

# Spinal Accessory Nerve to Suprascapular Nerve: Outcomes and Risk factors

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## Introduction:

After brachial plexus injury, the spinal accessory nerve (SAN) to suprascapular nerve (SSN) nerve transfer can restore functionality to the upper extremity. We hypothesize that greater extent of brachial plexus injury will be associated with worse shoulder abduction and external rotation results postoperatively.

## Methods:

A systematic review of the literature was conducted by two blinded reviewers. Individually reported data from included studies was pooled together to create a database that was analyzed. Inclusion criteria for subjects was undergoing SAN to SSN nerve transfer. Exclusion criteria were age under 18, any nerve transfer for reanimation of the shoulder other than SSN to SAN and/or AXN neurotization, and less than 12 months of follow-up postoperatively. Postoperative outcomes analyzed were Medical Research Council (MRC) score and range of motion (ROM) for shoulder abduction and external rotation. Means and standard deviations (SD) are reported for outcome variables. Multivariate logistic and linear regression analysis including age, number of nerves transferred, preoperative interval, and extent of injury was completed.

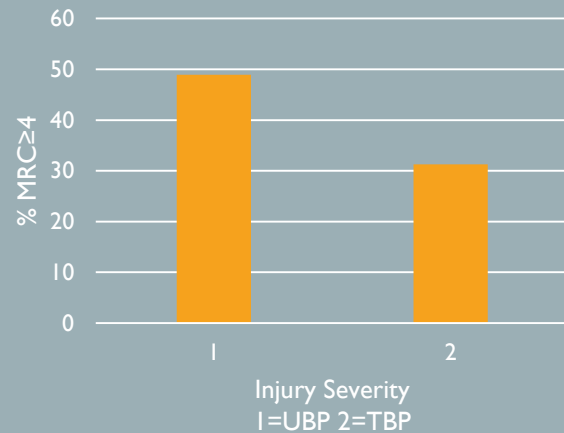
## Results:

There were 270 subjects from 19 studies included in this pooled analysis. The distribution of brachial plexus injury in this pooled cohort was 59.3% C5-C6 injury, 13.3% C5-C7 injury, 27.4% C5-T1 injury. Greater extent of injury was a statistically significant predictor of worse outcomes for every outcome analyzed: shoulder abduction MRC score greater than or equal to 4 (OR=0.482,  $p<0.001$ ), shoulder abduction range of motion (B=-14.041,  $p=0.002$ ), shoulder external rotation MRC score (OR=0.149,  $p<0.001$ ), and shoulder external rotation range of motion (B=-13.092,  $p=0.045$ ).

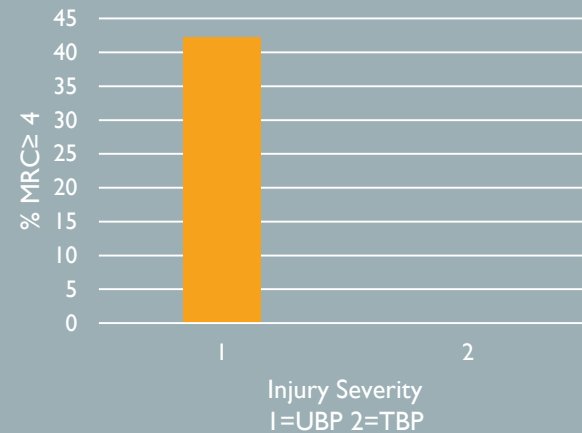
## Conclusion:

Greater extent of brachial plexus injury was associated with poorer SAN to SSN postoperative outcomes. Potential explanations for this association are best evaluated by future prospective studies.

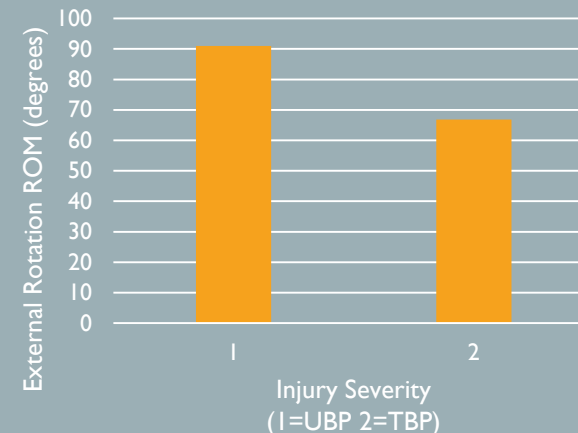
Abduction MRC $\geq$ 4



External Rotation MRC $\geq$ 4



Abduction Range ROM



Abduction Range ROM

