

Neurotisation In Extended Brachial Plexus Injury: Spinal Accessory Nerve (SAN) To Suprascapular Nerve (SSN) And Anterior Interosseous Nerve (AIN) Branch To Pronator Quadratus (PQ) To Radial Branch Of Extensor Carpi Radialis Brevis (ECRB) A Case Report

¹Abot MS, ¹Ismail R, ¹Khalid KA, ¹Mohd Shariff MY

¹Department of Orthopaedics, International Islamic University Malaysia, Jln Hospital Campus, 25150, Kuantan

INTRODUCTION:

Active wrist extension initiates most functions of the hand. Extended brachial plexus injury usually has loss of wrist extension. We report a case with extended brachial plexus injury (BPI) treated with SAN to SSN and AIN branch to pronator quadratus to radial branch of ECRB nerve transfer.

MATERIALS & METHODS:

A 26 year-old gentleman involved in road traffic accident resulted in a flail left upper limb. Nerve conduction studies showing evidence of left pan-plexus injury. Over 8 months he recovered lower trunk function and was planned for nerve transfer surgery for shoulder abduction and wrist extension. The SAN to SSN transfers were performed where two branches of SAN to the upper trapezius were preserved and stimulated to confirm function. The nerve was divided below these branches and coaptate to SSN. The AIN was sectioned 3–4 cm proximal to PQ and coaptation to ECRB motor branch performed before the first division of motor branch to ECRB.

RESULTS:

6 months post-surgery, wrist extension has improved from MRC grade 0 to 4 and shoulder abduction from 0 to 3 post surgery with no deficit of wrist pronation.

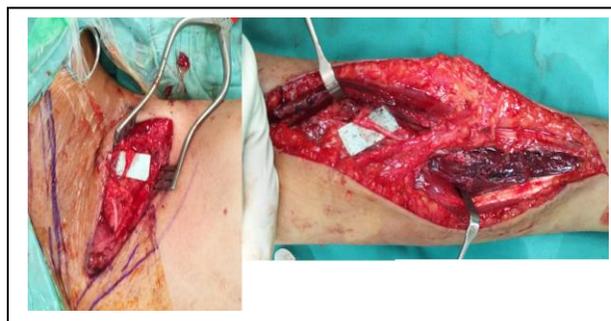


Figure 1: Nerve coaptation performed. Left: SAN to SSN. Right: AIN Branch to PQ to Radial Branch of ECRB.

DISCUSSION:

Nerve transfers are superior to tendon transfers as they do not require immobilization, reinnervate native muscles prior degeneration of motor endplates, gives synergistic effect to the desired function, avoid tenodesis effect and result in minimal donor deficit. Neurotisation for shoulder function is common but for wrist extension is relatively new in Malaysia and provides a better outcome and more natural movement for the hand than tendon transfers.

CONCLUSION:

Neurotisation of ECRB by the AIN branch provides an option to reanimation of wrist extension.

REFERENCES:

1. Bertelli, J. et al., J Neurosurg 2015.
2. Hems, T. J Hand Microsurg 2011. 6–10.