

## Is there an association between fixed orthodontic treatment and initiation of eating disorders?

Orthodontic therapy (OT) is commonly performed in adolescents for the correction of craniofacial disharmonies and dental malocclusion. Oral hygiene maintenance and routine follow-up visits during the course of OT are critical factors that influence the success of planned OT as these patients are susceptible to gingival inflammation and enamel demineralization. Moreover, alterations in dietary intake and weight status have been reported in patients undergoing OT.<sup>1</sup> Adolescence is a time period during which individuals are managing psychologic issues such as self-esteem and acceptance by peers. It has also been reported that psychiatric disorders such as eating disorders (EDs) may manifest during the adolescent years. The EDs are psychiatric disorders characterized by abnormal routine eating-related behaviors,<sup>2</sup> and patients often correlate them with psychologic concerns related to their weight and body image. The most common forms of ED are anorexia nervosa (AN) and bulimia nervosa (BN). It is well-established that AN and BN are serious conditions that jeopardize the patients' general and psychologic health status.

Malocclusion is linked with a state of psychologic stress, particularly in young patients, and fixed OT restricts routine dietary habits (consumption of soft and non-sticky foods only for prolonged durations).<sup>1</sup> Therefore, there is a possibility that fixed OT may trigger the onset of EDs in susceptible patients. An exhaustive search of indexed literature was conducted and four case reports<sup>3-6</sup> were identified on this subject. In summary, results from 75% of the case reports<sup>3,4,6</sup> showed that OT triggers the onset of EDs in adolescent female patients. In these studies,<sup>3,4,6</sup> the patients developed sore mouth after the initiation of fixed OT and this could have influenced the routine dietary patterns of the patients. Carter et al<sup>1</sup> investigated the influence of fixed OT on routine eating habits in teenagers. According to the findings of this study,<sup>1</sup> the participants restricted food in-

take due to factors such as fear of breakage of orthodontic appliances, dietary advice given by their orthodontist, fear of social embarrassment, and alterations in taste perception. Moreover, some participants also reported that fixed OT had a significant impact on their routine dietary habits.<sup>1</sup> This suggests that fixed OT influences the patients' daily eating habits and may trigger the onset of EDs. Furthermore, in the case reports<sup>3-6</sup> assessed, oral health-related complications such as sore mouth, recurrent oral ulcers, generalized gingivitis, demineralizations, white spot lesions, diffuse erythema, and enamel erosions were manifested in all patients undergoing fixed OT. It is noteworthy that the planned OT was successfully completed in only one case report.<sup>5</sup> Since EDs are a complex psychologic issue, a multidisciplinary therapeutic approach is required for the treatment of malocclusion and dentoskeletal deformities in susceptible patient groups. Such an approach may potentially include consultations with nutritionists, psychiatrists, psychologists, restorative dentists, dental hygienists, and orthodontists.

From an ethical aspect, patients undergoing fixed OT should be informed about possible dietary and oral complications that may be encountered during the course of fixed OT. Likewise, consultations with nutritionists and psychologists for patients planned and/or scheduled to undergo fixed OT might help minimize the risk of onset of EDs. Routine dental follow-ups in patients undergoing fixed OT may play a role in the early detection of oral complications such as tooth erosion and enamel demineralization that may be potentially induced by latent EDs. The authors of the present editorial suggest that prescreening of potential candidates for future OT could be done using questionnaires focusing on a history of stress/anxiety disorders as well as EDs. It is, therefore, essential to educate the patients as well as health care providers about the potential bidirectional interaction between EDs and outcomes of OTs and vice versa.



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## References

1. Carter LA, Geldenhuys M, Moynihan PJ, Slater DR, Exley CE, Rolland SL. The impact of orthodontic appliances on eating: young people's views and experiences. *J Orthod* 2015;42:114–122.
2. Treasure J, Duarte TA, Schmidt U. Eating disorders. *Lancet* 2020; 395:899–911.
3. Lee JY, Kim SW, Kim JM, Shin IS, Yoon JS. Two cases of eating disorders in adolescents with dental braces fitted prior to the onset of anorexia nervosa. *Psychiatry Investig* 2015;12:411–414.
4. Jaffa T. Three cases illustrating the potential of dental treatment as a precipitant for weight loss leading to anorexia nervosa. *Eur Eat Disord Rev* 2007;15:42–44.
5. Shaw BM. Orthodontic/prosthetic treatment of enamel erosion resulting from bulimia: a case report. *J Am Dent Assoc* 1994;125: 188–190.
6. Corega C, Vaida L, Festila DG, et al. Dental white spots associated with bulimia nervosa in orthodontic patients. *Minerva Stomatol* 2014;62.



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