

Title: Impact of various aligner auxiliaries on orthodontic activity: A systematic Review and Network Meta-analysis

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Abstract: Background It is imperative to analyze the forces and moments produced by various auxiliaries in order to select the optimal attachments and, eventually, to maximize the efficacy and efficiency of orthodontic therapy. Through this investigation, we aimed to highlight the impact of various aligner auxiliaries on orthodontic activity in patients undergoing orthodontic treatment on a pre/post treatment protocol basis. Methods After a thorough search of the online journals, a total of 482 documents were found using keywords such as “Orthodontic Treatment”, “Aligner Auxiliaries”, “Elastic Ligatures” and “Tooth Movement.” The database research, elimination of duplicate studies, data extraction and risk of bias were performed by the authors independently. This systematic review and network meta-analysis included prospective studies and clinical trials to evaluate research that had looked at the impact of various aligner auxiliaries on orthodontic activity in patients undergoing orthodontic treatment. Results Eight investigations of varying designs were selected for this review. The majority of investigations revealed that aligner auxiliaries significantly improve anterior root torque, rotation, and mesio-distal (M–D) movement, as well as posterior anchoring. They also significantly improved anterior root rotation. However, few studies have presented inconsistent or non-statistically significant findings. Conclusion Auxiliaries for aligners also appear to improve extrusion and other orthodontic movements, but there is insufficient evidence to support these claims. No research has examined posterior buccolingual expansion or tilting. Clarification of the effect of attachments and their related variables requires additional clinical investigations.

Keywords: Orthodontic treatment, Aligner auxiliaries, Elastic ligatures, Tooth movement, Root torque Rotation

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