

Ultrasound-guided Radiofrequency Ablation (RFA) of Saphenous Nerve for Management of Chronic Lower Extremity Pain from Neurofibromatosis-1

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Background:

Neurofibromatosis-1 is a genetic disorder of the nervous system, mainly affecting the growth and development of the nerve cell tissue. Neurofibromatosis-1 is usually an inherited disorder in which nerve tissue tumors form in the subcutaneous tissue, spinal cord or peripheral nerves. However, 30%-50% of people newly diagnosed with Neurofibromatosis-1 have no family history of the condition, which can arise spontaneously through gene mutation. There is no cure for neurofibromatosis. Treatments focus on symptomatic control, especially pain management.

Case Report:

This is a case of a 21 year old woman with a history of type 1 neurofibromatosis and 10 months of worsening left lower extremity pain due to a peripheral nerve neurofibroma. The pain was localized distal to her left knee and medial to her tibia, extending to her left medial foot. Due to her pain, the patient required crutches to walk short distances and a wheelchair for community mobility. She was unable to bear weight on her left lower extremity. Her pain was not well controlled using an off-loading knee brace and reasonable pain medications, including pregabalin for neuropathic pain.

Procedure:

After initially undergoing an ultrasound-guided left saphenous nerve block, with 40 mg of triamcinolone and 12.5 mg of bupivacaine, the patient received about three weeks of pain relief. Eight weeks after the saphenous nerve block, the patient underwent an ultrasound-guided RFA of her left saphenous nerve. With ultrasound guidance, the left saphenous nerve was identified between the sartorius muscle and the vastus medialis muscle. A 22-gauge 100 mm radiofrequency needle was used to ablate the left saphenous nerve at the distal thigh, 7 cm proximally from the left knee. Sensory stimulation was done with 0.5 mA and 50 Hz, which reproduced the patient's pain. No muscle response was noticed with motor stimulation at 2 V and 2 Hz. A mixture of 40 mg triamcinolone and 12.5 mg

bupivacaine was injected around the left saphenous nerve, followed by conventional RFA for 60 seconds at 60 degrees Celsius.

Outcome:

At post-procedure day number 3, the patient's left leg pain had abated by over 90%. She was able to walk without the use of her crutches. At post-procedure month number 3, the patient continues to be pain free, ambulating without any assistance, and not requiring any pain medication.

Conclusion:

For patients with Neurofibromatosis-1, there is no cure for their condition. However, we demonstrated that lower extremity pain in the saphenous distribution and associated with peripheral nerve neurofibroma does not have to be a life sentence of lower extremity pain. Patients can obtain pain relief from ultrasound-guided RFA of the saphenous nerve. Presumably, this pain management strategy could be utilized for pain arising from neurofibromatosis involving other peripheral nerves as well.