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Targeted Muscle Reinnervation Technique in Below-Knee Amputation.
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Abstract

Approximately 25 percent of major limb amputees will develop chronic localized symptomatic neuromas and phantom limb pain in the residual limb. A method to treat and possibly prevent these pain symptoms is targeted reinnervation. Previous studies prove that targeted reinnervation successfully treats and, in some cases, resolves peripheral neuropathy and phantom limb pain in patients who have undergone previous amputation (i.e., secondary targeted reinnervation). This article seeks to share the authors' clinical indications and surgical technique for targeted muscle reinnervation in below-knee amputation, a surgical description currently absent from our literature. Targeted reinnervation for the below-knee amputee has been performed on 22 patients at the authors' institution. Each patient has been followed on an outpatient basis for 1 year to evaluate symptoms of neuroma or phantom limb pain, patient satisfaction, and functionality. All subjects have denied neuroma pain following amputation. The majority of subjects reported phantom pain at 1 month. However, at 3 months, all patients reported resolution of this pain. Dumanian et al. first noted the improvement of symptomatic neuroma and phantom limb pain in patients undergoing targeted reinnervation to provide intuitive control of upper limb prostheses. These findings have been substantiated by multiple previous studies at various amputation levels. This study extends the success of targeted muscle reinnervation to below-knee amputations and provides a description for this technique.