# Factors associated with suboptimal triceps motor branch to anterior axillary nerve transfer: a case-control study 

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INTRODUCTION:
We sought to identify predictors of failed triceps motor branch transfer to anterior division of the axillary nerve (AN) for shoulder abduction reconstruction after a brachial plexus injury.

## METHODS:

A case-control study of adult brachial plexus patients treated with a triceps motor branch transfer to the anterior division of the AN with a minimum 18-months follow-up was performed. The suboptimal/failure group (case group) was defined as modified British Medical Research Council (mBMRC) postoperative deltoid grade $\leq 2$ was compared to the optimal/success group (control group), defined as mBMRC postoperative deltoid grade $\geq 3$. The effect of age, sex, body mass index (BMI), tobacco smoking, injury mechanism, time from injury to surgery, C5/C6/C7 root avulsion status, electrodiagnostic studies, rotator cuff injuries, scapula fracture, DASH scores and preoperative triceps strength were analyzed.
RESULTS:
Sixty-nine patients met criteria, of which 23 regained $\geq \mathrm{M} 3$ deltoid muscle strength and $52^{\circ} \pm 69^{\circ}$ of shoulder abduction (optimal group) and 46 regained $\leq \mathrm{M} 2$ deltoid muscle strength and $27^{\circ} \pm 30^{\circ}$ of shoulder abduction (suboptimal group). Both groups presented similar age, gender, BMI, smoking status, injury mechanism, time from injury to surgery and injury type. Preoperative triceps weakness ( $\mathrm{M} \leq 4$ ) was significantly more common in the suboptimal group ( $63 \% \mathrm{vs} .30 \%$, p value $=0.032$ ); preoperative triceps muscle fibrillations were significantly more common in the suboptimal group ( $61 \%$ vs. $30 \%$, p-value $=0.02$ ).
DISCUSSION AND CONCLUSION: Use of triceps motor branch associated with fibrillations or weakness resulted in statistically poorer outcomes compared to use of a normal triceps motor branch in restoration of anterior AN function after nerve transfer.

