

A COMPARISON OF POSTOPERATIVE ELBOW FLEXION STRENGTH AFTER INTERCOSTAL AND OBERLIN'S NERVE TRANSFER

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Introduction

Both extraplexal and intraplexal nerve donors can be used to restore functionality to the upper extremity after brachial plexus injury. In this pooled analysis, we compare the intercostal nerve and the ulnar nerve fascicles as nerve donors for reinnervation of the bicep. We hypothesize that intercostal nerve transfer will produce worse results than Oberlin's transfer.

Methods

A systematic review was conducted according to PRISMA guidelines. Inclusion criteria were studies reporting outcomes on patients undergoing ICN nerve transfer or Oberlin's transfer for restoration of elbow flexion. Patients were excluded for the following reasons: age<18 and follow-up<12 months. Pooled analysis was performed, and the primary outcome analyzed was elbow flexion MRC score. Comparisons between ICN transfer group and Oberlin's transfer group were made using chi-squared test for categorical variables and independent samples t-test for continuous variables.

Results

There were 24 studies (217 patients) included in this analysis. The ICN transfer group had significantly greater extent of injury ($p<0.001$), but shorter preoperative delay (4.6 months vs. 8.0 months, $p<0.009$) and more extended follow-up (46.8 months vs. 26.6 months, $p<0.001$). The ICN group had significantly worse mean elbow flexion MRC scores at final follow-up (2.9 vs 3.4, $p=0.036$).

Table 1. A Comparison in Demographics Between Oberlin's Transfer and ICN Transfer Group

	Oberlin's (93)	ICN (124)	P value	Chi Squared
Age, years, mean (SD)	29.0 (10.0)	28.3 (9.4)	0.56	
Extent of nerve damage (%)				
C5-C6	54.8	13.7	<0.001	79.298
C5-C7	44.1	31.4		
C5-T1	1.1	54.8		
Preoperative delay, mean (SD)	8.0 (12.2)	4.6 (2.8)	0.009	
Bicep MRC score, mean (SD)	3.4 (1.0)	2.9 (1.3)	0.036	16.446
Follow-up, months, mean (SD)	26.6 (12.5)	46.8 (30.5)	<0.001	

Conclusions

Extraplexal nerve donors such as the intercostal nerve may perform worse than intraplexal nerve donors in restoring elbow flexion; however, they remain a valuable option in patients with total brachial plexus injury.