Ultrasound-Guided Nerve Entrapment Release (Percutaneous Neuroplasty)
Sean Mulvaney, M.D.

About Percutaneous Neuroplasty
Percutaneous neuroplasty, also called nerve hydrodissection, is used to treat painful nerves that are entrapped in scar tissue from surgery, trauma, or damaged from chronic repetitive movements. (Percutaneous means “through the skin”.) This precise ultrasound-guided treatment is a gentle technique which utilizes the injected fluid to mechanically push away scar tissue that is entrapping or pinching a nerve. The relief is often immediate or within a few days. I did not invent this technique, although I did publish the very first paper in the medical literature describing its use in 2011. This safe and versatile technique can be used on any peripheral nerve and even on spinal nerve roots. It can often prevent surgery or the need for pain medications. This procedure requires a very high level of knowledge of sonographic anatomy and a high level of skill with ultrasound needle guidance. I have been teaching it on a national and international level for the last 12 years.

What to expect and how to prepare for percutaneous neuroplasty (hydro-dissection)
Unlike many of our treatments, there is nothing you need to do to prepare for this procedure. Hydro-dissection is a mechanical technique and medications generally do not interfere with this treatment. The limb treated may be numb or even weak for up to two hours. You may need a driver to bring you home, or you may need to use crutches for a few hours until the numbness wears off. Tobacco is a potent toxin, and its use constricts small blood vessels which are needed for tissue repair. Tobacco use will limit the effectiveness of any treatment and stopping tobacco use is one of the single greatest actions you can take to improve your health. Avoid toxins like alcohol, which inhibits and depresses the cells needed for tissue repair.

What happens during the neuroplasty procedure?
This is not a painful procedure and is in fact quite comfortable, so there is nothing to worry about. First, you are comfortably positioned. Then the nerve is assessed with ultrasound and the nerve cross-sectional area is measured at the place where the nerve hurts the most. By carefully viewing a nerve with ultrasound we can assess whether the nerve is being entrapped However, in some cases the nerve may look pretty normal despite your symptoms. The position of the nerve may be marked on the skin to help the procedure go smoothly. The skin is then cleaned with a surgical skin cleaner and sterile ultrasound gel is put on the skin over the nerve. The skin is numbed with some lidocaine first, then the needle used to perform the neuroplasty is guided down to the targeted nerve using constant ultrasound-guidance. The ultrasound view of the nerve is often switched from a cross-sectional view to a view along the nerve while intravenous fluid is injected along the nerve in a precise and controlled fashion through the scar or entrapment area. Depending on the nerve or nerves, this procedure can take fifteen minutes to 60 minutes. In skilled hands there is very low risk of injuring the nerve.

What to do after your procedure

There may be temporary (1 to 2 hours) numbness or even some weakness in the limb treated. This is not a painful procedure and there is only mild soreness afterward. Usually very little or no pain medication is needed by most patients. Avoid NSAIDs like ibuprofen. Acetaminophen can be used for mild pain. Any bandages can be removed after 1 day. Depending on the part of the body treated, you MAY be placed in a sling or on crutches for a few hours until the numbness or weakness wears off. Exercise is vital to good health and finding a way to cross train around your injury is important not only for your physical health, but for your mental health as well. Ask about cross training options for your injury. A brief (10 minutes or less) period of heat or ice therapy will not hurt the therapy, but it is not required. Benefits are usually seen within a few days. The procedure may need to be repeated if you have only partial relief or if symptoms return.