

# 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)	<b>&lt;0.001</b>	
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	<b>0.034</b>	4.51
Extent of Damage (% C5-C7)	34.4	64.5	<b>0.006</b>	7.533
Time Before Procedure, mean (SD)	3.7 (1.2)	16.7 (18.3)	<b>&lt;0.001</b>	
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)	<b>0.007</b>	

## 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.