

Surgical Strategies in Nerve Repair Of The Adult Brachial Plexus Traumatic Injuries - Could They Be Individually Tailored?

Prof. Dr Lukas Rasulić^{1,2}, Milan Lepić^{3,1}, Vojin Kovačević^{4,5}, Filip Vitošević^{6,1},
Andrija Savić^{2,1}, Nenad Novaković³

1. School of Medicine, University of Belgrade, Belgrade, Serbia
2. Department of Peripheral Nerve Surgery, Functional Neurosurgery and Pain Management Surgery, Clinic for Neurosurgery, Clinical Center of Serbia, Belgrade, Serbia
3. Department of Neurosurgery, Military Medical Academy, Belgrade, Serbia
4. Clinic for Neurosurgery, Clinical Center Kragujevac, Kragujevac, Serbia
5. Faculty of Medical Sciences, University of Kragujevac, Kragujevac, Srbija
6. Neuroradiology Department, Center for Radiology and MRI, Clinical Center of Serbia, Belgrade, Serbia

Introduction

The treatment of brachial plexus palsy is still one of the most difficult problems among the traumatic injuries of peripheral nerves. Over the past century, our understanding of nerve injury, regeneration, and repair techniques has evolved.

Method

The aim of this study is to allow understanding of current concepts and future perspectives in brachial plexus surgery in XXI century. Available data from literature and results in series of patients (including personal experience of the author) are used to accomplish this vision.

Results

Despite actual trends related to continuous introduction of new high tech surgical possibilities in treatment of brachial plexus injuries, according to the literature and personal authors experience, brachial plexus surgery in XXI century will remain related to the classical surgical technique, better understanding of brain plasticity and peripheral nerve regeneration capacity. Minimally invasive approach to the brachial plexus is considered to be *condicio sine qua none*.

Conclusion

Microsurgical technique has significantly improved surgical results, with the rate of recovery of more than 90% (in cases when all favourable prognostic factors are present). We can expect even better results in the future by application of the concept of "cellular surgery": development of non-suture techniques of nerve anastomosis, elongation of nerve stumps by means of balloon expansion and pharmacological activation of regenerative processes with application of neurotrophic factors.

Keywords: brachial plexus surgery, strategy, individual