

# Management of a Traumatic Brachial Plexus Injury in a Young Male using Dynamic Neuromuscular Stabilization according to Kolar

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## Study Design: Case Report

**Introduction:** The objective is to report the clinical application of Dynamic Neuromuscular Stabilization (DNS) according to Kolar in the management of an acute traumatic brachial plexus injury and present the outcomes after 18/12.

**Summary of Background Data:** Acute brachial plexus injuries are rare however they usually occur in young adults as a result of trauma such as motor bike accidents and cause a lifetime of motor and sensory dysfunction. Management usually consists of surgery, conventional physiotherapy and medication to manage the pain. Long term outcomes reported in the literature are chronic neuropathic pain, functional disability and depression requiring ongoing medication. Only a small percentage of patients report satisfactory outcome with treatment, those who reported relief with treatment had received appropriate early intervention.

**Methods:** The case of a 22 year old male cabinet maker and javelin thrower is presented. Pubmed was used to search the literature.

**Results:** The patient presented 8/52 post motor bike accident with severe burning pain in the right hand, stabbing pain in the right elbow and neck stiffness. There was loss of right shoulder, elbow and forearm function but he had retained good function of the right hand. There was overt wasting of the right shoulder girdle musculature, especially posteriorly.

The MRI confirmed a right C7 nerve root avulsion from close to point of origin with a retraction into the supraclavicular zone and diffuse spinal cord oedema. The nerve conduction study 3/52 post injury reported a lesion of the superior trunk of the brachial plexus, distal to the branches of the dorsal scapular and long thoracic nerves. Neurogenic abnormality on right triceps EMG was noted. Medication management was Gabapentin 4x300mg daily and Oxycontin. Treatment was commenced to achieve a better posture for the right shoulder girdle. The patient demonstrated fasciculation in the affected muscles during stimulation. Following treatment he reported a feeling of ease, a sense of the arm belonging to him again and improved sleep patterns.

The patient demonstrated substantial improvement beyond expectations following an intensive course of DNS treatments over the following 5/12. Outcomes measures were pain, medication required, right upper limb function, general function, Quality of Life and Return to Work.

**Conclusion:** Acute brachial plexus traumas are rare but incur serious long term consequences for the patient. As these patients often are young adults it means a lifetime of treatment and medication.

In this case adding DNS into the conventional management strategy appears to have improved the overall outcomes beyond expectations at 18/12. The patient experienced a decrease in neuropathic pain over the course of the treatment, has in the last month ceased medication, is working fulltime in kitchen designs and has returned to javelin throwing with the left arm. He is currently training for the London Paralympics in 2012.

The use of DNS, as an early intervention, in peripheral nerve injuries should be further explored in a clinical trial.

## Commencement of treatment



## DNS treatment and exercise examples

**A**



**B**



**A:** Among others, side lying position corresponding to 5 months developmental age and 2nd phase of reflex turning has been used in treatment. Affected side is integrated in supporting function, automatically activating the stabilizers of the shoulder-blade. Approximation, weight-bearing of the deltoid area, stimulation of the zones and resistance against planned movement can be simultaneously used for the best effect.

**B:** Quadruped position corresponding to 8 months developmental age. Functional centration, proper loading of both hands results in stabilization of the shoulder blades and activation of the shoulder-girdle muscles.



## End point of treatment

