

Evaluation for Treatment

- Send your records to the office for evaluation.
- Report of an EMG (electromyogram) or NCS (nerve conduction study) of the involved shoulder, arm, forearm, hand muscles, and brachial plexus nerves.
- A video of your current range of motion. Perform all the range of motion exercises to the best of your ability. See our website for how to send a video.
<http://www.drmathbrachialplexus.com/evaluation/video.php>
- A copy of the most recent therapy report that illustrates degrees and range of motion of the affected arm (if you have been to therapy).
- Any medical records pertaining to the injury: previous surgical reports, CT or MRI reports and images, a list of current medications, and clinic notes relating to the brachial plexus injury.

Once we receive those records, Dr. Nath will review them to develop an appropriate medical treatment plan for your condition.

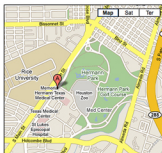
For More Information

- Nath RK & Mackinnon SE. (2000). Nerve transfers in the upper extremity. *Hand Clinics*. 16(21):131.
- Nath RK, Lyons AB, & Bietz G. (2006). Physiological and clinical advantages of median nerve fascicle transfer to the musculocutaneous nerve following brachial plexus root avulsion injury. *J Neurosurg*. 105(6): 830.
- <http://www.drmathbrachialplexus.com>
- Contact our offices and ask to speak with the patient liaison.



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TEXAS
NERVE & PARALYSIS
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TRAUMATIC BRACHIAL PLEXUS INJURY



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TRAUMATIC BRACHIAL PLEXUS INJURY

Traumatic Brachial Plexus Injury

The brachial plexus is a complex set of nerves originating in the spinal cord at the neck and supplying the muscles of the arm, elbow, wrist and hand. Injury to the upper roots paralyzes the shoulder and elbow, and a lower root injury predominantly affects the hand.

Most adult injuries to the brachial plexus occur as a result of significant trauma. The head and neck are forced away from the shoulder and arm, stretching the nerves of the brachial plexus and resulting in tear, rupture, or avulsion if the force is great enough. Injury can also result from inflammation, tumor, or radiation.

Nerve surgery is recommended as early as possible because of the large distance between the neck and hand of an adult and the 1 inch per month rate of regrowth. Muscles begin to atrophy at the time of injury and can lose the ability to respond to regrown nerves. Atrophy of denervated muscles can be delayed using an implantable muscle stimulator or similar technique. The stimulator delivers electrical pulses directly to the paralyzed muscle around the clock to give surgical repairs time to work, and improve the quality of the final muscle function.

Nerve Grafting

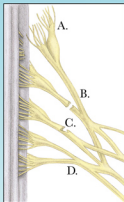
- Nerves that are ruptured can be repaired by bridging the gap with healthy nerve from another part of the body.
- The Sural nerve in the leg is commonly used with no loss of function and only minor changes in sensation.

Nerve Transfer

- Nerve transfers take power from uninjured adjacent nerves, bypass the area of injury and provide healthy nerve to the paralyzed muscle.
- The advantage to transfers is the shorter distance over which the repaired nerve has to renew before function returns to the muscle.



The five nerve roots of the brachial plexus are named for the vertebrae from which they emerge (C5-T1).



Common Types of Nerve Injury

- A) Avulsion
- B) Rupture
- C) Partial Rupture
- D) Stretch Injury,

Nerve Remains In-Continuity

Nerve Decompression

- When the nerve is stretched but not torn, scar tissue can form and a simple nerve decompression surgery that releases the scarring can restore function
- Pinching of the nerve is released surgically, and like a garden hose that has been uninked, the flow improves and results in return of function.

TBPI SURGERY

BEFORE

AFTER



Other Surgical Options

- In some cases tendon transfers are required to transfer functional movement from an injured muscle group to a less injured one.
- Free muscle transfer is the transfer of a muscle freed from elsewhere in the body, such as transfer of the gracilis muscle from the leg, to the arm.
- Generally, a combination of all of these options will be recommended. These and other approaches are being developed, giving reason to hope for restoration of function and appearance of the injured arm.

The number of surgeries and their duration will depend on the injury and the patient's goals. Dr. Nath will discuss options with you after reviewing your records and examining your functional abilities. The sooner you contact our office the more favorable the final result of reconstruction.