

**Editorial****Temporomandibular disorders due to clear aligners****Rohit Kulshrestha^{1*}**¹Specialist Orthodontist, Private Practice, Aesthetic Dental Center, Abu Dhabi, UAE**Received:** 20-02-2025; **Accepted:** 02-03-2025; **Available Online:** 07-03-2025

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Clear aligners have transformed orthodontic treatment by providing a more discreet and comfortable alternative to traditional braces. However, their impact on the temporomandibular joint (TMJ) remains an area of ongoing study and discussion. The TMJ, which connects the lower jaw (mandible) to the skull, plays a crucial role in essential functions such as chewing, speaking, and yawning. When the TMJ is affected by disorders, known as temporomandibular disorders (TMDs), individuals can experience pain, discomfort, and restricted movement.

1. Understanding Temporomandibular Disorders (TMDs)

TMDs encompass a variety of conditions that impact the TMJ and surrounding muscles. Symptoms may include jaw pain, headaches, clicking or popping sounds, limited jaw movement, and facial discomfort. The causes of TMDs are multifaceted, involving genetic predispositions, environmental factors, and behavioural habits. Since orthodontic treatments, including clear aligners, influence jaw positioning and bite alignment, their potential effect on TMJ health is often examined.

2. Clear Aligners and TMJ Health

Clear aligners work by gradually shifting teeth into proper alignment, improving bite function, and potentially reducing stress on the TMJ. Unlike traditional braces, these aligners are removable, allowing patients greater control over their treatment and making oral hygiene maintenance easier. However, the relationship between clear aligners and TMJ health is not entirely straightforward.

3. Potential Benefits of Clear Aligners for TMJ Health

Research indicates that one of the primary advantages of clear aligners is their ability to correct malocclusions. Proper bite alignment helps distribute chewing forces more evenly, which can alleviate strain on the TMJ. In cases where a misaligned bite contributes to TMJ dysfunction, improving stability through orthodontic treatment—especially non-invasive options like clear aligners—can provide relief. A 2024 study published in *Orthodontics & Craniofacial Research* found that 45% of patients with TMJ symptoms reported improvement following aligner-based treatment.

4. Potential Risks of Clear Aligners for the TMJ

Despite their benefits, clear aligners can also pose challenges for TMJ health. One concern involves the use of intermaxillary elastics, which help correct bite discrepancies by applying additional force to the teeth. Research suggests that using elastics with clear aligners may increase the risk of TMDs or exacerbate existing symptoms. Patients undergoing treatment with aligners and elastics have reported increased pain, difficulty chewing, reduced jaw mobility, and heightened levels of stress and discomfort.

5. Bruxism and Clear Aligners

Bruxism, or teeth grinding, frequently coexists with TMDs. Clear aligners may function similarly to night guards by providing a protective barrier, which can help prevent excessive tooth wear and reduce TMJ pain caused by grinding. While aligners are not a direct cure for bruxism,

they can minimize its impact by evenly distributing forces and protecting tooth enamel.

6. Customization and Precision in Clear Aligner Treatment

One of the stand out features of clear aligners is their high level of customization. Each aligner is designed based on digital scans, allowing for precise tooth movements tailored to the patient's needs. Recent advancements have made it possible to track TMJ stress during treatment more effectively. A 2024 study in the *Journal of Oral Rehabilitation* highlighted that customized aligner treatment plans, which consider TMJ health, can help mitigate potential risks associated with orthodontic care.

7. Conclusion

Clear aligners provide an effective solution for correcting bite issues and improving overall oral function. However, their impact on TMJ health is multifaceted. While they may help alleviate TMJ-related symptoms by improving bite alignment and distributing forces more evenly, they can also present challenges, especially when used with intermaxillary elastics or for cases requiring significant molar adjustments. Individuals with TMDs or those at risk should seek a comprehensive evaluation from a qualified orthodontist to ensure their treatment plan supports both dental alignment

and TMJ health. Ongoing research is essential to better understand the long-term effects of clear aligners on TMJ function and to refine treatment approaches for optimal outcomes.

8. Source of Funding

None.

9. Conflict of Interest

None.

References

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