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Short Communication

Orthodontic Clear Aligner Therapy Risk Factors for Composite Attachment Loss

Munitz Hoffmann*

Department of Pediatric Dentistry, Centro Escolar University Graduation School Manila, Manila, Philippines

ABOUT THE STUDY

Due to the rising demand, the clear aligner orthodontic treatment industry is quickly expanding. One of the early adopters of transparent aligner therapy, Align Technology Inc, introduced invisalign to the orthodontic market. Since then, other variants of clear aligners have been created and made commercially available. These tools enable orthodontists to treat a variety of malocclusions, from minor crowding to more serious situations [1, 2].

Although orthodontic fixed appliances have shrunk and become more aesthetically acceptable over time, they still draw more criticism than clear aligners due to their unattractive appearance and difficult to use nature. Additionally, clear aligners are advised for patients who are at a high risk of developing gingivitis since research suggests they may be better for periodontal health than fixed appliances. Additionally they discovered that using clear aligners for the first three months of treatment can cause non-pathogenic changes to the subgingival microbiota. Additionally, compared to conventional fixed appliances, it has been found that patients treated with aligners may experience less root resorption and a lower chance of developing White Spot Lesions (WSLs) [3].

In contrast to conventional permanent appliances, clear aligner therapy uses a series of appliances made from a transparent polymer to cover the teeth. A computer-aided design is used to plan the dentition's progress and prescribe various quantities of tooth adjustments. For many clear aligners, aligner attachments play a crucial supporting role in transferring forces from the aligner to the tooth root and crown. Most of the time, attachments are inserted automatically at predetermined places on teeth that are chosen by a computer programme. These attachments regulate the point at which force is applied, its direction, and its intensity. Different types of aligner attachments aid to improve retention and control over specific tooth movements when necessary. Composite resin is used for attachments and is adhered to the tooth's surface. Loss of adhesion to the tooth surface might result from bond failure or patient neglect. Significant clinical issues brought on by attachment loss may lengthen treatment times, increase the frequency of follow-up visits, and affect the treatment's outcome [4].

Attachment loss may occur as a result of risk factors, including operator- and patient-related variables. According to a new study, wearing aligners while eating can avoid attachment loss, however the typical attachment and frequent aligner removal (greater than or equivalent to five times per day) may cause attachment loss. The effectiveness of clear aligner orthodontic treatment has been the subject of numerous researches, however the prevalence of composite attachment loss and its impact on clear aligner therapy have not received as much attention. As a result, the current study's objective is to evaluate the prevalence of composite attachment loss in clear aligner orthodontic therapy as well as its risk factors [5].

CONCLUSION

According to our research, the diverse attachment sites-maxillary or mandibular, left or right-did not have an impact on the attachment loss rate. However, various tooth locations might have an impact on the attachment loss rate. The largest rate of loss occurs with molar attachments, possibly as a result of their unique shape, which makes them unsuitable for bonding attachments and causes the height of the buccal surface's contour to be distant from the cervical. The impacting forces delivered to the attachment during the wearing and taking out of the clear aligners are increased due to the molar's unusual position. On the other side, the available working space is constrained when executing molar attachment, making it challenging to separate the buccal surface during bonding.

Correspondence to: Munitz Hoffmann, Department of Pediatric Dentistry, Centro Escolar University Graduation School Manila, Manila, Philippines, E-mail: munitz.h@mail.com

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