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The role of the selective peripheral neurotomy in spasticity reduction

Justin M. Brown

University of California at San Diego, USA

Abstract

While not commonly practiced in the United States, selective peripheral neurotomies have supplanted tendon lengthening and releases in most centers where they are offered due to their ability to retain muscle strength and function while dramatically reducing spasticity within a specific nerve distribution. A 75% muscle fiber denervation is easily compensated for by motor unit enlargement. Reinnervation of sensory spindle nerve endings also occurs after nerve section but is disorganized. This non-specific reinnervation of muscle receptors is largely non-functional, thus strength is preserved while spasticity is reduced. Our practice utilizes functional electromyography followed by a trial of Botox. Those who respond well typically respond even better and in a more selective fashion than what is accomplished with Botox. Additionally effects are long lasting. Whether addressing gait adversely affected by an equinovarus foot or upper extremity reach hindered by overactive elbow flexion, selective peripheral neurotomy is a simple and low-morbidity procedure that produces reliable and effective results.

Biography

Justin M. Brown, M.D. completed his neurosurgery training at Baylor college of Medicine in Houston Texas and went on to complete a fellowship in peripheral nerve reconstruction in the Division of Plastic and Reconstructive Surgery at Washington University in St. Louis. Following training he became the Associate Director of the Center for Nerve injury and Paralysis at Washington University and most recently has been recruited to the University of California at San Diego Division of Neurosurgery to serve as the Director of Peripheral Nerve Surgery and Co-Director of the Center for Neurophysiology and Restoartive Neurology. He has published and travelled extensively giving lectures on the neurobiology and practical application of nerve transfers in the setting of neurotrauma.