



Mini Review

Occlusal Guards for Dental Implant

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ABSTRACT

Excessive stress to the bone-implant interface disturbs the dental implant biomechanics and is a major cause for dental implant failure. These stresses play a vital role shortly after uncovering of an implant, leading to early failure of the implant. The stress overload post the prosthetic loading of a successfully integrated implant, may lead to physical failure of the implant structure like fracture. It has been well documented that parafunctional habits, such as, bruxism affects the stresses on implant prostheses, thereby causing failures. There is however, no staunch evidence for a causal relation between the failures and overload of dental implants. In spite of this lacunae in evidence, metal restorations are preferred instead of porcelain for patients as a precautionary option. The main purpose of this paper is to discuss the importance of management and prevention of complications related to bruxism and to suggest occlusal materials for protection of implant prostheses.

Keywords: Bruxism, occlusal guards, clenching, load, stress, occlusion

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INTRODUCTION

The most vital factor in implant survival is osseointegration^[1,2]. Excessive stress to the bone-implant interface disturbs the dental implant biomechanics and is a major cause for dental implant failure. The aftermath of overload of dental implants can be biological or biomechanical complications^[3,4]. One such ignored cause for excessive offset loading of dental implants is parafunctional habit- bruxism.

Bruxism is a movement disorder of the masticatory system that is expressed, among others, by tooth grinding and clenching, during sleep as well as during wakefulness^[5]. Since it is controlled by the central nervous system, it may be difficult to prevent the occurrence of bruxism events. When considering implant supported reconstructions in such patients, occlusal analysis becomes a vital part of the rehabilitation^[6,7]. During mandibular protrusive and lateral excursions prematurity and posterior tooth contact increases stresses exerted on implants. Occlusal equilibration doesn't guarantee resolution of parafunctional habits. Therefore, the ability to reduce the chance of occlusal overload on some of the teeth and the additional benefit of potential reduction in parafunction is warranted in every patient diagnosed with habits like clenching or bruxism.

Clinical trials regarding the influence of bruxism on implant prostheses are scarce. Since most of the clinical research in dental implants excluded subjects with bruxism, there are only few research data on the influence of bruxism on dental implant outcome, and there is still no scientific evidence for a causal relation between bruxism and implant failure. The main purpose of this paper is to discuss the importance of management and prevention of complications related to bruxism and alter occlusal materials and add a suprastructure for protection of implant prostheses.

OCCLUSAL GUARD

The consequences of nocturnal parafunctional habits may be prevented by acrylic resin night guards^[8]. A hard stabilization splint (occlusal guard) contributes to optimally distributing and vertically redirecting forces that go with teeth grinding and clenching. An occlusal guard is often called a night guard or a bruxism guard. It works on the philosophy to relieve damage to the teeth and painful symptoms of TMJ, or temporomandibular joint disorder^[9]. Occlusal guards can prevent jaw strain, fatigue, pain, and the chipping or breaking of teeth. The jaw puts an extreme amount of pressure per square inch on the teeth while grinding and clenching the teeth. Occlusal guards are customized by a dentist to fit a patient's mouth exactly, or they can be purchased over the counter in many developed countries. While over-the-counter occlusal guards are less expensive than custom-crafted, they can have a negative impact on oral health if not used properly. Custom-fitted occlusal guards provide patients with better bruxism relief without the discomfort of ill-fitting plastic or metal parts that are one-size-fits-all.

The Michigan occlusal guard is constructed to provide even occlusal contacts around the whole arch in centric relation occlusion and provides posterior disocclusion with anterior guidance in all excursive movements of the mandible^[10]. This device may be fabricated with 0.5- to 1-mm colored acrylic resin on the occlusal surface. If the patient wears this device for 1 month, the consequences or intensity of the bruxism habit may be directly observed. If the colored acrylic is not worn through, the parafunction was not excessive. If the colored acrylic on the occlusal guard is ground through, an occlusal adjustment will have little to no effect on decreasing the parafunctional habit.

Substantial forces exerted on the dentition via bruxism are the most difficult to address on a long- term basis. Patient education and informed consent are helpful to gain the patient's cooperation in reducing or eliminating the noxious effects. If the opposing arch has a soft tissue supported removable prosthesis like a complete denture, the effects of the nocturnal parafunctional habit can be reduced if the patient removes the prosthesis at night.^[11] The use of an occlusal guard is helpful for a patient with a fixed prosthesis, to transfer the weakest

link of the system to the removable acrylic device.^[12] The occlusal guard can be designed to either fit the maxilla or the mandible. Even centric contacts during centric occlusion and anterior-guidance with disocclusion of the posterior teeth in mandibular excursions are strongly suggested in the construction of the occlusal appliance.

CONCLUSION

Till date, minimal research has highlighted the clinical approach to protect implant prostheses from bruxism. With recent developments and the advent of immediate or early loading, the clinical management of bruxism has become an important subject for implant prostheses. At present, expert opinion and cautionary approaches are still considered the best available sources for suggesting good practice indicators. There is a need for clinical research centers and university research institutes to provide evidence on whether the subjective feeling of clinicians regarding the approach of bruxism in implant patients is correct or not. In this field, future clinical trials on possible new materials should be planned to investigate the protection of implant prostheses from bruxism.

Authors' contribution

Poonam M Sardesai: Manuscript editing, Literature search, data collection

Aishwarya B Panicker: Data Analysis, manuscript drafting

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Conflict of interest

The authors have nothing to disclose or any conflicts of interest.

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