

# Preoperative and Postoperative Clinical Comparison in Patients with Brachial Plexus Injury with or without Nerve Recording

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## INTRODUCTION

- The accuracy of a diagnostic test for classifying a patient is a key point to make a treatment decision.
- In order to establish a diagnostic and offer a treatment in a patient with brachial plexus injury we have to base on physical examination and complementary paraclinic studies.
- The presurgical low specificity and positive predicted value in the electrophysiology studies are the main indication to perform an intraoperative nerve recording.

## OBJECTIVES

- Determine whether patients with brachial plexus injury and Intraoperative nerve recording have better postoperative clinical evaluation, compared with those without the intraoperative study.

## METHODS

- Postoperative patients with brachial plexus injury were evaluated, from 2007 to 2014.
- Two groups were formed, depending on the performance or absence of intraoperative nerve recording.
- Their pre and post-surgery videos were reviewed and rated according to a scale based on the Narakas and Raimondi valuation table.

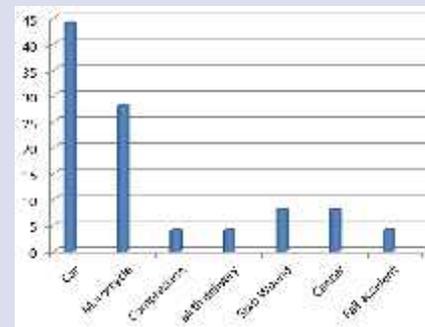


Preoperative

Postoperative

Shoulder	0: Full range of motion	1: To 90°	2: To 45°	3: To 15°	4: No range of motion
Abduction	11 Present	11 Present	11 Present	11 Present	11 Present
Internal rotation	11 Present	11 Present	11 Present	11 Present	11 Present
External rotation	11 Present	11 Present	11 Present	11 Present	11 Present
Flexion	11 Present	11 Present	11 Present	11 Present	11 Present
Extension	11 Present	11 Present	11 Present	11 Present	11 Present
Supination	11 Present	11 Present	11 Present	11 Present	11 Present
Pronation	11 Present	11 Present	11 Present	11 Present	11 Present
Forearm pronation	11 Present	11 Present	11 Present	11 Present	11 Present
Forearm supination	11 Present	11 Present	11 Present	11 Present	11 Present
Wrist flexion	11 Present	11 Present	11 Present	11 Present	11 Present
Wrist extension	11 Present	11 Present	11 Present	11 Present	11 Present
Hand grip strength	11 Present	11 Present	11 Present	11 Present	11 Present
Two-point discrimination	11 Present	11 Present	11 Present	11 Present	11 Present
Pinprick	11 Present	11 Present	11 Present	11 Present	11 Present
Temperature	11 Present	11 Present	11 Present	11 Present	11 Present
Light touch	11 Present	11 Present	11 Present	11 Present	11 Present
Vibration	11 Present	11 Present	11 Present	11 Present	11 Present
Proprioception	11 Present	11 Present	11 Present	11 Present	11 Present
Joint position sense	11 Present	11 Present	11 Present	11 Present	11 Present
Two-point discrimination	11 Present	11 Present	11 Present	11 Present	11 Present
Pinprick	11 Present	11 Present	11 Present	11 Present	11 Present
Temperature	11 Present	11 Present	11 Present	11 Present	11 Present
Light touch	11 Present	11 Present	11 Present	11 Present	11 Present
Vibration	11 Present	11 Present	11 Present	11 Present	11 Present
Proprioception	11 Present	11 Present	11 Present	11 Present	11 Present
Joint position sense	11 Present	11 Present	11 Present	11 Present	11 Present

- 25 patients, 17 men (68.0%) and 8 women (32.0%), with age range of 1-54 years (mean 28.1 ± 1.28).
- 52% were right brachial plexus injuries and 48% left.
- 15 patients were in the group with intraoperative nerve recording and 10 patients in the group without nerve recording.
- Etiology:



- All postoperative assessments showed a statistically significant improvement ( $p < 0.05$ ) regardless either of the presence or the absence of intraoperative nerve recording.
- During the postoperative evaluation of the group with intraoperative monitoring; in comparison to the group without nerve recording.
  - Shoulder external rotation and movement of the middle fingers obtained statistically significant improvement ( $p < 0.05$ ).
  - Thoracobrachial adduction was found with bordering statistically significant value ( $p = 0.084$ ).
  - In the postoperative evaluation, 52.4% of patients presented with intraoperative nerve recording arose in 1 or more of the ranges of the rating scale; whereas in patients without it, only 22.7% had increased.
- None of the patients (regardless of the performance or absence of intraoperative nerve recording) gave a lower score while postoperative assessment.

## CONCLUSIONS

- The intraoperative nerve recording studies are a reliable indicator of the lesion depth and subsequent repair results. Also minimizes the risk of intraoperative nerve injury.
- This studies provide better clinical outcomes in the postoperative period in patients with brachial plexus injury; this can be attributed to the intraoperative information obtained during brachial plexus exploratory surgery.