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 ≤ 2 was compared to the optimal/success group (control group), defined as mBMRC postoperative deltoid grade ≥ 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 M3 deltoid muscle strength and 52° ± 69° of shoulder abduction (optimal group) and 46 regained \leq M2 deltoid muscle strength and 27° ± 30° 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 (M≤4) was significantly more common in the suboptimal group (63% 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.