

# Bruxism and the Risk of Dental Implant Failure

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Bruxism is an oral habit consisting of involuntary rhythmic or spasmodic nonfunctional gnashing, grinding, or clenching of teeth, other than chewing movements of the mandible, which may lead to occlusal trauma.<sup>1</sup> Due to lack of the periodontal ligament, osseointegrated implants, unlike natural teeth, may be more prone to occlusal overloading and is often regarded as one of the potential causes for peri-implant bone loss and failure of the implant or implant prosthesis.<sup>2</sup> Finite element analysis suggested that the occlusal loads are concentrated at the implant marginal bone<sup>3</sup> and excessive peri-implant stresses can lead to bone resorption depending on the nature of the bone.<sup>4</sup> Bruxism leads to parafunctional movements of the mandible leading to higher lateral forces maintaining the continual risk of higher peri-implant stresses and may contribute to late implant failures after successful osseointegration of the implants and prosthesis loading. Do et al.<sup>5</sup> reviewed the influences of different potential risk factors on the incidence of late dental implant failure and found that one of the common risk factors for late failure was related to a history of radiation therapy, periodontitis, bruxism, and early implant failure.

Bertolini et al.,<sup>6</sup> reviewed two clinical and four animal studies to find out whether traumatic occlusal forces lead to peri-implant bone loss. They found that lower occlusal overloads have not been associated with peri-implant bone loss; however, in the presence of excessive overload, it seemed to generate a peri-implant bone loss, even in the absence of inflammation. Zhou et al.<sup>7</sup> performed a meta-analysis to evaluate the relationship between bruxism and dental implant failure and found that the implant prostheses in bruxers had a higher failure rate than nonbruxers and the bruxism is a contributing factor in developing dental implant technical/biological complications. Manfredini et al.<sup>8</sup> reviewed the literature on bruxism as a risk factor for dental implant-supported prostheses, with 14 papers assessing biological complications and seven assessing mechanical complications. They concluded that bruxism is unlikely to be a risk factor for biological complications, while it may be a risk factor for mechanical complications.

The traumatic occlusal forces and their effect on peri-implant bone loss are poorly reported.<sup>6</sup> Owing to the high potential risk of implant and implant prosthesis failure due to traumatic occlusal forces caused by bruxism, this condition must be addressed with high priority in the implant treatment planning phase. The risks of bruxism must be well informed to the patients with bruxism before prescribing the implant treatment for them, even with the otherwise straightforward situation for implant treatment, to avoid late complications and potential frustrations in managing the

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complications. More clinical studies are recommended to determine the correlation between bruxism and the risk of implant/prosthesis failures.

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