Ineffective Treatment of Residual Limb Pain with Botulinum Toxin: A Case Series

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Introduction

- Residual limb pain (RLP) is a common, sometimes debilitating condition seen in patients with amputations.
- Conventional treatment includes oral analgesics and modalities including massage, biofeedback, transcutaneous electrical stimulation, and desensitization therapy. If persistent, more invasive options including palliative nerve block, chemical denervation, surgical neuroma excision, or targeted muscle reinnervation may prove beneficial.
- Several published case reports suggest botulinum toxin may provide local analgesic effect in RLP. One prior study involving 14 lower limb amputees showed a comparable improvement in RLP immediately and at 6 month follow up with either botulinum toxin or lidocaine/Depomedrol injection. (1)

Case 1 Description

Male in his 60's with history of left dysvascular BKA and chronic myofascial pain syndrome

Diagnosis: Symptomatic fibular neuroma confirmed on ultrasound (Figure 1)

Prior treatment: Oral analgesics, multiple therapeutic modalities, Provant regenesis electrotherapy trial, and BKA revision with neuroma resection 5 years prior

(Previously reported pain relief with prior abobotulinum injection at outside facility)

Primary Procedure: Ultrasound guided perineural injection using 100 units onabotulinum toxin

Outcome: Failed to provide pain relief within 3 months

Second Procedure: Injection using 200 units onabotulinum toxin

Outcome: Failed to provide clinically significant relief within 3 months

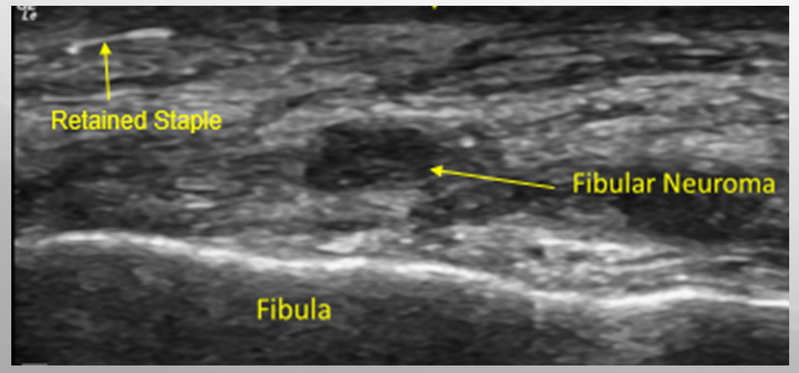

Figure 1: Ultrasound imaging of distal fibular neuroma

Case 2 Description

Male in his 70's with history of traumatic left BKA after MVC with multifactorial mixed nociceptive and neuropathic RLP

Diagnosis: Diagnostic ultrasound revealed a twitch response in the patient's distal myoplastic muscular sling (myofascial pain associated with muscle twitch)

Prior Treatment: Oral analgesics, physical therapy, local anesthetic/steroid injection, and tibial nerve block all failed to relieve RLP

Procedure: Ultrasound guided sciatic nerve block using lidocaine/bupivacaine 1:1 mix, followed by intramuscular injection of 100 units onabotulinum toxin to tender point over the distal residuum (Figures 2 and 3)

Outcome: 1 month post injection the patient reported only 3 days of 50% pain relief followed by return to baseline pain level

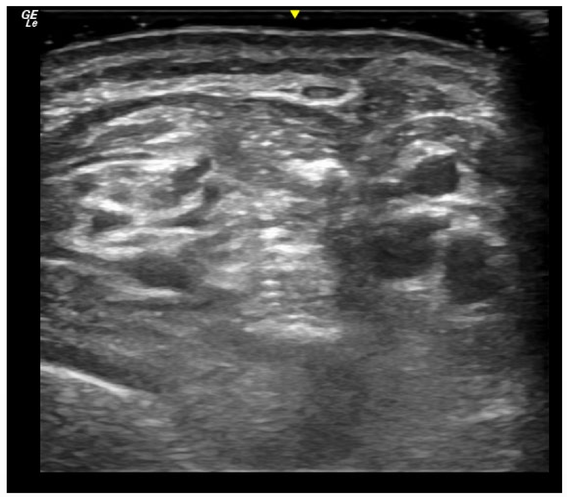

Figure 2: Initial imaging of the residual limb and area of positive twitch response

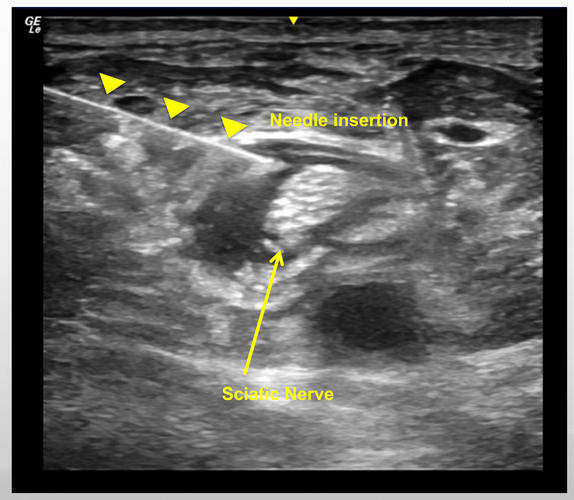

Figure 3: Isolating of the distal sciatic nerve for block, prior to intramuscular injection of Botox

Discussion

- Residual limb pain can be difficult to treat and may require a multimodal approach including therapies, medications, injections, and surgical interventions.
- Prior publications suggest botulinum toxin injection is associated with positive outcomes amongst amputees with RLP. These studies include significant variation in injection protocol (target, botulinum subtype, total units, etc.) (1-6)
- In contrast, this case series highlights unsuccessful treatment of RLP with perineural and intramuscular onabotulinum injections in two patients with chronic BKAs.
- In effort to reduce publication bias we wish to showcase the negative outcomes from the two presented cases.
- Limitations of this study include small patient sample size and differing target sites for botulinum toxin injection.

Conclusion

- Perineural and intramuscular onabotulinum toxin injection was not associated with pain relief in two amputees with RLP.
- Heterogeneity in existing literature highlights the need for additional research.

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