

SPINAL ACCESSORY NERVE TO SUPRASCAPULAR NERVE TRANSFER: A COMPARISON OF THE ANTERIOR AND POSTERIOR APPROACH

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Introduction

Studies comparing the newer posterior approach of spinal accessory nerve (SAN) to suprascapular nerve (SSN) transfer to the traditional anterior approach have shown mixed results. The purpose of this study is to determine if surgical approach affects postoperative shoulder abduction outcomes.

Methods

A systematic review of the literature was conducted according to PRISMA guidelines. Inclusion criteria were studies reporting outcomes on patients undergoing SAN to SSN nerve transfer. Patients were excluded for any of the following reasons: age under 13, nerve transfer for reanimation of the shoulder other than SAN to SSN and axillary (AXN) neurotization with the use of any donor nerve and had less than 12 months of follow-up postoperatively. Patients were divided into two groups based on the surgical approach utilized for neurotization. Pooled analysis was performed, and primary outcomes were shoulder abduction Medical Research Council (MRC) score and range of motion (ROM). The two groups were compared using independent samples t test and chi-squared test.

Table 1. A comparison of patients undergoing anterior approach with patients undergoing posterior approach SAN to SSN nerve transfer.

Approach	Anterior (46)	Posterior (39)	P-value	Chi-squared
Age, mean (SD)	26.7 (7.0)	29.6 (9.7)	0.128	
Sex, % male	100	94.9	0.12	2.416
Nerve transfer, % 2NT	100	100		
Spinoglenoid Decompression (%)	0.0	38.5	<0.001	21.484
Axillary transfer			0.006	7.487
LHT, %	82.6	100		
ICN, %	17.4	0		
Extent of Injury			0.006	7.487
Upper BP, %	82.6	100		
Total BP, %	17.4	0		
Preop Interval, mean (SD)	5.9 (2.6)	6.7 (3.7)	0.256	
Abduction range, mean (SD)	109.6 (34.5)	104.3 (37.9)	0.663	
Abduction MRC, mean (SD)	3.5 (1.3)	2.8 (1.3)	0.211	1.565

Results

There were 85 patients from six studies included in this pooled analysis. Patients who underwent the anterior approach had greater extent of injury and higher utilization of ICN nerves for axillary nerve neurotization (Total Brachial Plexus Injury/ICN use: 17.4% vs. 0.0%, $p < 0.006$). Patients who underwent the posterior approach had intraoperative surgical decompression more frequently. There were no other significant differences in demographic variables. Outcomes did not differ significantly between the two groups (Anterior vs. Posterior: [ROM] 109.6 vs. 104.3, $p = 0.663$; [MRC] 3.5 vs 2.8, $p = 0.211$).

Conclusions

Despite the ability to decompress the SSN at the spinoglenoid notch and the less severe injury pattern, the posterior surgical approach to SAN to SSN nerve transfer does not appear to improve outcomes with regards to shoulder strength or range of motion. Further study is warranted to identify the optimal technique.