

The Usage Of Viable C5-C6 Proximal Stumps In Reconstructive Surgery Of The Adult Brachial Traction Injuries - Impact On Surgical Strategy And Decision-Making Process

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Introduction:

In patients with the upper brachial plexus palsy (C5, C6), the international data favours nerve transfer (Oberlin and Sosmak procedures) over nerve grafting. In patients with complete brachial plexus palsy, there are authors who prefer nerve transplantation through nerve grafting to restore priority functions when there is a sustainable proximal spinal nerve.

Material and Methods:

The aim of this study was to evaluate the outcome of the priority functions restoration in 36 patients with upper or total brachial plexus palsy where in the period of fifteen years we performed only nerve grafting from sustainable proximal nerve to target nerves in a period of fifteen years (January 1999 to December 2013).

Patients with complete or upper brachial plexus palsy with preserved function of trapezius muscle, scapula levator muscle, rhomboid and anterior serratus muscle are included. Action potentials in the paraspinal muscles were verified by the EMG, while the motor potentials of the spinal nerve were registered intraoperatively during transcranial electrical stimulation. Patients were followed for at least two years.

Results:

The average age of the patient was 21 years (16-31), the most common etiology was a traffic accident. 22 out of 36 patients underwent emergency surgery due to related injuries. The most commonly associated injuries were rib fractures, long bone fractures, and brain contusion. The average interval between injuries and nerve grafting surgery was 4 months (3-7). Twenty-four patients showed up with complete brachial plexus palsy, and 12 patients with upper brachial plexus palsy.

Conclusion:

Treatment of Brachial Plexus injuries requires a multidisciplinary approach. A detailed preoperative assessment and intraoperative electrophysiological examination are valuable and necessary in the treatment of brachial plexus lesions. It is obligatory to use a combination of preoperative and intraoperative diagnostic procedures. In cases of infraganglionic injuries, nerve grafting or its combination with nerve transfers must be considered. Satisfactory functional results can be achieved with grafting of C5 to the musculoskeletal and axillary nerves and by passing the dorsal scapular nerve to the radial nerve branch to a long section of the triceps muscle.

Keywords: brachial plexus surgery, brachial plexus injury, proximal stump, direct graft repair