Changing Trends in Peripheral Nerve Repair: A Two-Decade Analysis of Grafting Techniques and the Ascendancy of Allografts

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INTRODUCTION:
Various modalities exist for repairing transected nerves not amenable to primary repair; including, autograft, vein graft, conduit, and allograft. Nerve allograft has been recently introduced to manage nerve with a gap and / or to minimize tension at the repair site. The study was hypothesis was that there is increasing utilization of allografts relative to autograft for peripheral nerve repairs.
METHODS: The TriNetX Research Network was queried from 2002 to 2022 for all patients undergoing peripheral nerve repair. Demographic information, usage patterns, and comorbidities associated with different grafting methods by CPT were extracted and analyzed.
RESULTS: Out of 33,262 patients undergoing peripheral nerve repair, 31,756 with available demographic data were identified and included. Primary repair cases totaled 17,159, followed by conduit (n = 9,282), allograft (n = 3,582), autograft (n = 2,886), and vein autograft (n = 353). The mean per-year rate of change (range) between 2017-2022 for nerve allograft, conduit, autograft and vein autograft was +93.4 (+16.5 to +176.5), +6.3 (-37 to +45), -1.4 (-7.5 to +7.5), and +2 (-2.5 to +6.5), respectively
DISCUSSION AND CONCLUSION: The study hypothesis was upheld. This study presents a twenty-year analysis of the changing trends in nerve repair and grafting techniques employed by nerve surgeons. Conduit repair has remained a major grafting technique used among surgeons. However, nerve allograft repair demonstrates a consistent positive upward trend in usage within the last 6 years, In contrast, autograft usage has decreased. Vein graft usage is least common with a less relevant change in usage. These trends suggest an increasing preference for allograft, potentially displacing other nerve grafting methods, including autografting.