



DR VANESSA SAMMONS

NEUROSURGEON



Guide to

BRACHIAL PLEXUS COMPRESSIONS
& TRAUMATIC INJURIES

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KEY FACTS

- The brachial plexus is a network of nerves in the neck and shoulder that transmits sensory and movement signals to the arms and hands from the spinal cord
- Brachial plexus injuries are most often associated with trauma to the neck
- Symptoms include pain, weakness, hand and arm numbness and pins and needles
- Treatments may include medication, physical therapy, corticosteroid injections, as well as surgery

WHAT IS THE BRACHIAL PLEXUS?

The brachial plexus is a bundle, or network, of nerves that stems from nerve roots in the neck and upper trunk sections of the spinal cord. Each nerve has a different function, and some of them include:

- **Axillary nerve** – enables the arm to lift away from the body and helps the shoulder rotate
- **Median nerve** – enables movement in parts of the hand and the forearm
- **Musculocutaneous nerve** – enables muscles in the upper arm, at the elbow and shoulder, to flex
- **Radial nerve** – controls a range of muscles in the hand, forearm, elbow, and upper arm
- **Ulnar nerve** – enables fine motor control in the fingers

Brachial plexus nerves reach the skin where they have sensory responsibilities. The nerves register if something you have touched is too hot or too cold, for example.

WHAT IS A BRACHIAL PLEXUS INJURY?

A brachial plexus injury occurs when the lines of communication between the spinal cord and the arm, wrist and hand are blocked. The injuries are classified based on the severity of the injury and how the nerves have been damaged:

- Brachial Plexus Avulsion
- Brachial Neuritis
- Brachial Plexus Neuroma
- Brachial Plexus Neuropraxia
- Brachial Plexus Rupture
- Brachial Plexus Compression

Traumatic brachial plexus injuries can affect the use of the affected arm or hand and may result in total loss of sensation in the area. The severity of the injury varies widely, depending on the extent of the injury and which portion of the network of nerves has been injured

WHAT ARE THE SYMPTOMS OF BRACHIAL PLEXUS COMPRESSION?

Typical symptoms of brachial plexus compression injuries include:

- Burning or stinging in the shoulder, arm or hand
- Inability to use hand, wrist, arm, and/or shoulder
- Loss of feeling in the arm or hand
- Limp arm
- Numbness along the arm or hand
- Severe, sudden pain in the shoulder or arm

The nature of the symptoms reflects the severity of the injury and where along the length of the brachial plexus the injury was sustained.

- Injuries to nerves higher up on the spinal cord affect the shoulder
- Injuries to nerves lower down on the brachial plexus affect the hand, wrist, and arm

WHAT CAUSES BRACHIAL PLEXUS COMPRESSION?

Brachial plexus injury can happen during childbirth, occurring in one to two births per 1,000 according to Johns Hopkins University. In adults, injuries leading to brachial plexus compression include:

- Athletic injuries
- Blunt trauma
- Falls
- Medical trauma
- Motor vehicle accidents
- Radiation therapy
- Anatomical reasons

WHEN SHOULD I CONSULT A DOCTOR?

Brachial plexus compression injuries run the gamut from mild to severe. Depending on the injury, symptoms may be temporary or chronic. Early intervention by a medical professional can improve the long-term outlook for recovery. Contact your doctor if you are experiencing symptoms that affect your quality of life.

HOW IS BRACHIAL PLEXUS COMPRESSION DIAGNOSED?

Your doctor will ask about your medical history and lifestyle. The next step is an examination of the arm and hand to help diagnose the location of the injury. Other diagnostic tests include:

- **Imaging tests** to illuminate the injury to the nerves, especially **MRI**
- **Nerve function tests** to assess electrical impulse activity
- **X-ray** to identify fractures and injuries to the bone and tissues near the brachial plexus

Comprehensive testing is important. It's used to identify correctly the reason for symptoms and to develop a customised treatment protocol. Most people find these non-invasive tests easy to tolerate

HOW IS BRACHIAL PLEXUS COMPRESSION TREATED?

Brachial plexus injuries may not need formal treatment, although recovery can take weeks or months. Prompt examination and non-surgical treatments such as these can accelerate healing:

- Braces
- Compression sleeves
- Corticosteroid injections
- Pain medication
- Physical therapy
- Splints

When the symptoms of brachial plexus compression do not resolve, surgery may be necessary to repair damage to the nerve and restore function. Ideally, corrective surgery should be scheduled within six months of the injury. Options include:

- **Brachial plexus exploration and nerve decompression surgery** – to locate the damage and free the nerve from any scar tissue by cutting tight tunnels around the nerve
- **Nerve graft** – the damaged section of the brachial plexus is excised and replaced with sections of nerves from other parts of the body (over time, this creates a bridge for new nerve growth)

In these procedures, anaesthesia is required. An incision is made to give the surgeon access to the affected nerves. The correction is made, and the skin is closed with absorbable sutures. The duration of surgery depends on the exact problem and can range from one hour to most of a day.

WHAT CAN I EXPECT AFTER BRACHIAL PLEXUS DECOMPRESSION SURGERY?

When your surgery is complete, you'll be observed in recovery and if there are no problems, you may be able to return home the same day. Pain, swelling, and redness are to be expected but should settle reasonably quickly. They may be treated with pain medication.

Nerves heal slowly. It may take as long as 6-12 months after surgery for successful nerve growth to the neuromuscular endplate to be complete. The next stage, nerve maturation and initial muscle recovery, may take an additional 12-18 months.

ARE THERE RISKS TO BRACHIAL PLEXUS DECOMPRESSION SURGERY?

All surgical procedures carry some risk. Surgery to relieve pressure on the brachial plexus can result in:

- Failure to resolve symptoms
- Post-surgical stiffness
- Temporary pain to certain areas of the body due to the length of the surgery

WHAT SHOULD I DO AFTER BRACHIAL PLEXUS SURGERY?

Surprisingly little pain is associated with surgery for brachial plexus injuries. Pain medication can be prescribed to help patients remain comfortable throughout their recovery if needed, however. To ensure optimal healing, you will be given a set of guidelines for managing your aftercare. Instructions may include:

- Keep your hand elevated as much as possible for the first 24-72 hours to reduce swelling
- Do not remove your bandage until instructed, but do keep it clean and dry
- Commit to physical therapy
- Call Dr Sammons if your wound becomes swollen or your pain increases

If pain, redness, or swelling increase rather than recede, contact Dr Sammons immediately.

SHOULD I FOLLOW UP WITH DR SAMMONS AFTER SURGERY?

Yes. You will need to see Dr Sammons for follow-up appointments during your long-term recovery. You will be contacted by our practice nurse during the week after surgery to schedule your first appointment within 4-5 weeks following your procedure.

If you have any concerns at any time, Dr Sammons is happy to talk and meet with you earlier to address them.

DOES BRACHIAL PLEXUS COMPRESSION COME BACK?

The majority of patients who undergo decompression surgery for brachial plexus injuries do not have a recurrence of the condition unless they experience another injury to the area.



Hello!

I'm a Neurosurgeon at North Shore Private Hospital, Gosford Private Hospital, Brisbane Waters Private Hospital and the Sydney Adventist Hospital. I treat all neurosurgical conditions, but with a particular interest in Peripheral Nerve Surgery. I pride myself on providing personalised and thoughtful patient care and utilising my skills to achieve the best outcome possible.

I believe that a great neurosurgeon will ensure you feel listened to, will ensure that you understand what your surgery involves, and should also work together with your GP to achieve the best outcome for you.

Dr Vanessa

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