



## EFFICACY OF BOTULINUM TOXIN IN TREATING BRUXISM - A REVIEW

**Dr. Varsha A Jadhao\***

Professor, Department of Dentistry, Government Medical College and Hospital, Akola, Maharashtra, India.

**\*Corresponding Author: Dr. Varsha A Jadhao**

Professor, Department of Dentistry, Government Medical College and Hospital, Akola, Maharashtra, India.

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### ABSTRACT

Bruxism is recognised as the parafunctional masticatory muscle activity, that enflames all the stomatognathic structures, being accountable for tooth wear, periodontal tissue damage, articular and/or muscular mutilation, characterised by excessive compression and/or grinding of the teeth, which can occur sleeping or waking. Despite the fact that a demonstration of a causal role for Temporomandibular Disorder has not yet been found and doubts exist as to the etiology of both awake and sleep bruxism, Many treatment alternatives have been proposed in the literature.<sup>[6-9]</sup> The treatments evaluated are as follows: sleep hygiene measures combined with relaxation methods, splint therapy, Drug therapy, and reliant electrical stimulation. The efficacy of BTX-A to reduce myofascial pain symptoms in bruxers, and effective in reducing the occlusal force, but psychological interference had an important role in treatment part.

**KEYWORDS:** Bruxism, Botulinum Toxin, Temporomandibular Disorders.

### INTRODUCTION

Botulism was originally called 'sausage poisoning' because it occurred after ingestion of poorly prepared blood sausage.<sup>[1]</sup> Botulinum toxin (BTX) has been under the clinical search since the late 1970s for the management of several situations allied with extreme muscle contraction or pain.<sup>[2-5]</sup> Furthermore, it is the first-choice treatment for wrinkles located on the upper third of the face, BTX is also widely used in the prevention and correction of changes caused by muscle contraction in the middle and lower thirds of the face and neck, including bruxism. Clostridium botulinum was first identified in 1897, in Belgium, by Professor Emile van Ermengem. In the same year, an antiserum for botulism was made. Justinus Kerner (1786-1862) was the first to describe the features of botulism.<sup>[1-4]</sup>

Despite the fact that a demonstration of a causal role for Temporomandibular Disorder has not yet been found and doubts exist as to the etiology of both awake and sleep bruxism, Many treatment alternatives have been proposed in the literature.<sup>[6-9]</sup> The treatments evaluated are as follows: sleep hygiene measures combined with relaxation methods, splint therapy, Drug therapy, and reliant electrical stimulation. Patients often favour conservative treatments such as physiotherapy, psychosocial intervention and splinting, which are non-invasive, painless and economical, but they require good acquiescence to be effective. Drug treatment is more effective and necessitates less compliance than conservative treatments and also well accepted by the

patients. However, it requires an acceptable level of health and is sometimes restricted because the drug is contraindicated.<sup>[2,8]</sup>

Bruxism is recognised as the parafunctional masticatory muscle activity, that enflames all the stomatognathic structures, being accountable for tooth wear, periodontal tissue damage, articular and/or muscular mutilation, characterised by excessive compression and/or grinding of the teeth, which can occur sleeping or waking. Approximately 85 to 90% of the general population reports bruxism to some degree, during some period of life. The prevalence of bruxism varies between 20 - 25% in children, 5 - 8% in adults, and 3% in the elderly people.<sup>[10-15]</sup>

The occlusion analysis system is a computer-assisted device partaking a pressure sensor. It was urbanised in 1984 to assess occlusal forces and contact times, and is measured a prosthodontic adjunct specific to problems that advance during the treatment of occlusal disorders and Bruxism. The most commonly used treatment modality for the management of bruxism is conservative symptomatic therapeutic modalities such as behavioural and physical treatments, sleep hygiene measures combined with relaxation methods, occlusal splint therapy, pharmacological management, reliant electrical stimulation and physiotherapy. But the treatment modalities such as occlusal splint is mainly aimed to prevent wear of tooth surface and periodontal damage, rather than achieve a therapeutic effect.<sup>[12]</sup>

Chronic local muscular contracture has been known to cause inflammation and localized muscular hypoxia leading to chronic myofascial pain.<sup>[4,14]</sup>

Considering these premises, the study hypothesis was that botulinum toxin may represent an alternate and effective option to avoid prolonged treatment with occlusal splints and/or drugs. BTX-A has been under the clinical pursuit since the late 1970s for the managing of several situations allied with extreme muscle contraction or pain.

BTX-A hinder the exocytotic discharge of acetylcholine in the motor nerve terminals leading to abridged muscle contraction.<sup>[1,5,7]</sup> This property makes it useful both clinically and therapeutically for a series of conditions where there is an excess of muscle contraction. Psychosomatic aspects are important in the aetiology of bruxism and so psychological intercession is an intrinsic part of the treatment of bruxism. The change in bite force in the placebo and control groups shows that psychological intervention has frolicked a part in the treatment of bruxism. Kim et al. indicated clearly that bruxism and Temporo-mandibular disorders are closely related to psychological factors. In investigation into the treatment of nerve disorders (such as TMD and bruxism), investigator have pointed out that psychological interference can perceptibly release the pain caused by nerve dysfunction. All the present clinical treatments can therefore be measured to be a combination of that particular treatment and psychological intervention, which marks patients during their treatment.<sup>[12-17]</sup>

Recent advances show that bruxism is caused by high levels of motor activity in the centrally situated mandible musculature, indicating that the reduction in muscle activity induced by the use of BTX-A could be beneficial in these cases.

## CONCLUSION

The present review enlightens an employment of botulinum toxin BTX-A was effective for treatment of bruxism to reduce myofascial pain symptoms in bruxers. We also achieve that the occlusal analysis system precisely imitates the characteristics of occlusal force during treatment of Bruxism. BTX-A has obvious advantages for the treatment of Bruxism in terms of tumbling the occlusal force, but psychological interference had an important role in treatment part.

## REFERENCES

- Dressler D: Botulinum toxin mechanisms of action [Suppl]. Clin Neurophysiol, 2004; 57: 159-166.
38. Cote TR, Mohan AK, Polder JA, Walton MK, Braun MM: Botulinum toxin type A injections: adverse events reported to the US Food and Drug Administration in therapeutic and cosmetic cases. J Am Acad Dermatol, 2005; 53: 407-415.
- Porta M, Camerlingo M: Headache and botulinum toxin. J Headache Pain, 2005; 6: 325-327.
- Blitzer A: Botulinum toxin A and B: a comparative dosing study for spasmodic dysphonia. Otolaryngol Head Neck Surg., 2005; 133: 836-838.
- Rosales RL, Bigalke H, Dressler D: Pharmacology of botulinum toxin: differences between type A preparations. Eur J Neurol, 2006; 13(1): 2-10.
- Simpson DM: Clinical trials of botulinum toxin in the treatment of spasticity. Muscle Nerve 1997; 6: 169-175.
- Silveira-Moriyama L, Goncalves LR, Chien HF, Barbosa ER: Botulinum toxin A in the treatment of blepharospasm: a 10-year experience. Arq Neuropsiquiatr, 2005; 63(2A): 221-224.
- Paesani DA. Bruxism: theory and practice. Berlin: Quintessence Publishing Co., Inc., 2010.
- De Laat A, Macaluso GM. Sleep bruxism as a motor disorder. Mov Disord, 2002; 17: S67-69.
- Zhang L-d, et al. Occlusal force characteristics of masseteric muscles after intramuscular injection of botulinum toxin A(BTX – A)for treatment of temporomandibular disorder. Br J Oral Maxillofac Surg (2016), <http://dx.doi.org/10.1016/j.bjoms.2016.04.008>.
- Erbguth FJ, Naumann M. Historical aspects of botulinum toxin: Justinus Kerner (1786–1862) and the ‘sausage poison’. Neurology, 1999; 53: 1850–3.
- Chen S. Clinical uses of botulinum neurotoxins: current indications, limitations and future developments. Toxins (Basel)., 2012; 4: 913–39.
- Song JH, Cho ES, Kim ST, et al. Change of distribution and timing of biteforce after botulinum toxin type A injection evaluated by a computerizedocclusion analysis system. Yonsei Med J., 2014; 55: 1123–9.10.
- Kim YK, Kim SG, Im JH, et al. Clinical survey of the patients with temporomandibular joint disorders, using Research Diagnostic Criteria (Axis II) for TMD: preliminary study. J Cranio maxillofac Surg, 2012; 40: 366–72. Lobbezoo F, Lavigne GJ: Do bruxism and temporomandibular disorder have a cause-and effect relationship? J Orofac Pain., 1997; 11: 15-23.
- Lavigne GJ, Kato T, Kolta A, Sessle BJ: Neurobiological mechanisms involved in sleep bruxism. Crit Rev Oral Biol Med., 2003; 14: 30-46.
- Manfredini D, Landi N, Romagnoli M, Cantini E, Bosco M: Etiopathogenesis of parafunctional activities of the stomatognathic system. Minerva Stomatol, 2003; 52: 339-349.
- Roldán-Barraza C, Janko S, Villanueva J, et al. A systematic review andmeta-analysis of usual treatment versus psychosocial interventions in thetreatment of myofascial temporomandibular disorder pain. J Oral Facial Pain Headache, 2014; 28: 205–22.