



INJECTION PROCEDURES

GENERAL CONSIDERATIONS AND PREPARATION FOR THE INJECTION

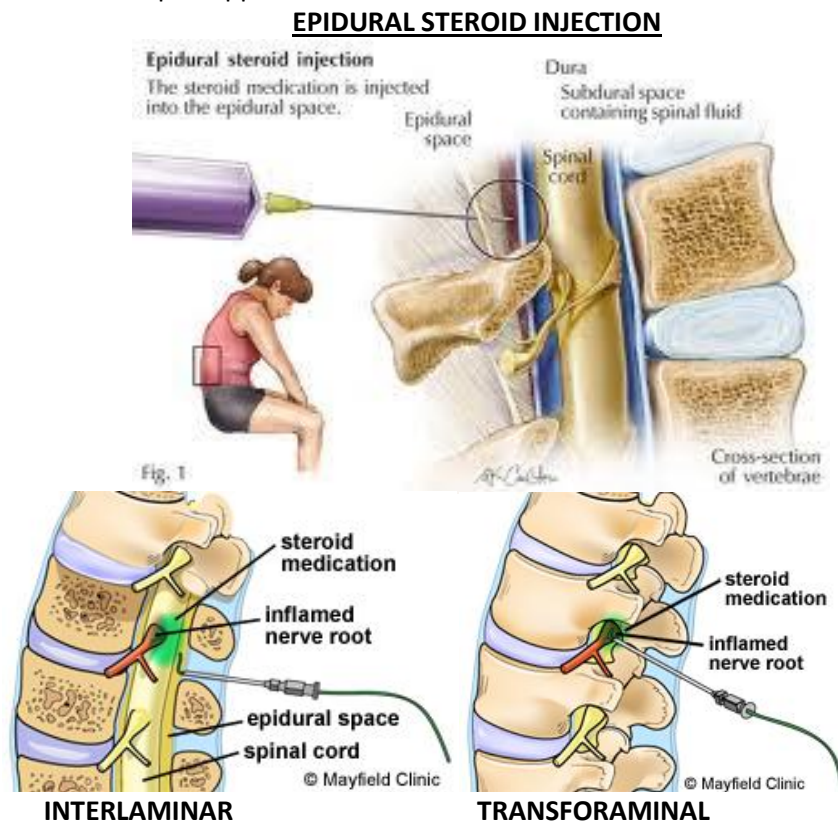
In general, injection procedures for the spine and some other parts of the body entail the use of live x-ray known as fluoroscopy in either a clinic or a hospital under sterile conditions in order to direct very narrow gauge needles into potential spaces or close to nerves to either treat or diagnose spine problems and other neuro-musculoskeletal problems. This can often facilitate other non-operative treatments. Alpine Orthopaedic & Spine, PC refers to and works with well-qualified injection specialists in the region to provide these injections, such as anesthesiologists, physiatrists and specialized radiologists. The radiation from this procedure is usually less than a chest x-ray, and the injection typically contains a steroid [like cortisone] and a local anesthetic [like Lidocaine]. You need to be without food or water for 4 or more hours, unless otherwise specified by the injection specialists' office. If you have an allergy to iodine or you take blood thinners such as Coumadin or Plavix or aspirin, then please inform the clinic of the injection specialist and Alpine Orthopaedic & Spine so that special arrangements can be made to discontinue these medications temporarily **ONLY WITH THE APPROVAL OF YOUR PRIMARY CARE PROVIDER OR CARDIOLOGIST**. Do not take anti-inflammatory medications for 7 days prior to the injection, such as Motrin, Naprosyn, Celebrex, and so-forth. Please take all of your other regular medications, such as those for blood pressure, thyroid disease, seizures, and so-forth. Please wear loose and comfortable clothing that you do not mind getting stained with iodine based anti-septics or other skin cleansers that are routinely used for the procedure. Please have a responsible driver who will be happy to take you home after the procedure.

EPIDURAL STEROID INJECTION:

An epidural steroid injection is an injection into the epidural space of the spine. The epidural space is a potential space outside of a special membrane called the dura mater that surrounds the spinal cord and the nerve roots as depicted in the figure below. Anesthesiologists often use this space to introduce pain relieving medications for women during the delivery of their child.

The purpose of this procedure is two fold. First, the steroid diminishes the release of painful chemicals from your spine which irritate the nerves within the dura mater. Often, this allows diminished pain to the extent that one can proceed with physical therapy and other measures to rehabilitate the spine. This effect may take up to FOUR days to occur and it may last from days to years. Second, the local anesthetic allows a fast relief from the pain signals originating from the epidural space. This allows a more comfortable introduction of the steroid into the epidural space, while also confirming whether or not the area of the injection is the location of the “pain generator” of spine. This numbness may last up to 12 hours, so it is important to avoid excessive activity for 12 hours after the injection so-as to avoid provoking more pain after the anesthetic wears off before the steroids take effect up to FOUR days after the injection.

There are three different methods to introduce injections into the epidural space. The first is the interlaminar approach. This is the classic method that is employed by anesthesiologists to place epidural catheters for an anesthetic effect during pelvis and lower extremity surgery and child-birth, and it allows a broad bilateral introduction of the steroid. The second is the transforaminal approach. This involves introducing the needle into the neuroforamina where the spinal nerves emerge from the spinal canal and go to the rest of the body. This approach can allow a more specific introduction of the steroid and the anesthetic into one side of the spine or the other, as spinal problems often only have one side. The third is the caudal injection. This is specifically for the lower lumbar spine and the sacral nerve branches, and this can be a helpful approach at times.



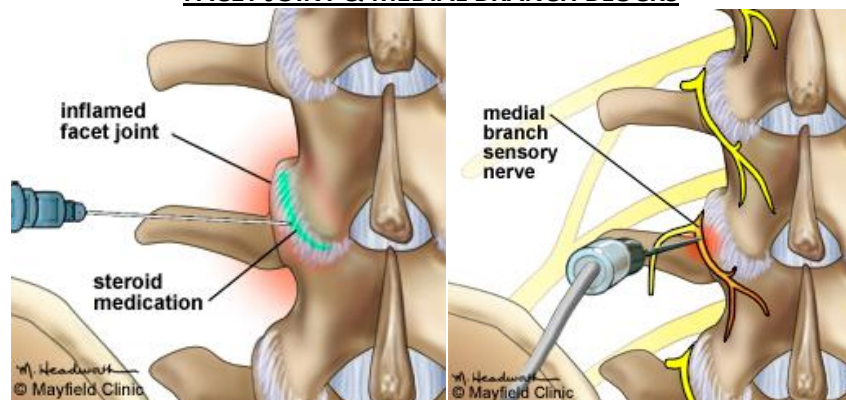
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FACET JOINT & MEDIAL BRANCH BLOCKS:

These injections target pain that may emanate the facet joint of the spine at any given level. There are normally two facet joints and one disk space per motion unit in the spine. These are joints that are similar in function to the basal thumb joint that help guide spine motion on the back side of the spine. These joints have the same type of cartilage as most of the other joints in the body, such as the wrist. As such, they are susceptible to the development of either osteoarthritis [wear and tear] or arthritis [rheumatoid, ankylosing spondylitis, and so-forth]. Either flouroscopy or CT scans are used to guide the injection needle into the appropriate location.

The purpose of this procedure is two fold. First, the steroid diminishes the release of painful chemicals from your spine which irritate the joint. Often, this allows diminished pain to the extent that one can proceed with physical therapy and other measures to rehabilitate the spine. This effect take up to FOUR days to occur and it may last from days to years. Second, the local anesthetic allows a fast relief from the pain signals originating from the epidural space. This allows a more comfortable introduction of the steroid into the joint or around the nerve, while also confirming whether or not the area of the injection is the location of the “pain generator” of spine. This numbness may last up to 12 hours, so it is important to avoid excessive activity for 12 hours after the injection so-as to avoid provoking more pain after the anesthetic wears off before the steroids take effect.

FACET JOINT & MEDIAL BRANCH BLOCKS



FACET INJECTION

MEDIAL BRANCH BLOCK

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RADIOFREQUENCY NEUROABLATION:

When there is relief of the pain from a medial branch block or a facet block that is only temporary, an injection specialist will occasionally consider radiofrequency ablation. This is a technique that uses RF [radiofrequency heat] to heat and destroy very small nerves that convey pain signals from a “pain generator” such as the facet joint. The approach is very similar to that of the medial branch block. The pain relief from this procedure in the right patient with a well defined “pain generator” may last months to years. This procedure may take up to 60 minutes. Approximately half of the patients undergoing this procedure have significant pain relief for a period of time. Occasionally, some patients do not have any relief of pain from the procedure. The nerves eventually grow back, but the pain may or may not recur. In such circumstances, a second neuroablation may be performed with similar outcomes.

TRIGGER POINT INJECTIONS:

A trigger point is a “knot” of muscle fiber that can form from muscle injury. It may be felt under the skin and it is painful to touch. This, in turn, may cause muscle spasm and it can impede your spine rehabilitation and recovery. In distinction to the epidural steroid injections, facet injections, and medial branch blocks, the injection often consists of a local anesthetic and vitamin B12. Occasionally, a steroid is used instead of vitamin B12. Frequently, more than one injection is used in different sites in one setting. The pain relief may occur within 15 minutes. Physical therapy is encouraged soon after the injection.

TRIGGER POINT INJECTION:

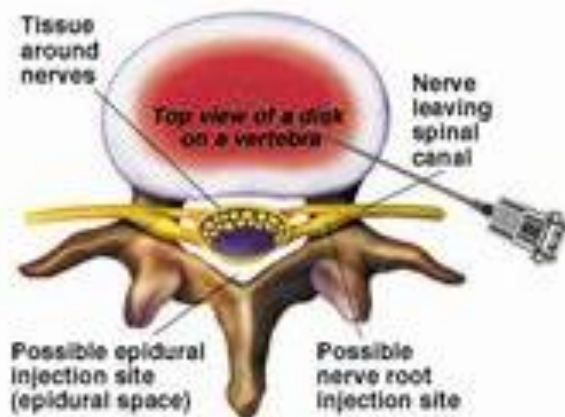


DISCOGRAM:

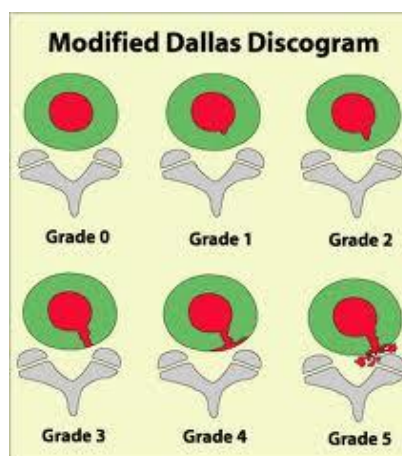
A discogram or diskogram is a test that involves the injection of either iodine contrast or gadolinium contrast into the disk space with a special needle under fluoroscopic or CT scan visualization. As a more invasive injection, this is a procedure that is reserved for situations in which conservative treatment, such as medications, physical therapy, activity restrictions, therapeutic injections and the like have failed to improve a spine condition. Either a CT scan or an MRI is performed after the discogram to further define the anatomy of the disk space, particularly as it relates to the nerves of the spine.

This is an injection procedure that is used to identify whether the respective disk space is a “pain generator” of the spine or the extremities. It is EXTREMELY important to register in your mind and ON PAPER whether pain is induced by the injection, how much immediate pain that you have with the injection on a scale of 0 to 10 with 10 being the worst pain, and whether the pain that is produced from the injection reproduces the same pain location and characteristics that you have been having in either the back or the extremities. Please report pain findings to your surgeon upon return to the clinic. The images from the study will be made available via the internet to the surgeon.

DISKOGRAM:



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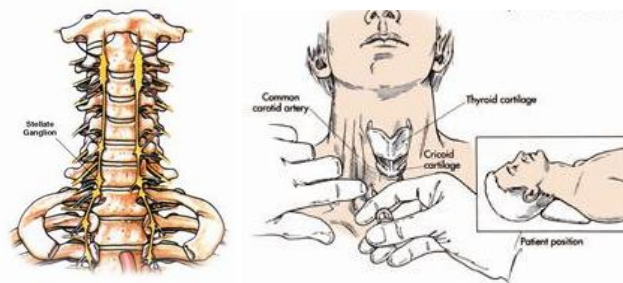
SYMPATHETIC BLOCKADE:

Stellate ganglion injections and lumbar sympathetic blockade are used for complex regional pain syndrome and other pain conditions of the upper extremity and the lower extremity, respectively. Complex regional pain syndrome is a chronic and progressive pain syndrome characterized by severe pain, swelling, and changes in the skin in the any one or all extremities. It may diminish slowly with time. The International Association for the Study of Pain has divided CRPS into two types based on the presence of a nerve lesion following the injury.

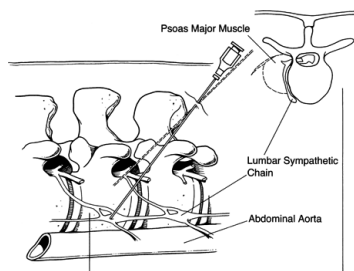
- Type I, formerly known as **reflex sympathetic dystrophy (RSD)**, Sudeck's atrophy, reflex neurovascular dystrophy (RND) or algoneurodystrophy, does not have a demonstrable nerve lesion.
- Type II, formerly known as **causalgia**, has evidence of obvious nerve damage.
- The cause of this syndrome is not clear at this time. Risk factors for the development of this condition include injury and surgery, although it can occur spontaneously with no specific site of origin.

The purpose of this procedure is two fold. First, the steroid diminishes the release of painful chemicals from the sympathetic chain of nerves next to the spine which are thought to mediate CRPS or RSD. Often, this allows diminished pain to the extent that one can proceed with physical therapy and other measures to rehabilitate the spine or the extremities. This effect may take up to FOUR days to occur and it may last from days to years. Second, the local anesthetic allows a fast relief from the pain signals that may propagatate within the sympathetic chain. This allows a more comfortable introduction of the steroid around the chain, while also confirming whether or not the area of the injection is the location of the "pain generator". This numbness may last up to 12 hours, so it is important to avoid excessive activity for 12 hours after the injection so-as to avoid provoking more pain after the anesthetic wears off before the steroids take effect up to FOUR days after the injection.

CERVICAL STELLATE GANGLION BLOCKADE [SYMPATHETIC]:



LUMBAR SYMPATHETIC BLOCKADE:



AFTER YOUR INJECTION:

After your injection, it is important to have relative rest for up to 12 hours. You may go home. Easy walking and other lower grade activities are appropriate in this early stage after the injection. After the 12 hour period is finished, you may resume regular activities within your pain limitations and/or within the prescribed work restrictions of the Alpine Orthopaedic & Spine or the injection specialist.

Your arms [or legs for lumbar injections] may feel weak for the hours after the injections, but this should wear off within 12 hours. If you have pain at the injection site, then you may either ice it or warm it for 20 minutes at a time up to five times per day. Diabetics may have short-term elevation of blood sugars. Some patients may have fluid retention for up to two weeks.

Spinal headaches can occur up to 3% of the time for injections that are close to the dura mater, such as with epidural steroid injections. These are headaches that are provoked with sitting or standing and they diminish with a recumbant position. They often are made worse with lights. In the event of such headaches, please contact the office of the injection specialist. In the mean time, drink fluid about four times per day, lie down flat with the head no higher than one pillow for 24-36 hours only getting up to go to the restroom, and try caffainated beverages.

Please take your regular medications, unless otherwise instructed by Alpine Orthopaedic & Spine or the injection specialist. You may take the band-aid off 24 hours after the procedure.

Please notify the office of the injection specialist or go to the emergency room if you have any of the following: sudden loss of strength, loss of bowel or bladder control, fever above 101°F, the injection site is red or tender to the touch, or there is new numbness that lasts more than 6 hours.

Please heed to all instructions of the injectionist, and allow those instructions to over-ride the instructions of this primer if there are different instructions given to you by the injection specialist.

WITH ALL INJECTIONS, it is VERY important to record your pain scores on a scale of 0 to 10 with 10 being the worst possible pain within one hour, one day, four days, and seven days after the injection. Please keep a log of these pain scores and present them back to Alpine Orthopaedic and Spine, if you are presenting back to Alpine Orthopaedic & Spine. The log on the next page will help with this recording.

Thank you,

Miguel Schmitz, MD

Ryan Saunders, PA-C

PAIN LOG [0-10] [0=NO PAIN; 10=WORST PAIN POSSIBLE]:

	BODY PART→	Neck	Right arm	Left arm	Back	Right leg	Left leg
TIME INTERVAL							
1 HOUR							
1 DAY							
4 DAYS							
7 DAYS							