



Guest Editorial

Comparing clear aligner treatments with multi-bracket systems: Advantages and disadvantages

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ABSTRACT

This editorial presents a comparative analysis of two widely used orthodontic treatment modalities: Clear Aligner Therapy (CAT) and Multi-Bracket Systems (MBS). Both approaches offer distinct advantages and disadvantages based on aesthetics, comfort, patient compliance, and treatment complexity. Clear aligners are favored for their discreet appearance, patient comfort, and ease of maintaining oral hygiene, making them especially appealing to adults and adolescents. However, their effectiveness is closely tied to patient compliance, and more complicated orthodontic cases might not be a good fit for them. However, multi-bracket systems provide superior control for treating complex malocclusions and do not depend on patient adherence for success, though they pose challenges regarding aesthetics, oral hygiene, and comfort. This editorial examines the current literature, highlighting both the strengths and limitations of these two systems. In conclusion, the choice of orthodontic treatment should be personalized, considering each patient's unique needs and compliance levels, to achieve optimal results.

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Dear Editor,

Clear aligner therapy (CAT) and multi-bracket systems (MBS) are two popular orthodontic treatment options, each with distinct advantages and disadvantages. Clear aligner therapy offers several notable benefits over traditional multi-bracket systems. One key advantage is aesthetics; clear aligners are virtually invisible, making them a preferred choice for individuals seeking a discreet orthodontic treatment option.¹ Additionally, clear aligners provide

greater comfort for patients due to their smooth and custom-fit design, reducing the likelihood of soft tissue irritation commonly associated with traditional braces.² Since the aligners are detachable, maintaining oral hygiene is simpler than with fixed equipment, which is another advantage of clear aligner therapy that is mentioned along with periodontal health.³ Additionally, clear aligners can produce segmented tooth movement and provide predictability in tooth movement, which may reduce treatment duration.⁴

Clear aligner therapy, provides a number of notable advantages over traditional multi-bracket systems. The

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primary benefit is its excellent attractiveness. Since clear aligners are almost undetectable, they are a preferred choice for individuals seeking a discreet orthodontic treatment option. This is particularly appealing for adults and adolescents who may feel self-conscious about wearing visible braces.¹

Comfort is another significant advantage of clear aligners. Because aligners are personalized from uniform plastic, there is less chance of soft tissue irritation, which is sometimes linked to traditional braces' metal brackets and wires.² Patients also appreciate the removability of aligners, which allows them to maintain better oral hygiene by easily brushing and flossing their teeth. This feature can help lower the probability of tooth decay, periodontal disease, and plaque accumulation, which are more challenging to manage with braces.^{3,5,6}

Clear aligner therapy also offers predictability in tooth movement and can achieve segmented movement of teeth, potentially shortening treatment duration.⁴ Digital treatment planning gives the orthodontist the ability to visualize and plan out the entire course of treatment in advance, providing the opportunity for changes when necessary for optimum results. This precise control can lead to more efficient and effective treatment outcomes.

However, the success of clear aligner therapy largely depends on patient compliance. Aligners must be worn for 20-22 hours per day to be effective, and non-compliance can lead to extended treatment times and suboptimal results. Additionally, clear aligners may be less effective in treating severe malocclusions or cases requiring significant tooth rotations.^{7,8} Root resorption has also been identified as a potential risk associated with clear aligner therapy, although studies have shown varying results in comparison to fixed appliances^{9,10}. Lastly, clear aligner therapy can be more expensive than traditional braces, potentially making it less accessible for some patients.

That said, multi-bracket systems have advantages of their own when contrasted with clear aligners. These systems are often more superior to clear aligners in the treatment of severe misalignments and complex malocclusions.⁷ Because of their reputation for being adaptable in treating a range of orthodontic problems, multi-bracket systems are a preferred choice for cases requiring extensive tooth movement.^{7,11} Additionally, fixed appliances like multi-bracket systems may be more suitable for patients with compliance issues, as they do not rely on patient cooperation to wear the aligners consistently.¹²

Multi-bracket systems are particularly effective for complex orthodontic cases. They provide precise control over tooth movement, making them suitable for severe malocclusions and significant alignment corrections.⁷ Since braces are fixed appliances, they eliminate the issue of patient compliance. Once they are placed by an orthodontist, they remain in place until removed by a professional, ensuring continuous treatment without relying on the

cooperation of the patient.¹²

Traditional braces do have some significant drawbacks, though. Their visibility is the biggest disadvantage. Metal brackets and wires are noticeable and can make patients, especially adults, feel self-conscious.² Patients wearing braces must also refrain from eating certain foods, like hard, sticky, or chewy meals, as they may damage the brackets or wires. This can be annoying and limit their dietary options.³

Discomfort is another issue connected to conventional braces. The metal wires and brackets may irritate the cheeks and periodontal tissues, also broken wires or brackets can cause discomfort and even injury, requiring emergency orthodontic visits.² Additionally, traditional braces may lead to enamel demineralization and white spot lesions due to difficulties in maintaining oral hygiene with fixed appliances.^{13,14}

Recent studies provide valuable insights into the performance and patient experiences with both clear aligner therapy and multi-bracket systems. Studies show that while clear aligners can effectively manage mild to moderate orthodontic cases, traditional braces remain superior for more complex movements.^{15,16} De Felice et al. also noted that obtaining accurate interproximal enamel reduction was one of the difficulties in utilizing clear aligners.³

Patient satisfaction tends to be higher with clear aligners due to their aesthetic appeal and comfort. However, the need for high compliance can be a limiting factor. Conversely, traditional braces, while less aesthetic, provide a reliable and effective solution for a broader range of orthodontic issues. The two systems may have different treatment durations. According to some research, because clear aligners can digitally plan and predict tooth movements, they may be able to provide quicker treatment timeframes for specific situations.^{1,2,4} However, patient compliance and the case's intricacy play a major role in this.

Both clear aligner therapy and the multi-bracket system have distinct advantages and disadvantages that influence their suitability for different orthodontic needs. Clear aligners offer superior aesthetics, comfort, and ease of maintaining oral hygiene, making them a popular choice among adults and teenagers. However, their efficiency is closely linked to the compliance of a patient, and they cannot be applied to all malocclusions in orthodontics.

While traditional braces ensure effectiveness for a wide range of orthodontic problems, including highly complex cases of malposition, they are proving to be very reliable. They require less compliance from the patient but come with challenges related to aesthetics, oral hygiene, and comfort. Ultimately, clear aligners versus traditional braces must be settled upon by detailed assessment of the needs, preferences, and lifestyle of a patient. In such a case, an orthodontist has to assess the complexity of a case, the capability of a patient to comply, and desired results to recommend the most appropriate modality of treatment.

In summary, clear aligner therapy offers advantages in terms of aesthetics, comfort, and oral hygiene, while multi-bracket systems excel in treating complex malocclusions and ensuring effective tooth movement. With special advantages and drawbacks for each modality of treatment, proper knowledge about them is necessary to be had by an orthodontic practitioner in order to enable the fitting treatment plans for various subjects effectively.

As the field of orthodontics continues to evolve, it is crucial for practitioners to stay informed about the latest advancements and research findings. The choice of treatment should be based on an all-inclusive assessment of the needs and preferences of the patient. Keeping in view the benefits and shortcomings unique to both approaches, an orthodontist strives to provide optimal care to his patients.

Tepedino et al. evaluated the predictability of torque movements of anterior teeth using clear aligners and found that while clear aligners can effectively achieve such movements, the predictability is not always consistent.² This variability underscores the need for orthodontists to carefully monitor and adjust treatment plans as necessary.

Almogbel highlighted about the cosmetic benefits of clear aligners, pointing out that adults and teenagers who might be self-conscious about wearing conventional braces find them especially appealing due to their almost undetectable appearance.^{1,17} This aesthetic benefit, coupled with the comfort and oral hygiene advantages, makes clear aligners a popular choice despite their limitations in treating more complex cases.

Clear aligner therapy has been shown to provide benefits for patients with TMD. The smooth and custom-fit design of clear aligners can offer a more comfortable alternative to traditional braces, potentially reducing the risk of exacerbating TMD symptoms.¹⁸ It has been suggested by some studies that clear aligners help in the relief of TMD by producing more favorable occlusal relations or by reducing excessive forces applied to the temporomandibular joints.^{9–22} Research has indicated that both clear aligner therapy and multi-bracket systems can be used effectively in managing TMD symptoms, but the outcomes largely depend on individualized treatment planning. Personalized orthodontic treatment, considering the patient's TMD status, can lead to significant improvements in both orthodontic outcomes and TMD symptoms.¹⁹

In conclusion, both clear aligner therapy and multi-bracket systems have their place in orthodontic treatment. Clear aligners have high aesthetics, comfort, and oral hygiene benefits; hence, they are more cosmetically pleasing to many patients. However, their efficiency is highly dependent on the patient's compliance. Multi-bracket systems, while less aesthetically pleasing, provide a robust and reliable solution for complex orthodontic problems and do not require patient compliance for their effectiveness. It is therefore upon the orthodontist to carefully weigh each

patient's needs and preferences against the possible course of treatment and tailor it appropriately in pursuit of the best results for their patients.

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Conflict of Interest

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