

Role of Botox in Efficient Muscle Relaxation and Treatment Outcome: An Overview

Dear Editor,

Smile is the most distinguished expression, and is the keystone of social interaction and communication. It is the universal welcoming greeting in all cultures and ethnicity. Just as a pleasant smile can act as a potential communication tool, an unpleasing smile can have the equally downbeat impact. Smile designing and functional restoration with dental implants, especially in partially edentulous patients, has become incredibly popular among prosthodontists in the last two decades. Botox is one of the most promising and exciting novel additions to the dentist's arsenal for the treatment of temporomandibular disorder (TMD), mandibular spasm, prominent gums, masseteric hypertrophy and various cosmetic corrections. Botox is the generic name for the neurotoxin protein botulinum toxin Type A produced by fermentation of anaerobic bacterium *Clostridium botulinum*, which is a secure, sterilized and vacuum-dried powder diluted with saline solution. In implant therapy, bone to implant union (osseointegration) can be impeded by excessive functional forces in patients with para-functional habits. Additionally, implant overloading while healing can result in early implant failure primarily by cessation of the active osseointegration process. Botox therapy prior to implant surgeries has been shown to enhance prognosis and aesthetic advantages. This is especially true in patients with a known history of night clenching of teeth (bruxism), where prophylactic use of botox injections is very effective in achieving true bone to implant connection. Botox decreases the muscle activity by blocking overactive nerve impulses that trigger excessive muscular contractions by selectively preventing the release of the neurotransmitter acetylcholine (ACh) at the neuromuscular junction.^[1]

Pre-surgical botox therapy also plays a key role in attaining muscular relaxation during surgical repair of multiple maxillofacial fractures associated with road traffic accident. Inappropriately attended hypertonic peri-traumatic musculature may lead to impendance of formation of callus.^[2] Excessive forces created by para-functional clenching impede healing and reattachment of gums and bone in the mouth following trauma. Botox doses up to 61.7 U (range 25-100 U) have been shown to achieve therapeutic response in bruxism, while higher doses (up to 150 U) are reported to significantly decrease

pain and tenderness in temporalis and masseter muscles with improved function and mouth opening.^[3-5] Because the para-functional activity usually leads to periodontal trauma in the form of trauma from occlusion, preventing such activity prior to and following periodontal surgery can promote the healing process. The use of a splint is often contraindicated because the teeth should be functional during healing.

Nevertheless, curative approach via botox transiently inhibits normal oral function, which eventually comes back to previous levels once the effect of the drug has subsided. In spite of several controversies, botox therapy is a conventional, non-invasive and pre-surgical treatment that weakens the injected muscle but leaves the other muscles unaffected. The procedures are trouble-free to complete by general dental practitioners, prosthodontists and cosmetic surgeons, with suitable instructions and guidelines. This letter is an attempt to draw attention toward the potential role of botox as an adjunct to prosthodontic surgery as well as in the context of maxillo-facial trauma. I hope it will prove to be a gentle nudge to steer the researchers in this direction.

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References

1. Ihde S. Prophylactic use of botulinum toxin in dental implantology. *Cranio-maxillofacial Implant Dir* 2007;2:3-8.
2. Kayikvioglu A, Erk Y, Mavili E, Vargel I, Ozgur F. Botulinum toxin in the treatment of zygomatic fractures. *Plast Reconstr Surg* 2003;111:341-6.
3. Blumenfeld A. Botulinum toxin type A in the treatment of Dental conditions. *Inside Dent* 2007;2:1-5.
4. Freund B, Schwartz M, Symington JM. The use of botulinum toxin for the treatment of temporomandibular disorders: Preliminary findings. *J Oral Maxillofac Surg* 1999;57:916-20; discussion 920-1.
5. Tan EK, Jankovic J. Treating severe bruxism with botulinum toxin. *J Am Dent Assoc* 2000;131:211-6.

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