

A CBCT evaluation of molar uprighting by conventional versus microimplant-assisted methods: an *in-vivo* study

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DOI: <https://doi.org/10.1590/2177-6709.23.3.35.e1-9.onl>

Objective: The aim of this prospective study was to compare the three-dimensional effects of the conventional helical uprighting spring (CA) and the mini-implant assisted helical uprighting spring (MIA), using CBCT scans.

Methods: Twenty patients with mesially tipped second mandibular molars were divided into two groups: CA group, in which 10 patients were treated using a conventional helical uprighting spring with conventional anchorage; and MIA group, in which 10 patients were treated using a mini-implant supported uprighting spring. Molar uprighting was observed in both groups for a period of four months. Two standardized 11×5-cm CBCT sections of the mandible were taken, being one prior to uprighting and one at the end of the four month follow-up. Statistical analyses at the beginning of treatment and after a 4 month follow-up were performed, with a significance level of $p < 0.05$.

Results: The mean amount of change in mesiodistal angulation in the MIA group was $8.53 \pm 2.13^\circ$ ($p < 0.001$) and in the CA group was $9.8 \pm 0.5^\circ$ ($p < 0.001$). Statistically significant differences were found between the two groups with regard to buccolingual inclination of canine, first and second premolars ($p < 0.05$), second molar ($p < 0.001$) and extrusion of second molar ($p < 0.05$).

Conclusions: The mean amount of change in the mesial angulation of the second molar in the CA as well as the MIA groups was similar. MIA, which used mini-implant as a source of anchorage, was more effective in preventing movement of the anchorage teeth as well as preventing extrusion of the second molar in the vertical plane, when compared to the CA group, which used dental units as a source of anchorage.

Keywords: Dental implant. Molar. Cone-beam computed tomography.

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How to cite: Martires S, Kamat NV, Dessai SR. A CBCT evaluation of molar uprighting by conventional versus microimplant-assisted methods: an in-vivo study. *Dental Press J Orthod*. 2018 May-June;23(3):35.e1-9. DOI: <https://doi.org/10.1590/2177-6709.23.3.35.e1-9.onl>

Submitted: March 31, 2017 - **Revised and accepted:** November 27, 2017

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