

Predictability of Maxillary Dentoalveolar Expansion Using Clear Aligners in Different Types of Crossbites

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Background

Introduction: The aim of this study was to determine the efficacy and predictability of maxillary dentoalveolar expansion clear aligners in unilateral, bilateral, and single-tooth types of crossbite.

Methods: This prospective analytical study enrolled adults with dentoalveolar posterior crossbite. Orthoanalyzer™ 1.7 software was used to analyze stl files of digital models before treatment (T1), predicted posttreatment outcome (T2), and observed outcome (T3). Changes in intercanine width, first and second interpremolar widths, and intermolar width were compared using a mixed ANOVA model for repeated measures ($\alpha=0.05$). The study included 46 patients aged 20–60 years, 15 with unilateral, 15 bilateral, and 16 single-tooth crossbite

Results: In all crossbite groups, expansion was largest at the second premolar level (unilateral: 2.54 mm; bilateral: 4.86 mm; single-tooth: 3.41 mm) (ANOVA $p < 0.001$) and smallest at the canine level. Expansion predictability was 90% at the first premolar level in the single-tooth crossbite group, 86% at the second premolar level in the bilateral crossbite group, and 79% at the second premolar level in the unilateral crossbite group. No significant difference was found between the predicted and observed expansion in any crossbite group.

Conclusion: Dentoalveolar expansion using differential anchorage techniques with clear aligners is highly predictable, although the treatment plan should consider overcorrection of the expansion movement to achieve the planned outcome

Biography

The PROF. JUAN CARLOS RIVERO LESMES, is a stomatologist, pioneer in Spain in the INVISALIGN technique, with more than 30 years of professional practice dedicated exclusively to orthodontics. His extensive experience in the world of university teaching and in Clinical and Experimental research began as an internal student in the Department of Prophylaxis, Stomatology and Orthodontics of the Complutense University of Madrid, where he was Full Professor since 1987.