

Eurasian Medical  
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## The Use of Botulinum Toxin in Dental Practice

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ABSTRACT

Today, in the field of medical technology, there has been a concept for the development of minimally invasive methods of treatment, while reducing the frequency of surgical interventions, the risk of development and the severity of complications. One of these methods is the use of botulinum toxin preparations in dentistry and maxillofacial surgery

**Keywords:**

botulinum, dental diseases, treatment, diagnosis, method.

### Introduction

In 1980, A. Scott became the first scientist to use botulinum toxin for medical purposes: in an experiment on monkeys suffering from strabismus. In 1982, J. Carruthers used botulinum toxin (BT) to correct wrinkles in the forehead and around the eyes, and already in 1992, W. Binder began using it for the treatment and prevention of migraine headaches [3, 5]. BT chemically denervates striated muscles.

### Materials And Methods

The mechanism of action consists in the presynaptic blockade of proteins that ensure the transport of acetylcholine vesicles, the presence of which is necessary for the implementation of muscle motor activity. The process of presynaptic blockade of transport proteins with the help of BT is irreversible and takes an average of 30-60 minutes. Despite the fact that the cellular effects develop very quickly and irreversibly, the clinical muscle relaxant effect of the drug after injection begins to appear after a few days. 1-2 months after the injection, the process of formation of new nerve terminals from axons, where the

transport of acetylcholine was previously blocked, begins, with the formation of new functionally active neuromuscular synapses (the so-called sprouting), which ultimately leads to the restoration of muscle contractions after 3- 6 months after injection [1, 3, 6]. In modern medical practice, a number of BT preparations produced by different manufacturers are used. These preparations differ in the production process, the strains of bacteria used, the degree of purification, the method of stabilization, biological activity, and, consequently, the properties of the preparations also differ, in particular, their biological activity [3, 4, 6].

### Results And Discussion

In 1957, S.C. Nadler identified the following etiological factors:

- Local causes in the maxillofacial area, ENT pathology.
- Psychogenic.
- Diseases of organs and systems.
- Professional.

Muscle function disorders are based on changes in contractile processes in the muscles, manifested in the form of hypertonicity. As a

result, painful zones are formed that have different density and size.

Cranio-mandibular disorder is a common pathology that is characterized by a wide range of pathological conditions affecting the temporomandibular joint, masticatory and facial muscles, and other components of the orofacial system. In recent years, the number of patients seeking help for this pathology has been steadily growing. One of the most common manifestations of craniomandibular dysfunction is bruxism. Bruxism is a parafunctional disorder that is not subject to the control of the proprioceptive system, characterized by unconscious contraction of the masticatory muscles during sleep, physical exertion, mental stress and stress. According to the literature, the incidence of bruxism among dental patients is quite high and amounts to 67-91%. According to the modern concept, bruxism has a polyetiological nature. The development of the disease is facilitated by a combination of many factors: changes in the state of the muscular apparatus, occlusive disorders, pathology of the spine (often the cervicothoracic region), asymmetry of the shoulders, shoulder blades, shortening of one leg, etc. [3].

Complications during injection of BT preparations develop rarely; moreover, these complications are temporary and reversible. Most often, hematomas appear at the injection site. The most serious side effects of BT injections in the upper third of the face include ptosis and, very rarely, diplopia. Complications as a result of botulinum toxin injection in the maxillofacial region can be a temporary inability to close the lips, premature fatigue during chewing, articulation disorders, voice timbre changes, and swallowing disorders. It is possible to significantly reduce the likelihood and severity of temporary side effects due to the precise injection of botulinum toxin preparations into the corresponding anatomical areas, as well as due to the impeccable injection technique. The use of botulinum toxin preparations is contraindicated in systemic lupus erythematosus, as well as in the presence of other autoimmune diseases characterized by

impaired function of neuromuscular synapses [1, 3].

## Conclusion

After analyzing the data of domestic and foreign scientific literature, we can conclude that the use of botulinum toxin preparations in dentistry and maxillofacial surgery shows positive results, is a minimally invasive method for treating patients with various nosological forms. The ease of use of BT and a small number of complications, which are predominantly temporary, make it possible to use it not only in a hospital setting, but also on an outpatient basis.

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