osteogenic, vascular, and endothelial potential. However, few studies have explored the schwann-cell differentiation potential of MDSCs in-vitro. The purpose of this study was to characterize the induction potential of MDSCs to differentiate into cells with schwann-cell phenotypes using two neurogenic induction protocols. 2,3

METHODS: MDSCs were isolated from 4–8 weeks old C57BL/6J mice using a previously described pre-plate technique based on the selective adhesion potential of various cell types to type I collagen coated surfaces.4 Two mesenchymal-stem cell (MSC) neurogenic induction protocols (P1 vs P2) composed of various glial growth factor combinations were used for Schwann cell differentiation of MDSCs. A Schwannoma cell line (S16) was used as a positive control for all experiments.5 Immunocytochemistry and flow cytometry were performed to assess the expression of schwann-cell markers including S-100 and p75 in schwann-cell-induced MDSCs. In vitro myelination assays were performed to assess the functional capabilities of these schwann-cell-induced MDSCs.

RESULTS: The two MSC induction protocols showed statistically significant differences in their Schwann cell induction potential (p = 0.004). Schwann cell differentiation for twelve days using the P1 protocol led to an upregulation in the fraction of cells expressing S100 compared to the P2 protocol and the untreated MDSCs controls (CTCF 4.9 vs 0.5 vs 0.28, p = 0.002). Furthermore, unstimulated and P2 stimulated MDSCs demonstrated no myelination capacity while P1-induced MDSCs showed potential myelination capabilities in vitro.

CONCLUSION: MDSCs can be differentiated into cells with Schwann cells-like properties in vitro. These in vitro findings suggest that MDSCs may have a potential application to augment nerve regeneration after peripheral nerve injury/trauma.

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no statistically significant difference in return of ≥M3 function between 2 vs. 3 transfers (p = 0.4), 2 vs. 4 transfers (p = 0.4), and 3 vs. 4 transfers (p = 0.07). When comparing return of M4 vs. M3 function, more patients developed M4 function when transferring 2 intercostal nerves (p = 0.05), but there was no difference when transferring 3 intercostals (p = 0.2).

CONCLUSION: Intercostal nerve transfer to the musculocutaneous nerve is an operation largely performed in 25-year-old males around 4 months after brachial plexus injury. No significant difference in return of ≥M3 elbow flexion was demonstrated with increased transfer of intercostal nerves. Based on equivalent outcomes, transfer of 2 intercostal nerves is recommended.

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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 intervention1, 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 process2. 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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