

## EDITORIAL

# Bruxism and Abutment-screw Loosening in Dental Implants

<sup>1</sup>Sunil K Mishra, <sup>2</sup>Ramesh Chowdhary

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Abutment-screw loosening accounts for up to 33% of the implant prosthetic complications encountered. The incidence of screw loosening was more in cases of single implant crowns, and it is up to 59.6%. The various reasons for screw loosening may be due to unwanted occlusal stresses, inadequate screw tightening, fatigue of the material and cantilever prosthesis.<sup>1</sup> With the increasing implant retained prosthesis among the population, bruxism has raised concern, as its prevalence in the general population accounts up to 10% and emerged as one of the important etiology for temporomandibular disorders, and causative factor for failure of dental implants. Bruxism is characterized by movement disorder of the masticatory apparatus due to clenching and grinding of teeth during wakefulness and sleep.<sup>2</sup>

Bruxism has emerged as one of the major concerns for the success of dental implants. Bruxism has a significant effect on the biomechanical complications of the implant due to repeated dynamic and static loading, resulting in screw loosening and fracture of the screw of abutment. Manfredini et al. in their systematic review found bruxism as one of the critical risk factors for complications occurred in implant-retained prostheses in form of loosening and fractures of screws.<sup>3</sup> Zhou et al. in their research stated that implant failure or prosthesis failure is almost four times more in patients with bruxism when compared to non-bruxers patients.<sup>4</sup> Suneel et al. in their study found that among the twelve cases of bruxism, six cases reported with loosening of screw and four cases had screw fracture.<sup>5</sup> Anitua et al. in their study found that in twenty-two cases having a prosthesis, eight cases had screw or implant fracture and three cases had screw loosening.<sup>6</sup> Chrcanovic et al. had

studied about the dental implant failure and its correlation with bruxism and found that a failure of 13% for bruxers and 4.6% for non-bruxers.<sup>7</sup> Kirov et al. reported screw loosening within the first year in six patients out of 11 implants patients with bruxism.<sup>8</sup> Esposito et al. studied about the ideal time to load the implant and concluded that it is difficult to predict whether to immediately load the implants in bruxism patient or not, so every caution has to be taken when using these techniques.<sup>9</sup>

Proper occlusal evaluation is very important in bruxism patients rehabilitated with an implant-supported prosthesis. Any premature contacts during mandibular excursions can increase the loads on implants and must be avoided and eliminated.<sup>10</sup> During tightening of the abutment screw there is an elongation of screw due to preload or tension created within the screw joint. The joint of the screw is in continuous compression, and the spring-like effect is created due to preload, which is associated with elastic recovery transferred to the implant and abutment and pulling them together by creating a clamping force. In cases where the elastic recovery of the screw is exceeded due to excessive forces or overtightening, the screw will loosen. The manufacturer recommended torque should be strictly followed in bruxism cases to tighten an abutment screw so that screw loosening can be avoided. The roughness of the screw maintains the stability of the screw, but opposing surfaces are never in complete contact. When pressure is applied, the rough spots between screw and abutment gets flattened, and settling occurs by relaxation of the preload, so screw must be retightened after 5 to 10 minutes to regain the preload lost due to settling. In bruxism cases, screws that already suffered application of an initial torque can be used to reduce the incidence of screw loosening.

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<sup>1,2</sup>Professor

<sup>1</sup>Department of Prosthodontics, People's College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh, India

<sup>2</sup>Department of Prosthodontics, Rajarajeshwari Dental College and Hospital, Bengaluru, Karnataka, India

**Corresponding Author:** Sunil K Mishra, Professor, Department of Prosthodontics, People's College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh, India, e-mail: sunilmsr200@yahoo.co.in

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