

Pain Diagnostics and
Interventional Care

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Pain Diagnostics
& *Interventional Care*

Radiofrequency Ablation (Rhizotomy) Procedures



Pictured above is Dr. Provenzano with his long-time friend and mentor, Dr. Eugene Viscusi, anesthesiologist and pain medicine specialist at Thomas Jefferson University Hospital.

Upcoming Lectures & Meetings

Spine Intervention Society
The SIS Annual Meeting –
Washington, D.C.
August 18-21, 2021
Lecturing on spinal cord
stimulation.

**European Society of Regional
Anesthesia**
September 8-10, 2021
Lecturing on radiofrequency
ablation.

**American Society of Regional
Anesthesia and Pain Medicine
20th Annual Pain Medicine
Meeting**
November 18-20, 2021 | San
Francisco, California
Lecturing on joint replacements
in ambulatory surgery centers.

What is Radiofrequency Ablation?

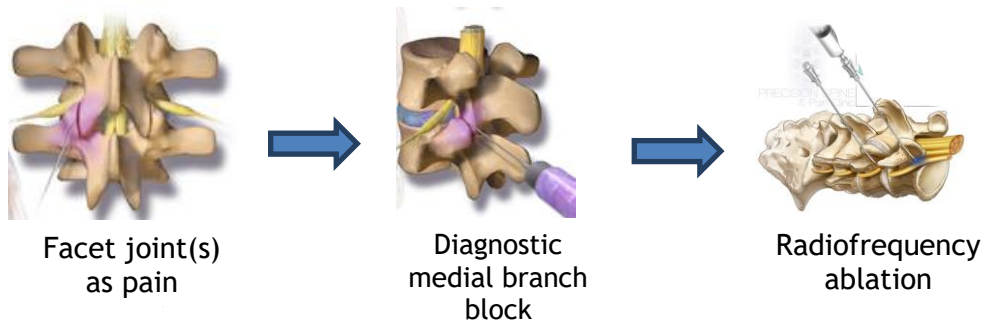
Radiofrequency Ablation (RFA), otherwise known as rhizotomy, is a minimally invasive procedure in which heating is used to treat small sensory nerves to painful joints. Heating the nerves prevents the nerves from effectively sending their pain signals to the brain, therefore, reducing the pain.

The minimally invasive procedure can be used to treat spine (neck, low back, and sacroiliac joint) pain and joint pain (knee) originating from arthritis, other degenerative changes, or injury.

RFA is performed in an outpatient setting with local anesthetic and light sedation. Patients are typically treated with anti-inflammatory medications during the healing process and physical therapy is initiated soon after.

Patients may experience some discomfort following the procedure but soon goes away. Results typically last between 8 months to 12 months depending on the area treated. The procedure can be repeated if pain returns.

Schedule of Events for Cervical & Lumbar RFA



1. To determine whether the facet joints are causing pain, medial branch nerves are diagnostically blocked. If a patient experiences significantly reduced pain with diagnostic medial branch injections on **2 separate occasions**, the patient can proceed with radiofrequency ablation treatment.
2. Radiofrequency ablation procedure uses high frequency alternating current to generate heat to make a lesion on the medial branch nerve to limit pain transmission from the facet joints to the brain.

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References

1. Davis T, Loudermilk E, DePalma M, et al. Prospective, Multicenter, Randomized, Crossover Clinical Trial Comparing the Safety and Effectiveness of Cooled Radiofrequency Ablation with Corticosteroid Injection in the Management of Knee Pain from Osteoarthritis. *Reg Anesth Pain Med.* 2018;43(1):84-91.
2. Chen AF, Khalouf F, Zora K, et al. Cooled Radiofrequency Ablation Compared with a Single Injection of Hyaluronic Acid for Chronic Knee Pain: A Multicenter, Randomized Clinical Trial Demonstrating Greater Efficacy and Equivalent Safety for Cooled Radiofrequency Ablation. *The Journal of bone and joint surgery American volume.* 2020;102(17):1501-1510.

Cervical and Lumbar Radiofrequency Ablation

Radiofrequency Ablation (RFA) performed in the cervical and lumbar spine is used to treat pain associated with the facet joints. The facet joints allow the for the spine motions of bending, twisting, and rotating. When the facet joints are injured or arthritic, the sensory nerves are activated. The small sensory nerves transmit pain signals from the facet joints to the spinal cord and then to brain.

Diagnostic studies, such as an x-ray, help to determine the cause of the facet joint pain. Some causes include facet arthritis, trauma (usually a “whiplash” type injury), or degenerative disc disease. To help determine if the patient’s pain is caused by

the facet joints in the lumbar and cervical spine, a series of medial branch blocks are performed. A medial branch block is a diagnostic test used to confirm that the targeted area is problematic.

If patients obtain relief during the diagnostic phase of the medial branch blocks, the radiofrequency procedure is performed. Full benefit of the procedure can take up to 3 months but then will usually last from 8 to 12 months. Typically, patients who obtain significant relief with the procedure for an extended period can undergo the procedure multiple times if symptoms return with similar positive results.

Genicular Nerve Radiofrequency Ablation

Genicular nerve RFA targets the genicular nerves providing sensory innervation to the knee. This innovative treatment is used to treat chronic knee pain caused from osteoarthritis, degenerative joint disease, or persistent pain after knee replacement.

The patient is initially tested to see if they are a candidate for this RFA procedure. The diagnostic block uses numbing medicine to determine if the genicular nerves are playing a role in the patient’s pain. If their pain is relieved during the diagnostic phase, the patient can be considered for a genicular nerve radiofrequency.

During the genicular nerve RFA procedure, the genicular nerve branches are heated

with a radiofrequency probe, thus stopping the pain signals from reaching the brain. Many patients find this treatment beneficial.

The radiofrequency treatment provides long-term pain relief as well as improvement in function and quality of life measures. The treatment was found to provide significant relief superior to steroid injections over a 12-month period in a randomized controlled trial published by Davis et al. In addition, genicular nerve RFA was found to be superior to viscosupplementation treatment. The genicular nerve RFA treatment resulted in significant improvement pain relief and function with a strong safety profile.

Sacroiliac Joint Radiofrequency Ablation

Sacroiliac (SI) joint radiofrequency may be an option for patients with persistent SI joint pain who have not responded to conservative treatment. The sacroiliac joint is a pelvic joint that connects the sacrum and the ilium. Inflammation and/or degenerative changes can be the main sources of pain. A patient may experience SI joint pain with standing from a seated position, walking up an incline, getting in/out of a car, or turning over in bed.

Conservative treatments may include PT, chiropractic care, and/or SI joint steroid injections. If the patient continues to struggle with pain, SI joint radiofrequency may be an option.

The radiofrequency probe interrupts the sensory nerves that surround the SI joint to disrupt the pain signals from reaching the spinal cord and brain.