A Surgical Technique to Improve Shoulder External Rotation in Upper Brachial Plexus (C5-C6) Injuries by Selective Nerve Transfers

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Introduction
- In C5-C6 Brachial Plexus (BP) injuries, restoration of elbow flexion, shoulder abduction and external rotation is required.
- When proximal root stumps are not available for nerve grafting, or when the time from the injury won’t allow a brachial plexus primary reconstruction.
- Functional loss can be reestablished through nerve transfers if the timing from the injury is suitable.

Objectives
- The authors describe a surgical technique for the reconstruction of shoulder function in upper brachial plexus injuries.
- By selectively neurotizing the teres minor and the anterior axillary nerve branches to improve shoulder external rotation.
- 10 patients with C5-C6 BP injuries were treated with nerve transfers using this technique.
- Spinal accessory nerve (SAN) to supraesacapular nerve (SSN) transfer and double Oberlin procedure was done to restore shoulder and elbow function.
- To improve shoulder function, a second nerve transfer for the shoulder was performed.
- Through an axillary approach
- The long head of the triceps nerve branch if followed distally until a terminal nerve division was obtained before the nerve enters into the triceps muscle. (Figure I)
- This branch and its terminal divisions were used to selective neurotize the anterior branch of the axillary nerve and the nerve to the teres minor muscle. (Figure II)

Methods

Results
- All patients obtain a muscle grading strength of M4 or more of shoulder external rotation in adduction and 90 degrees shoulder abduction. (Figure III)

Conclusions
- This technique has the advantage of neurotizing the anterior motor component of the axillary nerve and teres minor without any axon loss in the sensory or articular distribution through an axillary approach.
- Shoulder external rotation outcomes are improved either in shoulder abduction and abduction.