Spinal Accessory Nerve Transfer to Suprascapular Nerve through a Posterior Approach

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INTRODUCTION
Nerve transfer surgery provides a reliable method of restoring motor function to a paralysed group of muscles after a neurological insult. A redundant motor fascicle from within a named mixed nerve supplying a non-expendable muscle OR a motor branch from an expendable muscle in the vicinity is microsurgically coapted end-to-end close to the motor point of the denervated muscle.

ANATOMY
The suprascapular nerve (SSN) arises in the posterior triangle of the neck as a branch of the upper trunk. It courses towards the suprascapular notch, passing under the suprascapular ligament exiting into the suprascapular fossa of the scapula. The first branch supplies the supraspinatus muscles. The main trunk courses laterally, medial to the glenoid, through the spinoglenoid notch to the infraspinatus fossa, where it innervates the infraspinatus muscle.

SURGICAL APPROACH
Right shoulder with Trapezius intact
Posterior View

A. Medial branch of SAN identified in blue sloop
B. SSN identified after release of suprascapular ligament
C. SSN in the yellow sloop
D. SSN mobilised to surgical field in preparation for nerve transfer

CLINICAL OUTCOME
198 patients, 301 Nerve Transfers reviewed
- 28 patients with posterior approach to XI to SSN transfer
- 20 patients with high energy trauma
35% with an abnormality at the suprascapular notch:
- 15% ossified ligament
- 10% SSN Ruptures
- 10% Neuroma-in-continuity (Figure 2)

Advantages Of The Posterior Approach To The Spinal Accessory (XI) To Suprascapular Nerve (SSN) Transfer
- Lower mortality from the medial XI donor
- Coaptation closer to the denervated muscles
- Release of the suprascapular ligament
- Identification of a concomitant injury to the SSN at the notch
- No need for neck exploration in a scar in late presenting cases
- Distal transfer can salvage a non-recovering proximal reinnervation
- Distal transfer can salvage a late presentation

CLINICAL IMPLICATION
Posterior approach identified an additional pathology which could have affected functional outcome in 35% of high energy trauma cases.

The posterior approach to SAN to SSN nerve transfers is recommended in traumatic cases of brachial plexus injury.

REFERENCES

Figure 1. Left shoulder (posterior view) with trapezius muscle split
A. Medial branch of SAN identified in blue sloop
B. SSN identified after release of suprascapular ligament
C. SSN in the yellow sloop
D. SSN mobilised to surgical field in preparation for nerve transfer

Figure 2. Supraspinular nerve Neuroma-in-continuity at suprascapular notch

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