



Optimizing Efficacy of Lateral Pterygoid Botulinum Toxin (BTX) Injection for Temporomandibular Disorders via Electromyography

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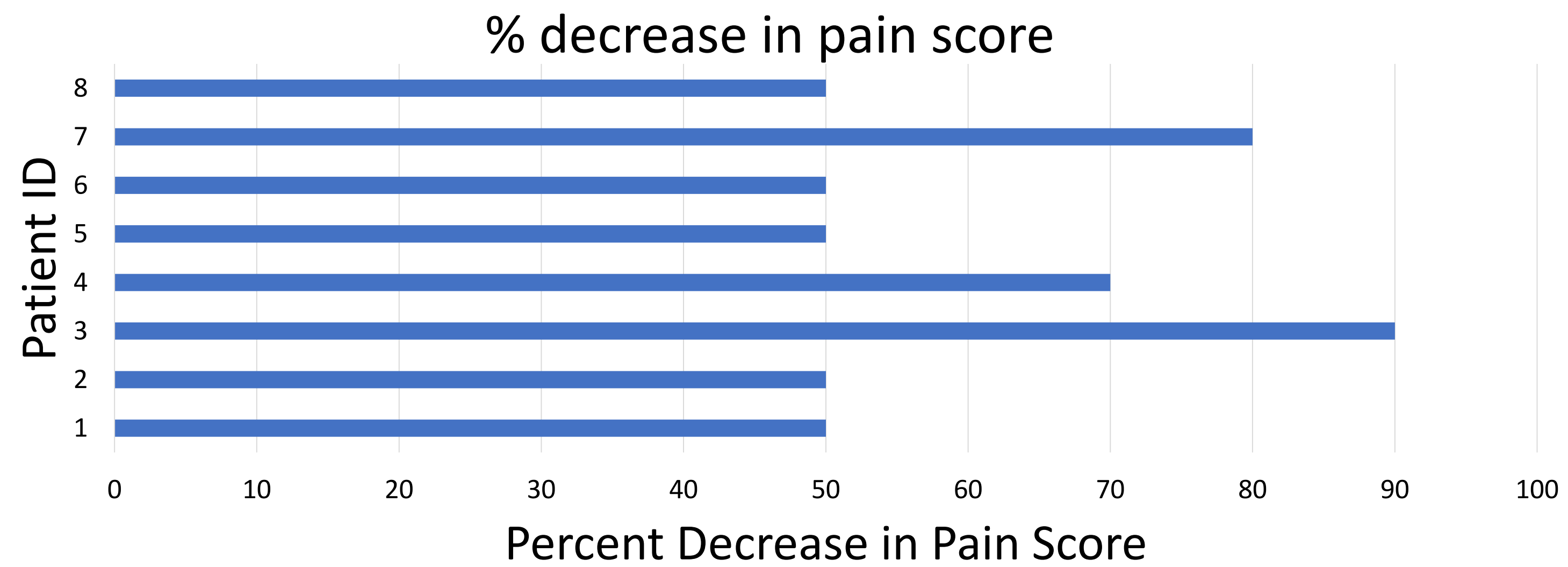
Introduction

Temporomandibular disorders (TMD) are conditions in which patients suffer from pain in the temporomandibular joint (TMJ) and muscles of mastication leading to decreased functionality and quality of life. Treatment usually targets the underlying etiology, such as bruxism, or focuses on symptom management. Nonetheless, this pain is often recalcitrant to conservative treatment. Lateral pterygoid injections have been shown to provide benefit in these patients, but injecting these deeper muscles of the face poses challenges and risks. Many approaches to injection have been reported, such as blind external or intraoral, arthroscopic, electromyographic (EMG), and via ultrasound. Our case series observes the use of EMG to guide safe, lateral pterygoid BTX injections for patients with TMD.

Methods

- The charts of 8 patients with TMD were randomly chosen from an academic pain clinic.
- All patients had to have received lateral pterygoid muscle BTX injections bilaterally via EMG guidance.
- Demographics, past medical history, pain scores pre and post BTX injections, dosage of BTX injected, and any additional muscles injected were obtained for all patients.
- Patients with comorbid chronic pain conditions were excluded from the study.

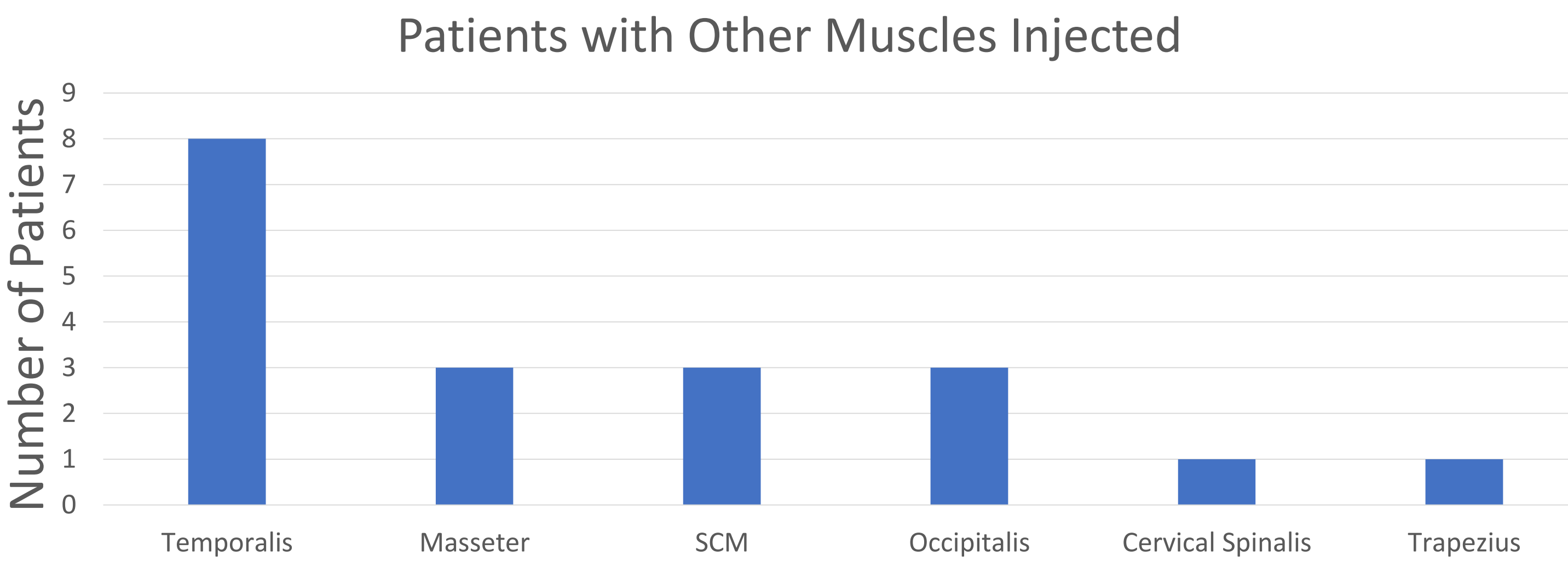
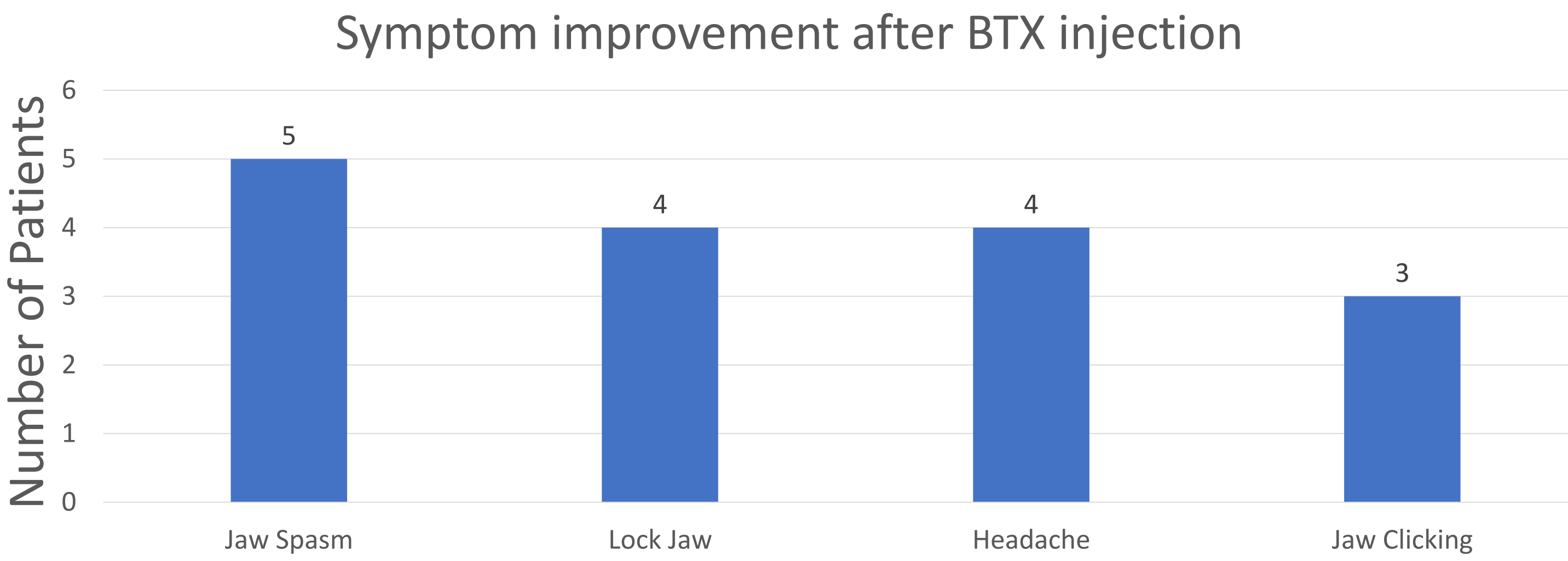
Results



EMG-guided BTX injections of the bilateral, lateral pterygoid muscles resulted in $\geq 50\%$ decrease in all patient pain scores; safe administration of BTX without complication; and a decrease in or resolution of:

- Jaw spasm
- Lock jaw
- Headache
- Clenching
- Jaw clicking

Other Graphs



Discussion

- The lateral pterygoid muscles are deep muscles of the face that can be difficult and risky to inject blindly or without the use of invasive techniques, such as arthroscopy.
- Risks of blind or intraoral injection include vascular injury and inadvertent diffusion of toxin into nearby muscles, which can result in speech difficulty, dysphagia, dysfunction of mastication, or problems with jaw opening/closing.
- This study highlights electromyography as an easy, safe, non-invasive way to correctly identify and inject the lateral pterygoid muscles.
- Limitations of our study: small sample size; injection of peripheral facial muscles was not uniform amongst the sample population; possible placebo effect.
- It would be beneficial to perform randomized control trials on this technique and the benefit of injecting BTX into these muscles for TMD.