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Functional outcome of nerve transfer for restoration of shoulder and elbow function in upper brachial plexus injury

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Abstract

Background: Purpose of this study was to evaluate the functional outcome of spinal accessory to suprascapular nerve transfer (XI-SSN) done for restoration of shoulder function and partial transfer of ulnar nerve to the motor branch to the biceps muscle for the recovery of elbow flexion (Oberlin transfer).

Methods: This is a prospective study involving 15 consecutive cases of upper plexus injury seen between January 2004 and December 2005. The average age of patients was 35.6 yrs (15–52 yrs). The injury-surgery interval was between 2–6 months. All underwent XI-SSN and Oberlin nerve transfer. The coaptation was done close to the biceps muscle to ensure early recovery. The average follow up was 15 months (range 12–36 months). The functional outcome was assessed by measuring range of movements and also on the grading scale proposed by Narakas for shoulder function and Waikakul for elbow function.

Results: Good/Excellent results were seen in 13/15 patients with respect to elbow function and 8/15 for shoulder function. The time required for the first sign of clinical reinnervation of biceps was 3 months 9 days (range 1 month 25 days to 4 months) and for the recovery of antigravity elbow flexion was 5 months (range 3 1/2 months to 8 months). 13 had M4 and two M3 power. On evaluating shoulder function 8/15 regained active abduction, five had M3 and three M4 shoulder abduction. The average range of abduction in these eight patients was 66 degrees (range 45–90). Eight had recovered active external rotation, average 44 degrees (range 15–95). The motor recovery of external rotation was M3 in 5 and M4 in 3. 7/15 had no active abduction/external rotation, but they felt that their shoulder was more stable. Comparable results were observed in both below and above 40 age groups and those with injury to surgery interval less than 3 or 3–6 months.

Conclusion: Transfer of ulnar nerve fascicle to the motor branch of biceps close to the muscle consistently results in early and good recovery of elbow flexion. Shoulder abduction and external rotation show modest but useful recovery and about half can be expected to have active movements. Two patients in early fifties also achieved good results and hence this procedure should be offered to this age group also. Surgery done earlier to 6 months gives consistently good results.