



**Title: Longer than expected electrophysiological and clinical improvement in patients after reconstructed nerve release with adipose stem cells support. Long-term neuropathic pain elimination.**

**Authors:**

Natalia Krzesniak<sup>1</sup>, Anna Sarnowska<sup>2</sup>, Anna Figiel-Dabrowska<sup>2</sup>  
Katarzyna Osiak<sup>1</sup>, Bartłomiej Noszczyk<sup>1</sup>

<sup>1</sup> Department of Plastic and Reconstructive Surgery, Centre of Postgraduate Medical Education, Prof. W. Orłowski Memorial Hospital, Warsaw, Poland

<sup>2</sup> Mossakowski Medical Research Centre, Polish Academy of Sciences, Warsaw, Poland

**Abstract:**

Few patients after hand injuries experienced unsuccessful course after nerve reconstruction and suffer from painful neuropathy, severe hand numbness and hypersensitivity. Those symptoms of sensory and autonomic source are damaging for patient's life and reveal an important issue for their social and economic burden. Secondary nerve release with autologous stem cell administration was shown to improve regeneration in motor and sensory fascicles of nerve during first 30 months follow-up. Also neuropathic pain and hypersensitivity were eliminated completely.

The aim of this study was to perform continuous follow-up of those patients, who underwent secondary nerve release with ADSC support. We checked whether any further improvement in clinical and electrophysiological examinations can be observed.

Method: Three patients were routinely examined and tested by electromyography, DASH survey, VAS scale for pain evaluation, and motor, sensory and functional evaluation by British Medical Research Council classification system in Chanson et al. modification.

Results: In primary reports we noticed that improvement was progressing to 2,5 years after a treatment and after then probably stopped.

However, 60 months follow up revealed that continuous improvement can be observed even longer. All patients obtained normal sensory threshold after 5 years follow-up and their nerve conduction velocity was also improved. All patients, who suffer from very severe pain before treatment were still pain free in five years follow-up.

Conclusions: The clinical and electrophysiological results after simultaneous nerve release with ADSC support improved longer than primary expected.