

Title: Effectiveness of Early Intervention with Palatal Expansion Versus Late Orthodontic Treatment for Correcting Maxillary Crowding

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Abstract: Background:Maxillary crowding is a common orthodontic issue that can impact a patient's oral health and overall well-being. The timing of orthodontic treatment plays a crucial role in achieving optimal results.

Materials and Methods:Thirty patients who received early intervention with palatal expansion (Group A) and 30 patients who underwent late orthodontic treatment (Group B) were included in this study. The age range for Group A was 8–10 years, while Group B had an age range of 16–18 years. Pretreatment and posttreatment records, including dental models and cephalometric radiographs, were analyzed to assess the effectiveness of the respective treatments.

Results:In Group A, the mean duration of treatment was 12 months, and the maxillary crowding was corrected by an average of 4.5 mm. In Group B, the mean treatment duration was 24 months, and maxillary crowding was corrected by an average of 3.2 mm. The early intervention group (Group A) exhibited a statistically significant reduction in treatment duration and greater correction of maxillary crowding compared to the late orthodontic treatment group (Group B) ($P < 0.05$).

Conclusion:Early intervention with palatal expansion is an effective approach for correcting maxillary crowding, leading to shorter treatment duration and greater improvement compared to late orthodontic treatment.

Keywords: *Cephalometric radiographs, dental models, early intervention, late orthodontic treatment, maxillary crowding, oral health, orthodontic intervention, palatal expansion, patient satisfaction, treatment duration*

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