

Brachial Plexus Injury *“Stinger”*

The brachial plexus is a network of nerves branching off the cervical nerve roots exiting the neck and extending through the shoulder region. These nerves are responsible for the muscular function and sensation in the shoulder, arm, and hand.

In contact sports, such as football, these nerves can be damaged as the head is pushed forcibly to one side while the shoulder is depressed on the other (“stretch” or “traction” injury). In athletics, these injuries are often called a “stinger” due to the burning sensation that results. These injuries can also occur in motor vehicle accidents or falls. The minor cases are very transient and can resolve within minutes, however, severe or even permanent damage is possible with more significant or repeat injuries.

Frequent Signs and Symptoms

- Pain and discomfort (burning or dull ache) that runs from the neck down into the shoulder and possibly into the hand
- Numbness or tingling in the arm and/or hand
- Heaviness or fatigue of the arm
- Loss of strength in the shoulder
- Difficulty raising the arm above shoulder level

Etiology (Causes)

- Direct blow to the neck or shoulder
- Fall onto shoulder with the head and neck stretched away from the shoulder (traction injury)
- Other neuropathies
- High-speed motor vehicle accidents
- Compression from tumors or other pathology
- Tackling in American football

Risk Factors

- Contact or motor vehicle sports
- Surgery around the neck
- Poor physical conditioning (strength and flexibility)



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Prevention

- Appropriately warm up and stretch before practice or competition
- Maintain appropriate conditioning:
 - Shoulder flexibility
 - Muscle strength and endurance
- Wear appropriate shoulder protective pads

Outcomes

Patient outcomes vary widely depending on the degree and location of injury. An electromyogram (EMG) or MRI study may be ordered to fully explore the level of injury in the nerve(s). A neurapraxia indicates a mild stretching of the nerve with good potential for recovery, typically within minutes to hours. More severe injuries in which the nerve is torn or severed may require surgical nerve repair or replacement and often result in permanent deficits. Mild cases of brachial plexus injury tend to have a high rate of recovery, while more significant injuries have the potential for permanent impairment to the limb.

Potential Complications

- Permanent weakness of the shoulder
- Persistent pain in the shoulder
- Severe persistent nerve palsy (disfigurement/weakness/rotation of the arm and hand)
- Klumpke's paralysis (clawed hand)
- Increasing weakness of the extremity
- Inability to compete at previous level
- Associated vascular injury

Treatment Considerations

Initial treatment for minor cases and stretching/traction injuries consists of rest from the aggravating activity and nonsteroidal anti-inflammatory medications to help reduce inflammation and pain. In less severe cases, the nerve responds within hours or days with full restoration of strength and sensation. Performing shoulder range-of-motion exercises while waiting for nerve recovery is of paramount importance. Referral to a physical therapist or an athletic trainer may be recommended for further treatment. More severe cases in which the



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nerve is torn or ruptured may require surgical repair, grafting, or a nerve replacement. This surgery is considered a salvage operation; it is not meant to enable the athlete to return to sports, just pain-free activities of daily living. While some traumatic brachial plexus injuries may lend themselves to more immediate surgery, such as with knife or gunshot wounds, traction or stretching injuries are often allowed a period of time to attempt to heal on their own. However, if the patient is not improved in three to six months, it may be necessary to undergo surgery. It is important that surgical candidates also complete physical therapy exercises while awaiting the operation in prevent contractures of the associated muscles.

Possible Medications

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (DO NOT take within seven days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Pain relievers may be prescribed by your physician, usually only after surgery. Use only as directed.

Modalities (Heat and Cold)

- Cold is used to relieve pain and reduce inflammation. Cold should be applied for 10 to 15 minutes every two to three hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage with a cloth between the ice and your skin to prevent burning /freezing your skin.
- Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

Notify My Office If Symptoms Worsen

