

Brachial Plexus Injury Reconstruction: A Patient-Centered Integrated Multidisciplinary Care Pathway from Treatment Through Recovery

Introduction: Brachial plexus injury (BPI) is a devastating condition that frequently affects young and working-age adults, resulting in severe upper-extremity disability, chronic pain, prolonged rehabilitation, and substantial psychosocial burdens. Although advances in microsurgical nerve reconstruction have improved functional outcomes, successful recovery depends not only on surgery but also on patient engagement in continuous rehabilitation. To address these challenges, our institution developed a patient-centered integrated care pathway for BPI reconstruction.

Methods: Since 2022, we have established a multidisciplinary program that integrates hand surgeons, neurosurgeons, physiatrists, rehabilitation therapists, nurses, social workers, and case managers into a coordinated care team. The case manager serves as the central coordinator, facilitating communication among healthcare professionals, patients, and families throughout the treatment journey. The care pathway encompasses preoperative evaluation and rehabilitation planning, shared decision-making, microsurgical reconstruction, early postoperative rehabilitation, long-term functional monitoring, psychosocial support, and community reintegration. One-stop multidisciplinary outpatient services, standardized outcome assessments, digital educational materials, and messaging platforms further enhance continuity of care.

Results: Between 2022 and 2025, 46 patients were managed using this integrated care pathway. Rehabilitation adherence improved substantially, with rehabilitation linkage rates increasing from 53% to 92%. Patient anxiety scores decreased by 36.5%, while patient satisfaction scores improved from 7.4 to 9.2 on a 10-point scale (0 = least satisfied; 10 = most satisfied).

Conclusions: A patient-centered multidisciplinary care pathway extends the value of brachial plexus reconstruction beyond surgical success alone. By integrating surgical treatment, rehabilitation, psychosocial support, and long-term follow-up, this model improves care continuity and facilitates functional recovery, providing a replicable strategy for BPI management.