

Brachial Plexus Injuries – Treatment Options – by Justin Brown, MD

Hi. My name is Justin Brown. I'm an associate professor of neurosurgery at the Massachusetts General Hospital and co-director of the Massachusetts General Paralysis Center.

At the Paralysis Center, we treat several different sources of paralysis, but one of the focuses of our center is brachial plexus and peripheral nerve injuries. The brachial plexus is a group of nerves that emerges from the cervical spine and causes function in the arm.

This nerve runs under the clavicle and through the arm and animate flexion of the biceps and triceps and fingers and the wrist and shoulder. When these nerves are injured, the entire arm can hang flail at the patient's side and have no function to it whatsoever. It can lose all motor and all sensation.

It's important with an injury like this to get to a treating physician as quickly as possible. There are a number of diagnostic modalities that we must undertake immediately and they include MRI to find out if the nerves have actually been pulled out of the spinal cord, or whether they've been ruptured or ripped in the middle, or whether there's a chance that they'll recover on their own.

Once we do that, we then perform a nerve test or electro-diagnostic studies which involves placing needles in the muscles of interest to find out whether there is some function there that will recover with time or whether the nerve to that has been completely severed.

Once we gather our information we can devise a reconstructive plan to put the arm back together and restore as much useful function as possible. The primary ways in which we restore this function is one, nerve grafting and that is when there's a segment of nerve that has been injured, we want to put that nerve back together.

Sometimes there's a long segment and we can't pull it directly together so we must use a sensory nerve that's somewhere else in the body to build that bridge. The wires can then grow through that graft and on down to the original muscle and wake it up once again.

The second modality we have is called nerve transfers and that is, when there's a nerve that's not working, sometimes we have more than we need to run other muscles. So we can simply take a branch or a portion of another nerve, cut it and send its axons or wires down to that distal muscle and that could wake it up as well.

The third modality we have is also less time-sensitive. This one we can use when patients are even a year or more out from their injury and that is a tendon transfer or a muscle transplant.

We can take a muscle that's working that has other muscles that perform the exact same function. In that way, when we cut and move it to achieve a more important function, we don't also cause a new deficit.

For example, we have three tendons or muscles that extend the wrist. Therefore, we can move one of those to flex the fingers and not lose the wrist extension.

There are options like that about the shoulder and the biceps, the triceps, the arm and so there are many modalities we have to restore function after a brachial plexus injury.

So keep in mind, when you've had an injury like this, it's very important to see a specialist as soon as possible, ideally within three months, but if we can see you within a year, we'll have many more options to offer you.

If you've passed this window and you're many years out, we still have that third category of procedures available to you which involve the tendon transfers and muscle transplants.

If you're interested in learning more, please call us at our office at 617-643-5687. Thank you very much.