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Sensory Outcomes in Digital Nerve Repair Techniques: An Updated Meta-Analysis and Systematic Review

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Introduction: Injuries to the digital nerves are common with trauma to the hand; surgery is often required to repair injured nerves. Surgical management of digital nerve injuries includes neurorrhaphy or use of allograft, autografts, and conduits.

Objective: In light of the increasing availability and utilization of digital nerve repair constructs, an updated meta-analysis was undertaken in order to comparatively review the available evidence to determine differences in outcomes.

Methods: We reviewed the most current literature on sensory outcomes of various digital nerve repair techniques using static two-point discrimination (S2PD), moving two-point discrimination (M2PD), Semmes Weinstein–Monofilament testing (SWMF) and complication rates as outcomes of interest. After inclusion and exclusion criteria were applied, 15 articles were reviewed and 625 nerve repairs were analyzed.

Results: In terms of S2PD outcomes, autograft repair was found to have the highest percent of repairs with “good” and “excellent” sensory outcome followed by allograft repair, conduit repair, and neurorrhaphy (95% vs. 80% vs. 78% vs. 76%). In terms of SWMF outcomes, autograft repair reported the highest percentage of “normal” and “diminished light touch” sensation,
followed by allograft, neurorrhaphy, and conduit repair (95% vs. 70% vs. 59% vs. 47%). Of the studies that reported complications, allograft repair had the highest complication rate (9%).

**Discussion:** Combining “good” and “excellent” S2PD results and “normal” and “diminished light touch” SWMF showed that autograft repair may yet still provide the best sensory outcome results in repair of injured digital nerves. Allograft repair may pose the greatest risk for complication.