Brachial Plexus Injury

The brachial plexus is a group of nerves that come from the spinal cord in the neck and travel down the arm **(see Figure 1)**. These nerves control the muscles of the shoulder, elbow, wrist and hand, as well as provide feeling in the arm. Some brachial plexus injuries are minor and will completely recover in several weeks. Other injuries are severe enough and could cause some permanent disability in the arm.

Causes

The brachial plexus nerves can be damaged by stretching, pressure or cutting. Stretching can occur when the head and neck are forced away from the shoulder, such as during a motorcycle fall or car accident. If severe enough, the nerves can tear out of the spinal cord in the neck. Pressure could occur from the crushing of the brachial plexus between the collarbone and first rib, which can happen during a fracture or dislocation. Swelling in this area from excessive bleeding or injured soft tissues can also cause a brachial plexus injury.

Signs and Symptoms

Nerve injuries can stop signals to and from the brain, preventing the muscles of the arm and hand from working properly, and causing loss of feeling in the area.

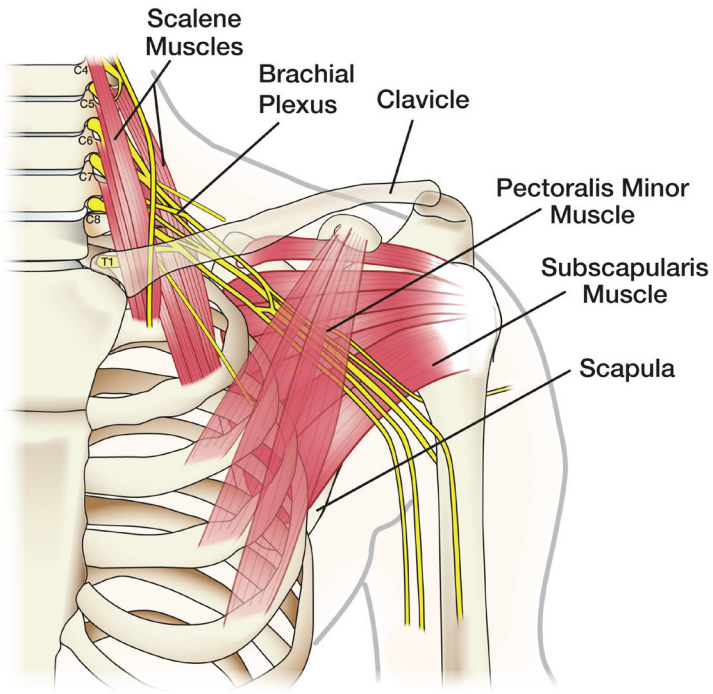
Treatment

Many adult brachial plexus injuries will not recover on their own, and early evaluation by physicians who have experience treating these problems is essential. Some brachial plexus injuries can recover with time and therapy. The time for recovery can be weeks or months. When an injury is unlikely to improve, several surgical techniques can be used to improve the recovery.

To help decide which injuries are likely to recover, your physician will rely upon multiple examinations of the arm and hand to check the strength of muscles and presence of feeling in different areas. Additional testing, such as an MRI scan or CT scan/myelography, may be used to visualize the brachial plexus. A Nerve Conduction Study/Electromyogram (NCS/EMG), a test that measures the electrical activity transmitted by nerves and muscles, may also be performed.

In some cases, when nerve recovery will not happen, a tendon transfer surgery may be performed.

Figure 1. The brachial plexus is a network of nerves between the neck and shoulder. Their branches form the nerves that go into the arm, forearm and hand.



Recovery

The patient must do several things to keep up muscle activity and prevent the joints from getting stiff. Your doctor may recommend therapy to keep these joints flexible. If the joints become stiff, they will not move even after muscles begin to work again, like a hinge that has rusted.

When a sensory nerve has been injured, the patient must be extra careful not to burn or cut fingers while there is no feeling in the affected area. During nerve recovery, the brain may not interpret the new nerve signals properly, and a procedure called sensory re-education may be needed to optimize muscle control and feeling in the hand or fingers. Your doctor will recommend the appropriate therapy based on the nature of your injury.

Factors that may affect results after a brachial plexus injury include patient age and the type, severity and location of the injury. Though brachial plexus injuries will result in lasting problems for the patient, care by a hand surgeon and proper therapy can maximize function.