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WITH THE DELLON INSTITUTE

Chronic Nerve Pain Following Knee Surgery

Arthroscopy, Knee Replacements, Or Other Procedures

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In all likelihood, the main reason you decided to undergo knee surgery was to relieve pain and restore function to the joint. This tends to be true no matter if surgery was performed in order to:

- **Repair a knee damaged due to a sports injury**
- **Replace—partially or completely—a severely arthritic knee joint**
- **Correct genetic or abnormal structural abnormalities**
- **Resolve any other possible knee issue**

Surgery on the knee is generally performed after other medical options and therapy are unsuccessful in restoring problems in or around the joint. Although the medical and orthopedic communities—along with the patient—expect to find relief with appropriate and properly performed procedures, there is still the potential for nerve damage or chronic pain to develop following surgical intervention of any sort.

Because of our high expectations, it is rather frustrating if you find yourself in the minority of patients who have chronic pain several months after a procedure that was supposed to stop painful symptoms. The truth of the matter, however, is this–no surgeon can guarantee that a procedure will be 100% successful and all the pain you had before the surgery will be relieved.

Furthermore, there's unfortunately also no guarantee you won't experience a new, different kind of pain than what you had before the surgery. In this case, the new pain could possibly be from nerves that have been trapped in scar tissue or unavoidably injured during the exposure required to repair biomechanical problems (something we will discuss shortly).

Now, a key detail needing to be emphasized is that we are talking about chronic pain. This means pain that lasts six months or longer following your surgery. Part of the reason you shouldn't necessarily panic if you are experiencing painful symptoms—even ones that are likely nerve-related such as sharp, burning, tingling, or electrical pain—within the first couple of days following your surgery is the fact a nerve might simply be pinched while your knee is swollen or stretched from the procedure. Sometimes, it might take a few days, weeks, or even months for nerves to calm down after a procedure. (If you've ever wondered why surgery hurts, there you go.)

If that is the explanation for your pain, it may help to know that most patients do find relief once the swelling subsides and tissues have had time to properly heal. Accordingly, we don't want you to be discouraged if you are having new kinds of pain following your surgery. Most patients demonstrate a steady improvement over several months as the body recovers. Unfortunately, some people do have chronic postoperative pain.

In the event you've been suffering from neuropathic pain for several months after your procedure, you need to start looking for analternate explanation and, hopefully, treatment to resolve the problem. Your first step in potentially finding relief from the pain is to have your treating physician reexamine the surgically-repaired knee that is giving you problems. If you are told that everything appears to be normal and there are no issues with the hardware or surgical site, you may wish to seek a second orthopedic opinion to confirm this.

If the consensus after the second opinion is that, from a structural point of view, the knee and surrounding tissues have been repaired appropriately and there is no sign of infection or breakdown—AND you're outside of a normal recovery period, yet are still experiencing pain—the core issue could be related to nerve damage in or around your knee.

If that's the case, do not lose hope!

It is possible to address certain nerve-related issues so as to both resolve present pain and difficulty and prevent the problem from becoming worse (or even permanent) by treating the appropriate nerves in and around your knee joint.

We know it can seem like a dire situation when you expected to get better and, instead, are suffering from pain that could be more severe than what you had before your surgery. The good news is that Dr. Williams has been able to help patients in situations like yours – and he may be able to do the same for you.

Is Your Postsurgical Knee Pain Neuropathic?

Before you were discharged following your surgery, you likely received guidelines from your surgeon letting you know what you could expect from the recovery process – including how long it should take for your postsurgical pain to go away. If your pain has not resolved in a timely manner, you are probably rather frustrated and wondering what is happening for you to feel this way. Whereas you may have had pain that was orthopedic in nature, what you now have could be neuropathic.

So what is meant by "neuropathic" pain?

Orthopedic pain is the kind caused by damage to elements of your musculoskeletal system (bones, muscles, and connective tissues). Neuropathic pain, on the other hand, is caused by injury or entrapment of nerves that have been stretched, compressed, or otherwise damaged and are unable to function normally.

Your nervous systems (central and peripheral) provide many essential functions. Nerves let us both experience physical sensations and perform voluntary and involuntary movements.

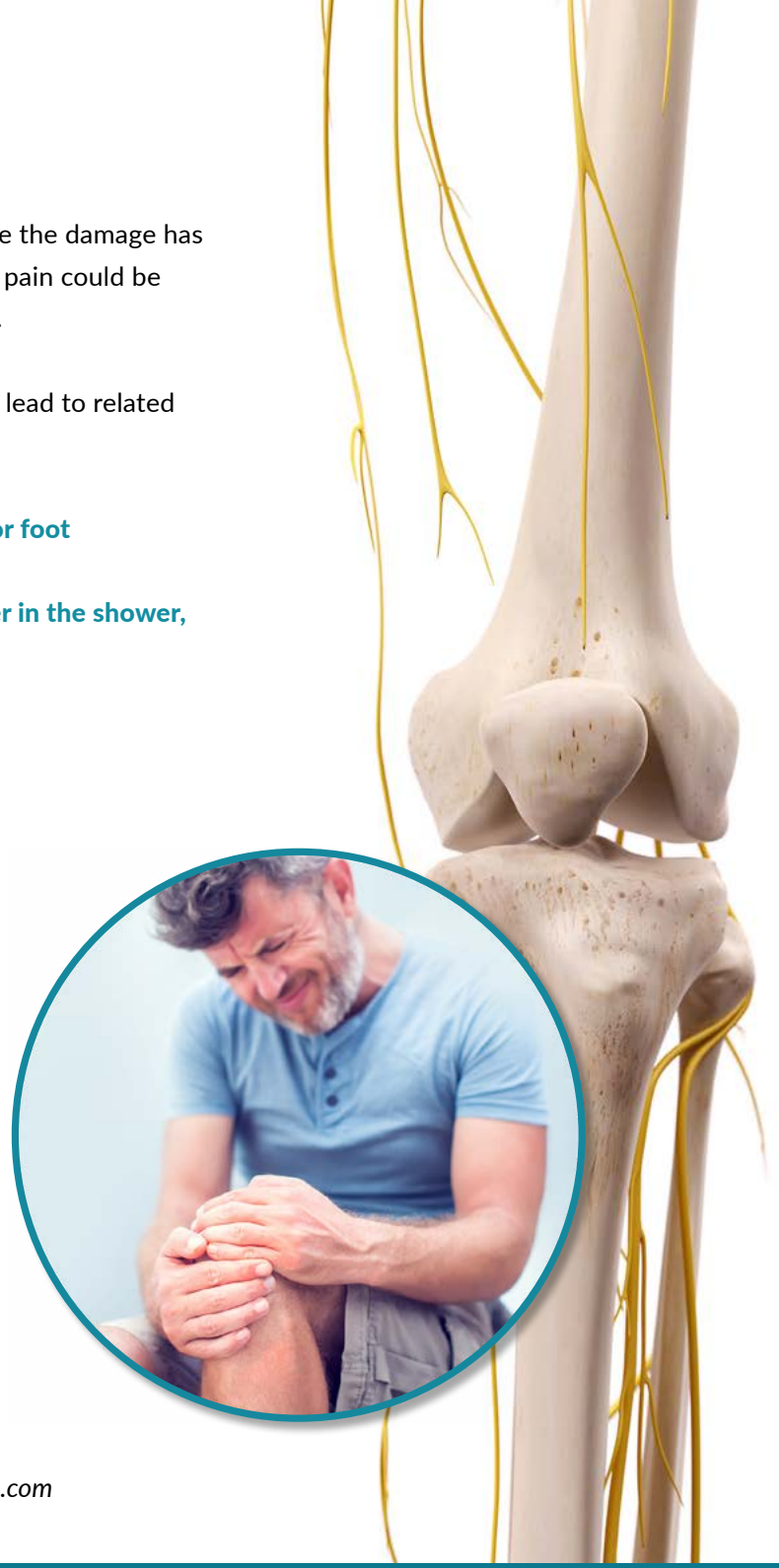
When damaged, nerves can cause pain typically described as feeling like burning, tingling, and electrical in nature (amongst other colorful descriptions we hear from patients). Additionally, this kind of pain tends to be more severe and—when it's chronic—can be quite distressing – often having a profound negative impact on your quality and enjoyment of life.

It is not necessary that symptoms of nerve damage show up in body parts exactly where the damage has occurred. The nerves, as we know, form a complex network in the body. Therefore, the pain could be experienced at distant places, away from the actual site (this is known as referred pain).

On account of an impaired nerve functionality, nerve issues following knee surgery can lead to related symptoms such as:

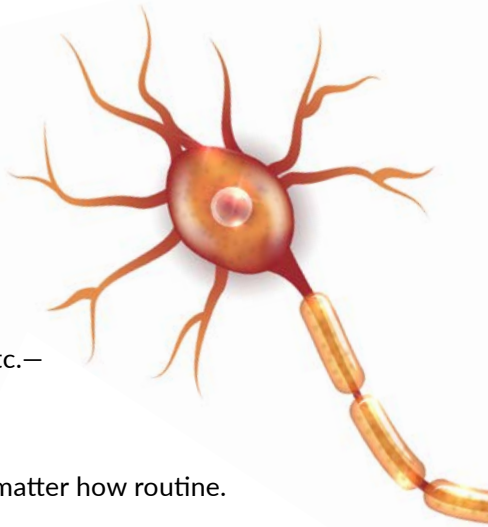
- **Decreased sensation, numbness, or tingling—"pins and needles" in the knee, leg, or foot**
- **Severe burning or sharp, shooting pain in and around knee and lower extremity**
- **Hypersensitivity – even contact from light materials and objects (bedsheets, water in the shower, wind, etc.) produces intense pain**
- **Pain in the scar or surrounding area (if surgery was performed)**
- **Numbness**
- **A weak foot that drops due to an inability to hold it up**
  - **"Slapping" gait, a walking pattern wherein each step makes a slapping noise**
  - **Toes that drag while walking**
  - **Walking problems and difficulty**
  - **Weakness of the ankles or feet**
- **Loss of muscle mass because the nerves aren't stimulating the muscles**

Dr. Williams has helped patients who demonstrated and reported having those exact kinds of symptoms. If you are experiencing any of them—and it has been several months since your knee replacement or surgery—it is possible he could do the same for you.



Why You Might Be Experiencing Neuropathic Pain 6+ Months Following Knee Replacement Or Surgery

Following knee surgery, the typical expectation from patients is for optimal success–which means no pain, full use of the joint, and return to normal activities.



Most of the time, these expectations are met.

Unfortunately, “most of the time” isn’t the same as “every time” and some patients do not have the expected results following their procedure. In severe cases, the patients even regret having the surgery performed in the first place.

Even though surgeons discuss the risk of potential problems—such as major bleeding, infection, worsening of pain, etc.—no one really thinks the worst is going to happen to them. Yet, those are typical potential complications.

The fact of the matter is this: there is always a risk for complications and suboptimal outcomes with any surgery, no matter how routine.

In the case of nerve problems following knee surgery, the reason they can develop usually fall into one of two general categories:

- **Nerves are damaged during surgery.** Since the majority of the nerves we’re discussing that are found in and around the knee joint are quite small—and most exposures to replace or repair a knee are not small—certain nerve branches may be inadvertently damaged during surgery. Imagine for a second that you are opening the door to your grandmother’s closet to take out clothes that are hanging up. Since the closet hasn’t been opened for 20 years, there are cobwebs in it (as should be expected). Now think about how difficult it would be to remove the clothing, but without breaking or disturbing the webs.

  Well, that is very much like the situation a surgeon faces when working on your knee joint. Only in this case the clothing is the knee itself and those cobwebs are the nerves running to and around the joint. Accordingly, the potential exists for nerves to either be cut or stretched during the procedure. The reason we bring all this up is because your surgeon was likely taking every measure and precaution to keep this from happening, to the best of his or her ability.

- **Nerves are trapped in scar tissue during recovery.** Let's say your surgeon avoided any direct injury to nerve tissues (most of which he is unable to see). You might think this would mean you're in the clear, but it is still possible to develop neuropathic pain after the procedure anyway.

  In this case, the reason for the pain is a nerve that became trapped in scar tissue in or around the knee after the surgery. A metaphor we use for this situation is steel reinforced concrete. Before the concrete (scar tissue) hardens, you can move a steel rod (nerve tissue) within it. Once the concrete has hardened, however, the steel rod cannot move.

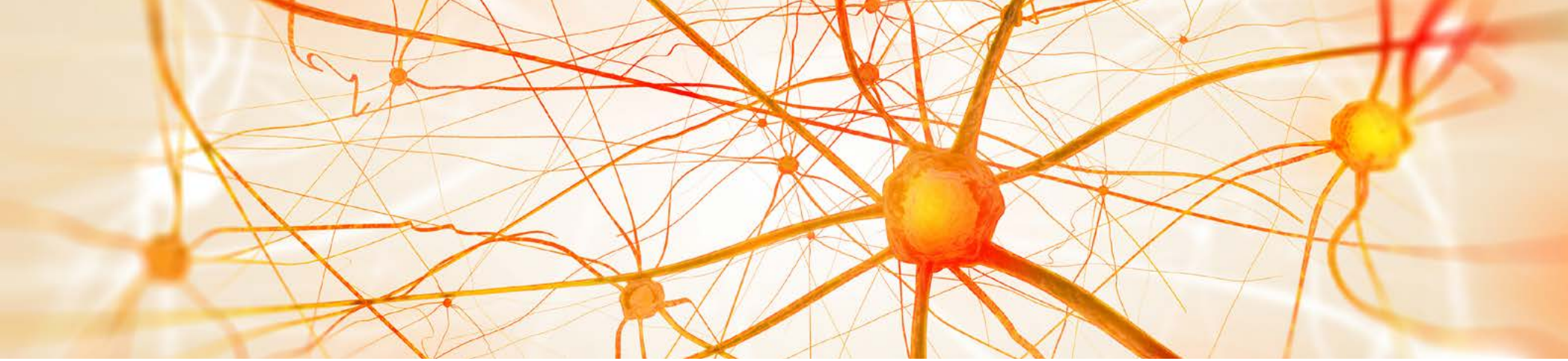
  Unlike steel rods, nerves do have a certain degree of flexibility, but it is not unlimited. This is kind of like how you can only pull Stretch Armstrong so far before he breaks, and your nerves are considerably more fragile than that!

  This means that your pain could be the result of a nerve trapped in scar tissue and unable to move as it normally would. Any tugging or pulling on the anchored nerve can be rather painful.

When we think about these situations, there are some nerves that tend to be more commonly affected than others. It can help to think about these in terms of three general areas – nerves that go into the joint, nerves that envelope the joint, and nerves that pass around the joint:

- **With regards to nerves going into the joint, we are talking about the medial and lateral retinacular nerves and the infrapatellar branch of the saphenous nerve (ISN).**

- **While performing total knee arthroplasty using a standard midline skin incision, transection (cutting in half) of the ISN—or its terminal branches—is fairly common. This typically causes an area of numbness to the outside of the knee and can make kneeling difficult and painful, but in rarer cases will result in a painful neuroma. The progress of postsurgical pain can be relatively slow and its intensity might not be terribly severe in early stages.**



- **Nerves that envelope the joint and could potentially be injured during knee repair or replacement include the anterior femoral cutaneous nerve, the medial cutaneous nerve to the knee, and the ISN. There are some others, but these constitute the main ones (roughly 90% of cases). When these nerves are affected, you will likely feel symptoms that include burning, numbness, hypersensitivity, etc.**

- **The least commonly injured nerves (during knee surgeries) are the ones passing around the knee – the common peroneal nerve and tibial nerve. These nerves are bigger, which obviously makes them easier for surgeons to see and avoid, and also tend to be protected on account of their importance (as major branches of the sciatic nerve). In the rarer cases when they are injured, they may cause foot drop or pain in the sole of the foot, respectively.**

- **When a nerve is damaged, it will try to repair itself. In doing so, the nerve sends out new branches (axonal sprouting) – and this can result in something we call a neuroma.**

- **Those axons grow slowly, but they sprawl out as they do so – in "search" of other nerve tissues to connect to. Often, they will attach themselves to non-nerve tissues—muscle, bone, scar, etc.—and anything pulling or compressing on the new, raw nerve endings can lead to painful sensations.**

Not all people have pain from a neuroma, however. And at this time, there is simply no way to predict whether or not someone will.

Foot Drop:
Impaired Motor Function

Not all nerve injuries only cause pain. Some can lead to a development of motor function dysfunction, including foot drop.

If you have developed issues with walking—such as toes dragging, a slapping gait, etc.—following your surgery, this is the likely explanation. Reflexively, you may have started using a high-stepping gait to compensate for weakness of foot dorsiflexion (the action of raising your foot) and prevent you from tipping over your toes.

Foot drop occurs when the common peroneal nerve has been injured in some way. Actually, peroneal nerve injury is an understood potential complication from surgery in or around the knee joint. The injury could be caused by compression, laceration, traction, or ischemia (lack of blood supply to organic tissue).

The peroneal nerve is a branch of the sciatic nerve, which is responsible for supplying movement and sensation to the lower leg, foot, and toes. Damage to this particular nerve—an issue known as common peroneal nerve dysfunction—can lead to loss of sensation and impaired movement in the foot and leg.

The risk for common peroneal nerve dysfunction is heightened during knee replacement surgery because the peroneal nerve resides close to the fibula bone, just below the knee. In fact, nerve damage is one reason why some people have persistent lateral knee pain and loss of function in a newly-replaced knee.

If that happens, Dr. Williams may recommend treating the peroneal nerve surgically to allow it more room to recover in an appropriate manner.

Treating Postsurgical Pain From Knee Repair or Replacement

To diagnose the specific cause of your postsurgical knee pain, Dr. Williams will use physical examination, medical history, nerve blocks, advanced imaging studies, MRN (magnetic resonance neurography), EMG (electromyogram) or sensory testing when trying to pinpoint the source of your persistent pain.

The initial treatment for neuropathic pain is conservative management, which may be successful. Depending on your specific circumstances, this might entail medicinal treatment (including oral medications) and physical therapy.

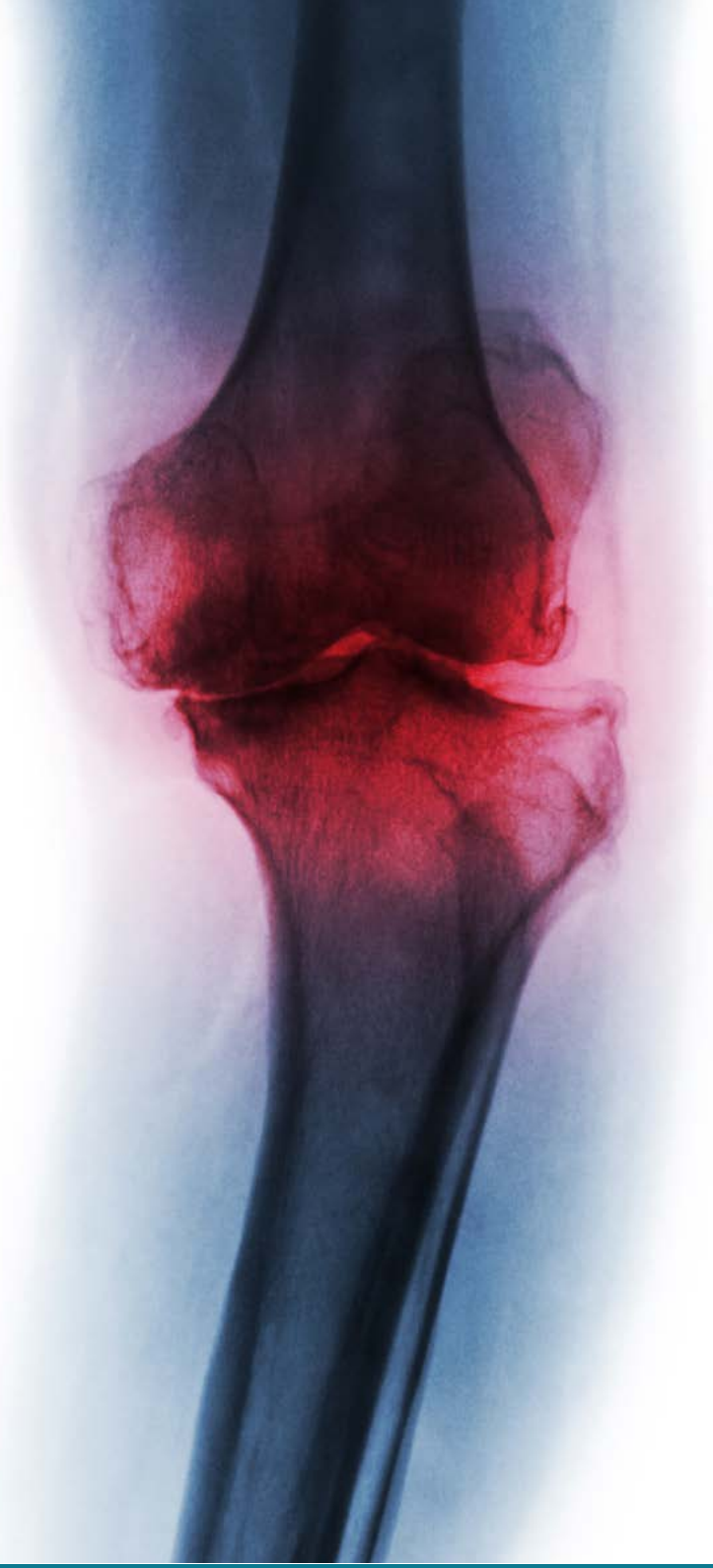
You may benefit from over-the-counter or prescription pain relievers to control the pain – at the very least, until you are able to find a more permanent solution. Other medicines that may be used to reduce pain include gabapentin, carbamazepine, or tricyclic antidepressants, such as amitriptyline. In some cases, corticosteroids injected into the area may reduce swelling and pressure on the nerve.

Physical therapy exercises might be recommended or prescribed to help you maintain (or even increase) muscle strength and improve range-of-motion in the joint.

Orthopedic devices can potentially improve your ability to walk and prevent contractures. These may include braces, splints, orthopedic shoes, or other equipment.

You may need surgery, however, if:

- **The pain and dysfunction does not go away after 6 months**
- **You have problems with movement (despite appropriate physical therapy)**
- **There is evidence for severe nerve damage from diagnostic imaging studies**



With regards to surgical options, type of procedures we may recommend are nerve decompression, nerve repair, or nerve resection (depending on your specific case).

Nerve decompression is a procedure performed to release pressure off pinched nerves so they are able to function better.

For important nerves that are severely damaged, we might recommend a nerve repair. In this kind of procedure, a possible approach is to use grafting and let the damaged nerve regrow.

If other treatments do not resolve painful symptoms, nerve resection could be a viable option. This is a matter of removing unimportant and expendable nerves (such as those in the skin) responsible for painful symptoms.

Dr. Williams's mentor and current partner Dr. A. Lee Dellon—and Drs. M.A. Mont, T. Mullick, and D.S. Hungerford—wrote a paper on this very subject, based on the results of 70 different cases.

The clear majority of patients (60 out of 70) who underwent nerve resection demonstrated "good" to "excellent" pain relief at their 24-month follow-up.

Drs. Dellon, Mont, Mullick, and Hungerford's 86% result is reasonably consistent with another study by Drs. M.Y. Nahabedian and C.A. Johnson, which reported 84% indications of "good" to "excellent" pain relief from 25 cases at their respective 1-year follow-ups.

Accordingly, nerve resection is one potential option that shows promise for many patients suffering from chronic, neuropathic pain following a knee surgery or replacement.

Why Dr. Williams Is The Right Choice For The Relief You Need

Dr. Williams is board-certified in Plastic and Reconstructive Surgery, as well as trained in General Surgery. He has been a full partner at the world-renowned Dellon Institute in Baltimore, MD since 2009, dedicating the majority of his time to caring for patients suffering from peripheral nerve injuries.

Since 2007, Dr. Williams has been focused on providing surgical care and rehabilitation for lower extremity peripheral nerve injuries, including those sustained from ankle sprains and fractures, and the surgeries to repair those same ankles. Along with treating nerves in the lower extremity, Dr. Williams also specializes in upper extremity, trunk, thorax, head, and neck peripheral nerve injuries.

Additionally, Dr. Williams has independently developed procedures to improve sensation and muscle function in the lower extremities, and has been part of the team that has helped derive many other advancements in peripheral nerve surgery and peripheral nerve imaging.

Dr. Williams has written and co-authored multiple publications in the field of peripheral nerve surgery.

Get Help Today!

If you've been living with chronic (six months or longer), neuropathic pain following a knee surgery, you aren't getting better, and other doctors don't have an answer – contact us!

Request a consultation with Dr. Williams today. Call our Baltimore office at (410) 709-3868 and one of our team members will be happy to help schedule your appointment.

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