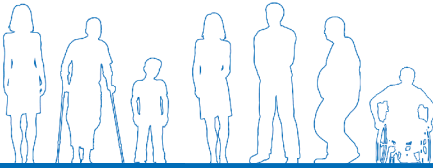




**Royal National
Orthopaedic Hospital**
NHS Trust



A Patient's guide to

The Brachial Plexus

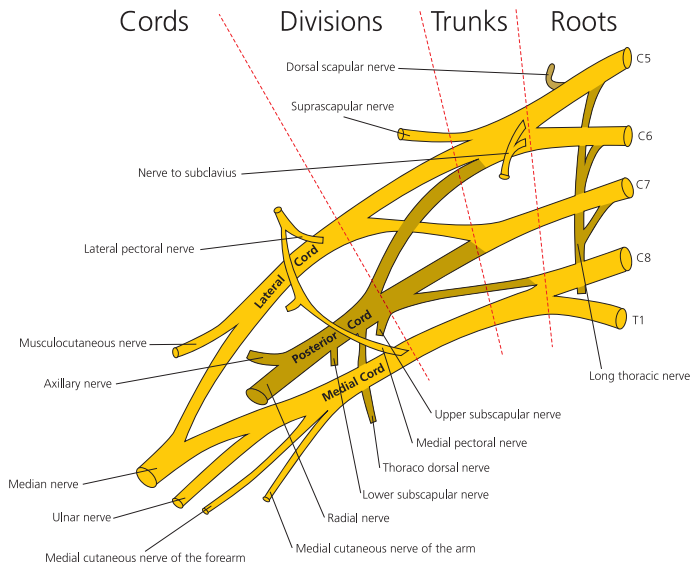
You have had an injury to your brachial plexus. This leaflet provides information on your condition which may help you prepare for your surgery, admission to hospital and your follow up care.

Please note: Treatment is always planned on an individual basis, so your experience may differ slightly from the information given.

The Peripheral Nerve Injury unit is a multidisciplinary team consisting of Specialist Consultant Surgeons, Specialist Training Registrars, Junior Doctors, a Clinical Nurse Specialist, Specialist Physiotherapists, Occupational Therapists and our secretarial team. Our staff are here to help and answer any questions you may have, therefore please do not hesitate to ask at any time.

What is the brachial plexus?

The brachial plexus is a complex network of nerves that arises from the spinal cord in the neck to supply the arm with feeling, movement, pain and other functions like skin sweating. In the neck these nerves are initially called roots as they run from spine. These roots are named C5, C6, C7, C8 and T1. These nerve roots then form a network, or plexus, by joining with each other and separating again several times to finally form the main nerves supplying the arm. This plexus occurs between the neck and the armpit. An injury can occur at different levels of this plexus and this will affect the symptoms that you have. The diagram below demonstrates the complexity of the brachial plexus.



Reference: En.wikipedia.org. (2019). Brachial plexus 2.svg. [online] Available at: https://en.wikipedia.org/wiki/File:Brachial_plexus_2.svg [Accessed 28 Jan. 2019]

How does nerve injury occur?

The most common injury is from traction, or stretching. However, the plexus can also be crushed, squashed or cut. This may be from an accident, fragments from a fracture (broken bone) or occasionally from surgery itself.

There are different types of injury that you may hear the doctor discussing. The first is described as a conduction block (sometimes known as a neurapraxia). This is when the signals travelling through the nerve are unable to pass the injured area but the nerve cells have not died back. This is often a problem that resolves without surgery. Sometimes surgery is required to relieve the pressure on the nerve. A good analogy is to think of the nerve as a hose-pipe that has been stepped on and squashed. It can take time for the hose-pipe to open up again and let the water through.

The second type of injury is called a degenerative injury. This is where the nerve, or part of the nerve, has been injured to such an extent that part of it dies and has to regrow. The nerve cells have a great ability to re-grow by themselves and do so at the speed of about 1mm a day. Sometimes surgery is needed to help them re-grow or know which way to grow.

Often the injury is a combination of both conduction block and degenerative injuries.

There is also a serious nerve injury called a nerve root avulsions. This is when the nerve has been torn directly out of the spinal cord. It is not possible to repair this directly however there may be other surgery that we can do improve the function of your arm.

What are the symptoms and signs of injury to the brachial plexus?

- Pain. This is commonly described as burning, crushing or like “electric shocks” .
- Loss or change of feeling. There can be complete loss of any feeling so that there are areas of numbness or reduced feeling, or you might have strange tingling or altered sensations.
- Loss of movement. This can affect just some muscles, for example, those that move the shoulder, or more widespread. If the whole plexus has been injured then the arm may not be able to move at all.
- Loss of sweating in the arm, development of thick, dry skin.

You may find your symptoms are worse in cold weather or when you are stressed or worried.

How will it be diagnosed?

You will be seen in clinic and the doctor will discuss with you how the injury happened and then examine you. We may require further investigations such as an MRI scan, an Xray or nerve conduction studies. A diagnosis (what is wrong) and prognosis (what will happen) may not be fully possible without seeing and testing the nerves at the time of surgery.

What are the treatment options available?

Some injuries to the brachial plexus will not benefit from an operation. Sometimes we need further tests or to see how things improve on their own over time. This is specific to you, your injury and the timing of your injury. Your surgeon will discuss this with you and help you come to a decision on your treatment. Currently there are no medications available that can improve these injuries but there are different types of pain killers that may be helpful if pain is a feature of your injury.

What is the goal of surgery?

The goals of surgery are to work out the exact injury to your nerves, improve your pain, or improve the feeling and movement in your arm.

What does surgery involve?

Surgery involves admission to hospital for at least one night. Often patients are able to go home the next day. This surgery will happen at the Stanmore site (HA7 4LP). You will require a general anaesthetic and the surgery can take anything between 1 and 6 hours.

A cut is made usually above or below the collar bone depending on where the injury is thought to be. The surgeon then dissects between the layers of muscle, to find the nerves and identify the injury. The surgeon will use electrical stimulation to see if there is any function along the injured nerve(s). This will help guide what needs to be done. Scarring around the nerve may be released. This is known as neurolysis. If the damage is more serious sometimes nerve grafts or transfers may be necessary. Your surgeon will discuss this with you in greater detail before and after the surgery.

What are the risks of surgery?

All operations have risks. The overall benefit and risks will be discussed with you individually again on the day of surgery. Your absolute risk varies depending on your injury and your other medical history. Possible risks include (but are not limited to):

- Pain. You may experience a slight increase in your pain as during surgery the nerves can be stretched. This often settles within a few weeks. Sometimes pain may persist. The Surgeon will put a numbing injection in the skin where the cut is made that will last for up to 8 hours after the operation. You will be advised as to which tablets will best help with this.
- Infection. Occurs in less than 1%. The operation is performed under sterile conditions. Despite this, infection may still occur. This is treatable with antibiotics.
- Damage to blood vessels and bleeding. Several of the main arteries and veins to the arm and head are very close to where we are operating. They can be damaged and may require repair. Very occasionally this requires a blood transfusion. More commonly, a haematoma (or collection of blood under your skin) may form.
- Damage to the nerve itself. The outcome of this depends on where the injury is located. It may result in changes to sensation or weakness in particular muscles. The Peripheral Nerve Injury Unit is a specialised centre that manages brachial plexus injuries weekly and hence this risk is much lower than in other centres.

- Damage to the lining of the lung. This is known as a pneumothorax. The lung may be closely related to injured nerves. A pneumothorax is unlikely, but if it were to happen, you may need a chest drain. This is designed to re-inflate the lung and stays in for a few days.
- Scarring. You may have a large scar. Occasionally the scar itself can be painful.
- Deep vein thrombosis. This is a blood clot in a vein due to the surgery. It can cause leg swelling and pain. Very occasionally the clot can travel to the lungs and affect your breathing. This is known as a pulmonary embolus (PE) and can be fatal. The risk of this is very low. Wearing specialised stockings during your stay will reduce this. Mobilising early is also one of the best ways to prevent blood clots from forming.
- Risks of a general anaesthetic. This will be discussed with you by the anaesthetist on the day of surgery.
- No improvement in symptoms – sometimes there is no way to improve upon the injury. This is very rare. Nerve injuries take a long time to recover regardless and it can often take a year or two before the full benefit of surgery is seen.
- Need for further surgery. Sometimes not everything should or can be done at the first operation. This will all be discussed with you.

What is the likely recovery?

The wound usually takes 2 weeks to heal. It is important during this time that you keep the dressing clean and dry at all times. Try not to change the dressing unless it is absolutely necessary.

Recovery time for the nerve injury itself is hugely variable depending on the injury. Sometimes improvements are not seen for many months. It may take up to 2 years to see the final function of your arm. Your likely recovery time will be discussed with you with the treating team.

What is the follow up treatment?

You will be reviewed two weeks after surgery in our wound clinic at Bolsover Street. This is run by our specialist nurse and junior doctors on the team. They will see how you are progressing and review the healing of the wound. You will often be seen by the physiotherapists and occupational therapists again at this time.

The consultants or registrars will see you between 6 weeks and 3 months after surgery. If further surgery is possible this will be discussed. This may include nerve or tendon transfers. Some patients are admitted for inpatient rehab at a later stage.

Advice on lifestyle that may moderate the disease process

People who smoke are at higher risk of developing complications with their lungs and circulation. Smoking also affects wound healing. Stopping smoking before surgery, even for a short time, can reduce your risks associated with surgery and improve your surgical success.

What happens next?

Once we have offered you surgery in clinic we will call you with a date for surgery. The timing of this can vary depending on the urgency of your case. Our Unit co-ordinator will give you a date for surgery and will send written confirmation of this. After a date has been set you will be called by our pre-operative assessment team. Some patients may be asked to attend a screening in person. If you are on any regular medication, please ask the pre-operative assessment staff what medication you can take on the day of surgery.

Before coming into hospital

Please read this leaflet in conjunction with "A Patient's Guide to Admission leaflet" (ref 17-38) or visit: www.rnoh.nhs.uk/patientsvisitors/information-guides.

Illness before surgery

If you are unwell in the days prior to surgery or if there are any changes in your medical condition, such as dental or urinary infection, or infected cuts or ulcers on your skin please let us know as soon as possible. Your operation may need to be rescheduled, however this is in your best interests to reduce the risk of developing post-operative infection.

Your operation

Before the operation one of the surgical team will discuss the procedure with you and answer any questions you may have. You will be asked to sign a form giving consent to the operation. The anaesthetist will visit you before your operation to discuss your anaesthetic options.

You will be told not to eat for approximately six hours and drink for two hours prior to your operation, depending on the anaesthetist's instructions. Failure to follow these instructions will result in your operation being delayed or even cancelled. Our porters will take you to the operating theatre and a nurse will accompany you and hand you over to the care of the theatre team.

What will happen when you arrive at hospital?

You will be admitted to hospital on the day you have your surgery. Occasionally, it is necessary for patients to have further tests before surgery. If this is the case, you will be asked to come in the day before. On admission, you will see several members of the treating team who will complete final checks to make sure you are fit for surgery. If you have any questions, please ask a member of staff.



Contact Information

Peripheral nerve injury unit co-ordinator: 020 3947 0051

Clinical Nurse Specialist: Dennis Hazell

E-mail: rnoh.cns-pni@nhs.net

Further information

www.rnoh.nhs.uk/our-services/peripheral-nerve-injury-unit



Notes

If you would like this leaflet translated into another language/large print, please contact the Quality Team on 020 8909 5439.

Royal National Orthopaedic Hospital NHS Trust
Brockley Hill
Stanmore
Middlesex
HA7 4LP

Switchboard: 020 3947 0100

www.rnoh.nhs.uk

Twitter: @RNOHnhs

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Authors: Miss Sarah Abbott, Dr Sundeep Varma and Mr Tom Quick