Botulinum Toxin Type A Usage for Preoperative Treatment for Dental Implants Placed in Maxillary Arches for Full-Arch Restoration of Patients with Bruxism

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Abstract

Bruxism is a motor activity that is supposed to have the potential for causing damage to the stomatognathic structures as well as to be a risk factor for dental implants survival. Few publications have suggested clinical guidelines for reducing complication risks and implant failures for patients with a history of bruxism. Weakening of the muscle activity might provide some protective role on dental implant in patients with bruxism.

The aim of the present report was to describe the use of botulinum toxin type a as preoperative treatment for delayed loaded dental implants placed for maxillary arches for full-arch restoration of patients with bruxism.

Patients with bruxism who were scheduled to receive delayed loaded full-arch implant supported fixed restorations were included in this retrospective clinical report. Patients were followed and implant survival as well as peri-implant bone level were also recorded. Adverse effects were also recorded. A control group without application of botulinum toxin was evaluated as well.

A total of 10 patients (5 test and 5 control), with bruxsim , systemically healty were included in this retrospective report, and the patients were received delayed loaded dental implants placed in maxilla for full-arch restoration. The test group treatment preceded botulinum toxin type A injection was administered to masseter and temporalis muscles. Maxillary arches were supported with 6 or 8 implants. The follow-up time was 2 years . In the test group, no implants failures were recorded and prosthetic complications. With regard to complications, porcelain fracture and screw loosening were observed at 2 years after loading in 3 patients, who consequently received new restorations. There were no other biomechanical complications.

The preoperative use of botulinum toxin in patients with bruxism undergoing full-arch rehabilitation using delayed dental implants placed in maxilla.Prosthetic complications will appear less frequently in patients use of botulinum toxin.

Background and Aim

Bruxism is a motor activity that is supposed to have the potential for causing damage to the stomatognathic structures as well as to be a risk factor for dental implants survival. Despite the increasing knowledge on its etiology, diagnosis, and management, evidence on the effects of bruxism as a cause of dental implant failure or complication is still lacking. The caution that is urged when using implants to support dental prosthesis in bruxers is due to the common fear that bruxism can cause overloading and may affect osseointegration and/or compromise the integrity of mechanical components.

Weakening of the muscle activity might provide some protective role on dental implant in patients with bruxism. The aim of the present report was to describe the use of botulinum toxin type a as preoperative treatment for delayed loaded dental implants placed for maxillary arches for full-arch restoration of patients with bruxism.

Methods and Materials

Patients with bruxism who were scheduled to receive full-arch implant supported fixed restorations were included in this retrospective clinical report. All patients received dental implant placed in maxilla supported by 6 to 8 implants.

In the test group, to reduce the occlusal forces applied in patients with bruxism, Botulinum toxin type A (Dysport; Speywood Pharmaceuticals Ltd, Maidenhead, UK) was introduced prior to implant placement procedure.

Preoperative botulinum toxin A injections target the primary muscles of mastication, the masseter and temporalis muscles (Figure 1 and 2). Patients were injected 3 weeks prior to the operation. The clinical muscle relaxation seen as a result of Botulinum Type A injection continues for 4 to 6 month. This was the rational for providing the injections 3 weeks prior to the surgery to allow a protective period of time during the initial osseointegration.

The intramuscular injection was administered by means of 1-mL syringe and a 30-gauge hypodermic needle. Injections were made in the region of the zygomatic arch and the temporal area where the temporalis muscle has a large fan-shape administered at 4 points yielding total dose of 70 U to each side.

The masseter muscle was injected in 3 to 4 points around the mandibular angle yielding a total dose of 90 U to each side. The front edge and deeper lying parts of the masseter were not injected due to the proximity of the facial nerve, parotid gland, and zygomaticus major muscle .

A control group with no use of Botulinum toxin was evaluated as well. Patients were followed, and implant survival as well as peri- implant bone level was assessed in each periodic follow-up visit. Adverse effects were also recorded.

Results

A total of 10 patients (5 test and 5 control), with bruxsim, systemically healty were included in this retrospective report, and patients were received delayed loaded dental implants placed in maxilla for full-arch restoration. The test group treatment preceed by Botulinum toxin type A (Botox[®], Allergan) injection. Maxillary arches were supported by 6 or 8 implants while the mandibular arch was supported by 6 or 8 implants. All surgeries went uneventfully and no adverse effects were observed. The follow-up time was 2 years. In the test group, no implant failures were recorded and prosthetic complications (Figure 3). In the control group, porcelain fracture and screw looseing were observed at 2 years after loading in 3 patients who received new restorations.

Figure1 and 2: Injection areas

Figure 3 :Prosthetic restoration

Conclusions

Reducing and controlling forces may favor the successful integration of dental implants and the protecting their stability, even during the period of postoperative robust osteonal remodeling. The use of botulinum toxin in patients with bruxism under going full-arch rehabilitation might improve the overall results. In might be assumed that weakening the muscle activity inthose patients can provide some protective role on dental implant. Further long-term, large-scale randomized clinical trials will help to determine the additional benefit of this suggested treatment modality.

References

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