



Radio Frequency Neurotomy

What is it?

Percutaneous radio frequency neurotomy (pRFN) is a simple pain relieving minor surgical procedure. It is a procedure carried out under strict x-ray control using a fine needle called an electrode with local anaesthetic to place the tip of the electrode alongside a relevant small nerve. The needle tip is then heated by connecting to a separate special device (a radio frequency generator) which, by means of an electrical current at the frequency of radio waves causes only the tip to heat up.

The electrode is heated to 85°C for ninety seconds and requires repeated careful placement to ensure that part of the nerve has been treated. As long as the nerve is within the very small area heated it will be “cooked” and thus rendered dysfunctional. This does not destroy the nerve but prevents the nerve from functioning and thereby pain messages are stopped until the treated nerves regrow. This can take from three to eighteen months depending on the size and length of the relevant nerve.

The procedure is carried out as a simple day-only procedure in a hospital or appropriate facility. On occasions if long distance travel is involved overnight accommodation may be necessary. Discharge is usually possible one to two hours after patient evaluation and supply of reasonable analgesia. The procedure takes generally one to two hours depending on the structure involved because great care is taken that the electrode is accurately positioned on the numerous occasions required for that procedure and each “cook” takes ninety seconds.

It is a procedure that has been scientifically proven to be a safe and effective means of useful pain relief for many patients around the world.

Who is eligible for RF?

Patients who have persistent severe troublesome disabling pain for which other treatments have been ineffective and for which they would like a more effective treatment. They will have an adequately diagnosed condition, such as proven painful cervical or lumbar spinal zygapophysial joints (by means of controlled diagnostic nerve blocks where they have had definite or complete relief repeatedly) or nerve scars or entrapment. Other simpler forms of treatment should have been tried and it is not advisable generally to undertake this procedure within six to twelve months from the onset of pain.

What are the treatment alternatives?

For a proven zygapophysial joint problem there is no alternative as effective. However, many people find benefit in medications, exercises, manipulation or mobilization, physiotherapy techniques, pain management psychology, osteopathy, chiropractic,



acupuncture, massage and other forms of treatment. Using one of these approaches may be all that you need to feel comfortable with your pain.

If however you have persistent pain this is the best known option. There is no better surgical alternative.

What are the risks?

These can be simply divided into early and late:

Early

1. Small risk of infection.
2. Allergic reaction to local anaesthetic (but this should have been detected during the diagnostic injections which also use local anaesthetic).
3. There can be significant post-operative localised pain lasting two days to two weeks and which may feel like a deep bruise, similar to a severe thumping in the neck or back, but this is easily managed with strong analgesics and ice packs and gentle exercise.
4. Risk of developing an area of hypersensitive skin for days or weeks. This can range from a minor nuisance to a burning hypersensitivity which can be quite disabling but these can be made manageable with medications and ointments if necessary and usually only occurs if the nerve has a skin patch. Most don't.
5. There is a potential risk of "cooking" other tissues such as bone lining, ligaments, joint capsules and other tissues and this is why the pain can be significant for some time. It is also feasible to inadvertently cook other nerves if inadequate visualisation with x-ray has not been obtained. However, this is unlikely to occur with the use of x-ray visualisation and you remain awake throughout the procedure and may warn of inadvertent needle position.
6. There is further radiation exposure which may be equivalent to the background radiation exposure of several return trips to Europe.
7. There may be a few hours or days of dizziness and/or unsteadiness, particularly if the upper cervical joint is treated.
8. The procedure may fail in as many as 30 percent of patients. Failure is regarded as the procedure never being effective, or partially effective for less than three months. A repeat attempt may be warranted should the latter occur.

Late

1. Damage to the joint could theoretically occur many years later because the numbed joint may be over-used. But this is unlikely to occur biologically because the joint on the other side, the disc segment and other ligaments are still fully functioning to guide and limit spinal movement at that level, and this procedure does not permanently anaesthetize the joint.
2. Phantom pain or neuroma formation does not seem to occur in radio frequency neurotomy because the nerve is not cut but simply damaged.
3. Eventual failure of the procedure. It is not known how many times radio frequency can be successfully repeated; some individuals have had ten to twelve successful repetitions.



What are the benefits?

There is a better than 70% likelihood of obtaining relief similar to that found during the diagnostic procedures. The duration of responses has varied from three months to eighteen months with an average of seven months for C2/3, eleven months for lower cervical joints, and suggestions of one to two years for lumbar joints (although an adequately performed study has yet to verify this).

A good result will allow you to reduce or cease medications and therapy and increase your ability to undertake a wider range of activities.

Can RF be repeated?

Yes. If other measures are insufficient to control otherwise unrelievable pain and you report sufficient benefit from the previous procedures, this procedure can be repeated successfully in most patients.

However, if the first procedure is ineffective, that is if it does not work at all, then a repeat attempt has not yet been shown to be successful. However, if pain relief is incomplete or of short duration such as days or weeks then there is a 30-50 percent chance of a repeat procedure being more successful.

Following the procedure

You will be discharged from hospital when you are ready. You will need transport – it is not appropriate that you drive. However, most people can travel by car or plane for several hours after the procedure.

You will be supplied a prescription for strong analgesics, and it is recommended that you use ice packs, and to lightly exercise your spine to prevent secondary tightness which can then cause further pain.

You will be instructed to be followed up by your treating general practitioner and/or referring specialist. If Dr. Speldewinde has not personally reviewed you, he would like to be informed one month after the procedure as to your progress or sooner if there are any questions.

As this procedure done in this strictly controlled fashion is relatively new Dr. Speldewinde is part of a group gathering data on its effectiveness. Your participation in future surveys, questionnaires and trials, with your appropriate consent, would be appreciated (but this is not a necessary condition of your undertaking this procedure). Be reassured that this is a procedure which has been scientifically proven as a safe and effective means of useful pain relief for many patients.

Revised by Dr. Speldewinde in February 2003, acknowledging the work of colleague Dr. Greg McDonald from the Cervical Spine Research Unit, Newcastle.