

OBERLIN'S TRANSFER FOR UPPER BRACHIAL PLEXUS INJURY: EXPLORING THE BENEFITS OF EARLY INTERVENTION

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Introduction

It is commonly taught that prolonged preoperative delay negatively impacts outcomes after Oberlin's transfer. However, it is not well known if early intervention (<3 months) bares better results than intervention at 6 months . We hypothesize early intervention produces superior outcomes in patients undergoing Oberlin's transfer.

Methods

A systematic review was conducted according to PRISMA guidelines. Inclusion criteria were studies reporting outcomes on patients undergoing Oberlin's transfer. Patients were excluded for any of the following reasons: age<18, follow-up<12 months, and total brachial plexus injury. Pooled analysis was performed, and primary outcomes collected were recovery time (time to achieve Medical Research Council [MRC] score≥3) and elbow flexion MRC score. Patients were placed into an early intervention and late intervention group. We divided the early intervention group into two: surgery by 3 months and by 6 months after injury. Comparisons were made between the early and late groups and the 3 and 6 month early groups using chi-squared test and independent samples t-test.

Results

There were 93 patients from nine studies included in this pooled analysis. Preoperative interval differed between the early and late intervention group when 3 months and 6 months were used as dividing time-points ($p<0.001$), and the late intervention group had a higher proportion of patients with greater extent of injury (C5-C7) when 6 months was used as the threshold for early intervention ($p=0.006$). Patients in the early intervention group demonstrated higher MRC scoring at final follow-up than patients with late intervention only when 6 months was used as the cutoff for early intervention (3.5 vs. 3.0; $p=0.007$).

Table 1. Demographics and outcomes in patients with 3 months as threshold for early intervention.

Intervention	Early (n=25)	Late (n=67)	P-value	Chi-squared
Age, mean (SD)	31.2 (10.6)	28.4 (9.7)	0.226	
Sex (% Male)	100	85.7	0.136	2.227
Extent of Damage (% C5-C7)	56.0	40.3	0.178	1.817
Time Before Procedure, mean (SD)	2.48 (0.60)	10.1 (13.8)	<0.001	
No. Transfers (% 2 transfers)	28	35.8	0.498	0.48
Follow-up Time, mean (SD)	25.7 (9.2)	27.1 (13.6)	0.64	
Recovery Time Biceps, mean (SD)	26.5 (9.5)	25.1 (13.6)	0.677	
Actual MRC Biceps, mean (SD)	3.5 (1.0)	3.3 (1.0)	0.304	

Table 2. Demographics and outcomes in patients with 6 months as threshold for early intervention

Intervention	Early (n=61)	Late (n=31)	P-value	Chi-squared
Age, mean (SD)	29.6 (10.2)	28.2 (9.5)	0.509	
Sex (% Male)	94.7	72.7	0.034	4.51
Extent of Damage (% C5-C7)	34.4	64.5	0.006	7.533
Time Before Procedure, mean (SD)	3.7 (1.2)	16.7 (18.3)	<0.001	
No. Transfers (% 2 transfers)	1.3 (0.5)	1.4 (0.5)	0.468	0.526
Follow-up Time, mean (SD)	25.1 (10.3)	29.9 (15.8)	0.134	
Recovery Time Biceps, mean (SD)	24.4 (10.1)	29.3 (17.8)	0.298	
Actual MRC Biceps, mean (SD)	3.5 (0.8)	3.0 (1.2)	0.007	

Conclusions

This pooled analysis suggests that intervention by 3 months compared to 6 months may not influence the time it takes to achieve adequate postoperative outcomes but that it could limit the extent of functionality restored at final follow-up.