

Novel Modalities in the Treatment of Refractory Myofascial Pain with Concomitant TMJ Arthralgia

By: Matthew Venditelli

Chronic myofascial pain is estimated to affect half of the patients that present with TMJ arthralgia. When looking into evidence-based treatments for myofascial pain, we see that there are weak and insufficient evidence to support many of the current treatment modalities employed by practitioners, including the use of SNRIs, physical therapy, TENs, and occlusal appliance therapy. Many patients are also non-responders to our current first line therapies, like NSAIDs, lifestyle modifications and soft diet, whether it is due to compliance or a true non-response. When our current first-line non-surgical treatment modalities to address TMD fail, patients are often treated with arthroscopy, a minimally invasive procedure. Arthroscopy has a 70-90% success rate in the treatment of TMJ internal derangements. In this procedure, the superior space between the disc and articular eminence/fossa, is irrigated to eliminate inflammatory mediators, break synovial adhesions and allow for synovial hemostasis. This is the standard of care for *arthrogenous pain*.

However, as stated above half of the patients that present with TMJ arthralgia also have a component of chronic, refractory myofascial pain. There is no current standard of care or evidence-based therapy for the treatment of this chronic myofascial pain. In the last two years the use of botulinum toxin a (Botox), has been shown to have promise for the treatment of myofascial pain, severe bruxism, muscular hyperactivity and hypertrophy, and chronic facial pain. Additionally, the FDA has recently approved the use of Botox in migraine prophylaxis. Botox works by inhibiting presynaptic release of acetylcholine at the neuromuscular junction, leading to temporary and selective muscle paralysis. Additionally, Botox has an inhibitory effect on many excitatory neurotransmitters involved in pain experience and modulation, including substance P, glutamate and calcitonin gene-related peptide.

The purpose of this paper was to investigate if there is a reduction in pain scores reported on a visual analog scale by patients with concomitant TMJ arthralgia and myofascial pain when treated with arthroscopy +/- Botox injection at symptomatic masticatory muscle sites.

Additionally, we hear the term “steroid injection” used as a treatment for myofascial pain in attempt to reduce inflammation at symptomatic sites. The use of Depo-Medrol, or methylprednisolone acetate, at a dose of 40mg per site was also assessed in its ability to modulate myofascial pain experience.

All patients presented with TMJ arthroscopy and refractory myofascial pain. Patients were subjected to arthroscopy (control) or arthroscopy with Botox (treatment) injections at sites of maximal muscle tenderness within the masseters and temporalis muscles. The use of Depo-Medrol was only administered when patients had tenderness over the anterior ramus or coronoid, signifying a temporalis tendon involvement. It is important to note that the researchers eliminated any patients with signs of neuropathic pain.

At around 6 months post-treatment the following results were gathered:

- Mean pain score reported by patients decreased significantly in the treatment group (arthroscopy + Botox) vs. control
- The addition of Botox decreased maximal bite force leading to a possible decreased joint loading, which is possibly favorable for those with bruxism.
- Depo-Medrol injection of the temporalis tendon did not significantly reduce pain scores between the control and treatment
- Maximal incisal opening improved in the treatment group, however not significantly
- Both control and treatment improved diet consistency tolerance

It was determined that 4 patients would need to be treated with Botox for 1 patient to achieve at least 30% decrease in pain score.

The only complications noted in this study from the injection of Botox was a self-limiting hematoma at the site of injection. Only one patient in the arthroscopy control had unfavorable scarring.

Botox presents practitioners with a possible treatment for refractory myofascial pain that requires minimal administration time, results in a proven decrease in bite force and a potential decrease in pain scores with low risk of complications. When patients present with aspects of both arthrogenous and myofascial pain, Botox can be incorporated with arthroscopy in attempt to target both aspects of pain experience. Drawbacks and barriers to treatment include cost and the need for repeat injections.

Take Home Message

Around half of the patients that present with TMJ arthralgia have a component of refractory, chronic myofascial pain that goes untreated when patients are treated with arthroscopy alone. Adjuvant Botox administered via injection to symptomatic muscles of mastication presents a possible way to target refractory myofascial pain and decrease pain experience, in a relatively safe manner, when patients are non-responsive to first-line TMD therapies.

References

1. Thomas NJ, Aronovich S. Does Adjunctive Botulinum Toxin A Reduce Pain Scores When Combined With Temporomandibular Joint Arthroscopy for the Treatment of Concomitant Temporomandibular Joint Arthralgia and Myofascial Pain? *Journal of Oral and Maxillofacial Surgery*. 2017;75(12):2521-8.