and increased ability to perform activities of daily living
- Reduced need for oral medications for pain and avoidance of side effects such as nausea, vomiting, sedation, and constipation

How long does Prolotherapy take?

The procedure usually takes about 15 to 30 minutes. Under ultrasound guidance, the solution is injected into the affected body part. Patients are discharged from the office the same day and may resume their normal activities and return to work.

Do I have to take special precautions for this procedure?

No. We recommend patients to continue their usual medications and speak to their provider for specific questions.

How many treatments do I need?

In general, most patients require 4-6 treatments to have the maximum benefit from this therapy. These treatments are performed 2 weeks apart. It is also possible that patients may feel better after the first few treatments and the subsequent treatments are performed only if absolutely needed.