



KATARZYNA MACKENZIE

PLASTIC SURGEON

## Neuroma

---

Neuromas can be excised and if possible the nerve ends repaired together. Sometimes a nerve graft is required to bridge the graft. If this is not possible, the nerve end can be buried into deeper tissue to relieve the pain. Relocating the nerve end to deeper tissue removes it from the surface so it is away from points of contact where it can be knocked.

Despite the many advances made in microsurgical techniques and instrumentation, the functional outcome of a repaired nerve will never be exactly the same as before the injury.

Length of surgery	1-3 hours, depending on the extent of injury
Anaesthesia	Regional or general anaesthetic
Hospital stay	Day case
Risks/complications of surgery	Frequent: Swelling, stiffness, discomfort on movement Infrequent: Infection, bleeding (haematoma), delayed wound healing, painful scar, damage to the nerve, neuroma, adhesions, complex regional pain syndrome, no improvement
Recovery	2 to 4 weeks resume light activities, such as using a keyboard or writing with a pen 5 to 6 weeks resume medium activities, such as light lifting or shelf stacking 6 to 8 weeks resume heavy activities, such as heavy lifting or building work 6 to 8 weeks resume sporting activities 3-9 months until final result
Driving	8-10 weeks
Hand position	Elevation above the heart level
Follow up	1 week, 6 weeks, 3 months, 6 months
Duration of results	Results can be unpredictable with neuroma surgery

# KATARZYNA MACKENZIE

PLASTIC SURGEON

## What is a neuroma?

Neuroma is a nodule developing on damaged nerve. They can be:

- In continuity- neuromas in a nerve that has not been completely severed and are of two main types; those in which the perineural sheath is intact and those in which the nerve is only partly damaged
- Neuromas in completely severed nerves- forms on the proximal stump of any severed peripheral nerve
- Amputation stump neuroma

## How long does it take for the nerve to regenerate after surgery?

Factors that may affect results after nerve repair include:

- Age (the younger you are, the quicker and the better the recovery time)
- Type of wound
- Type of nerve (sensory vs motor)
- Level and cause of the injury (the higher up your arm the injury occurs, the slower the recovery time for your hand)
- Delay between injury and repair
- Smoking

The important thing to remember is that nerves take many months to repair themselves. The nerve grows back at about 1mm per day and the final result may not be known for two years or more.

Sensory nerves can recover sensation months or years after injury; however, motor nerves have a time limit for healing otherwise the muscle will waste away.

Muscle power or skin sensation may never return to pre-injury levels.

## What are the symptoms and signs of a neuroma?

- Pain and discomfort at the site of nerve injury and absent sensation distally
- Direct tapping over the nerve elicits pain
- A palpable mass that is tender to palpate and pressure of this mass may recreate the patient's symptoms

# KATARZYNA MACKENZIE

PLASTIC SURGEON

## What is the treatment?

There is no procedure that is completely successful in the treatment of neuromas and thus there are many techniques that are described. Almost any nerve will form a neuroma if it is severed and the best way to minimize this is by careful repair or nerve graft.

### Nonoperative techniques

- Desensitisation - tapping, massage

### Surgical techniques

Surgical management of neuroma is indicated:

- Persistent pain and dysesthesia
- No hope of reuniting the damaged nerve
- Palpable tender neuroma in the line of the damaged nerve
- The presence or possibility of irritation of the neuroma by adherence to moving muscle or tendon

#### *Nerve grafting*

During the procedure, under the general anesthetic and under microscope magnification, neuroma is excised until healthy nerve ends are seen. That leaves a nerve defect. In these situations, attempting to restore continuity of the nerve directly may lead to too much tension at the repair site. Therefore, Dr Mackenzie will use a conduit or a graft to bridge the defect. Usually your own nerve (from a forearm or leg) is used (nerve autograft) as it is the gold standard for grafting. However, it is associated with donor site morbidity, which can be avoided with off-the-shelf options. The choice of a graft/conduit is dependent upon:

- The length of nerve defect/gap
- The type of nerve injured (sensory, motor or mixed)
- The size/diameter of the nerve injured
- Patient's acceptability to off-the-shelf options such as allograft (cadaveric nerve) and animal products
- Costs
- 

Please remember, the hand's function will never return to normal and pain and discomfort should improve.

# KATARZYNA MACKENZIE

PLASTIC SURGEON

## *Nerve transposition*

After a nerve is injured, sometimes painful neuromas develop in digital nerves of the hand. They are usually in locations that are not suitable for nerve repair such as amputated fingers. In these situations, the neuroma is excised, and the nerve end is either transferred to an area away from the working surface of the stump or buried deep in a muscle or bone. Relocating the nerve end to deeper tissue removes it from the surface so it is away from points of contact where it can be knocked. The area that the nerve supplied will be completely numb, and this is permanent.

## **What is the recovery after neuroma treatment?**

It is very important to elevate your hand as often as possible, following your operation as it helps to reduce the swelling. You may be encouraged to move your fingers to reduce swelling and prevent stiffness.

You can expect some mild pain, swelling, and stiffness after your procedure. It may take from 4 to 9 months for swelling and stiffness in your hand and fingers or thumb to go away completely. If stiffness, swelling, or pain persist after surgery, hand physiotherapy will be recommended.

Although the scar may be red and tender for several weeks, it is seldom troublesome in the longer term.

You can have a bath or shower 48 hours after your operation, but keep your wounds dry until they have healed. It is helpful to wear a large plastic bag over your arm for showering or bathing.

You can drive a car at about 4-6 weeks, provided your hand is comfortable and you are able to control a motor vehicle safely.

Physical therapy is sometimes needed after a nerve injury.

It can take many months for the nerve to finish growing after an injury depending on many factors including the length that the nerve that needs to grow. It can also take this long for muscles to work well again. There might be numbness, pain or a "pins and needles" feeling during the healing period.

If a sensory nerve has been injured, care must be taken not to burn or cut fingers because there is no feeling in the affected area.

With a nerve injury, the brain may need to be "re-educated." After the nerve has recovered, sensory re-education may be needed to improve feeling to the hand or finger.

# KATARZYNA MACKENZIE

PLASTIC SURGEON

## When can I return to work?

This will depend on the type of work you do, but it may be 3-4 weeks after your operation. Office workers may need a 2-4 from work. Heavier activities with the affected hand are restricted for 6 to 8 weeks.

## What are the complications of a neuroma treatment?

Complications associated with this surgery can include:

- Infection – this can be settled by taking antibiotics
- Swelling and stiffness
- Painful scar
- Minimal or no improvement
- Neuroma formation- unpleasant sensations if it is knocked or tapped
- Bleeding
- Wound healing problems
- No improvement
- Delayed wound healing
- Loss of sensation in the skin where the nerve graft is taken from
- CRPS-complex regional pain syndrome