**Peripheral Nerve Decompression for the Treatment of Chronic Pain in Burn Patients: Learning Curve Analysis to Determine Effect of Surgical Volume on Complications and Clinical Outcomes**

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**INTRODUCTION**: Burn patients often develop debilitating pruritus, paresthesias, and allodynia, despite medical and pharmacologic therapy. Peripheral nerve decompression has emerged as a potentially effective intervention[1], but many questions remain, regarding surgical indications/timing/technique. The overall learning curve for a specific procedure can be quite volatile especially during an evolutionary process[2]. We present the largest, single-surgeon series of burn patients who underwent neuroplasty for sensorimotor dysfunction and the learning curve observed.

**MATERIALS AND METHODS**: After collecting demographic data from a prospective ABA registry, we analyzed operative notes for evolution of surgical technique and tracked the following outcomes: post-operative pain, pharmacologic regimen, and complications. For the learning curve analysis, we compared “early” (2000-2010, n=105) and “recent” (2011-2015, n=118) cohorts, using Student’s T test and chi-square.

**RESULTS**: From 2000-2015, 223 patients underwent 511 nerve releases at the following anatomic sites: digit/palm, 154; carpal tunnel, 123; Guyon’s canal, 65; radial tunnel, 29; cubital tunnel, 53; lower extremity, 41; other, 46. Median time from injury to neurolysis was 14.3 months. Definitive-to-moderate relief from neuropathic pain occurred in 86.7% of the “early” group, compared to 95.0% of the “recent” group ($p<0.05$), while complication rates decreased from 28.6% to 16.9%, ($p<0.05$). Three major technical changes occurred: 1) adoption of wide-awake, local-anesthesia-only, “tourniquet-less” neuroplasty; 2) conversion from nerve transposition to in-situ decompression; 3) increase in radial nerve release and neuroma resection. Mean follow-up was 13.7 months.

**CONCLUSION**: Peripheral nerve decompression effectively and safely alleviates chronic, neuropathic pain in burn patients. Improved outcomes are unequivocally linked to surgical volumes and cumulative surgeon experience. Relief from such pain can be transformative, improving quality life for these burn patients and establishing new possibilities for recovery.

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