

**Republic of Iraq
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And Scientific Research
University of Baghdad
College of Dentistry**



Acceleration of Canine Movement by LASER Assisted Flapless Corticotomy

[An innovative Approach in Clinical Orthodontics]

A Thesis

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Abstract

Corticotomy-assisted orthodontic treatment is done to induce a state of increased tissue turnover and transient osteopenia, which is followed by a faster rate of orthodontic tooth movement. It is considered as an adjunct treatment option for orthodontic treatment of adults.

Aim of the Study: To elucidate the effectiveness of a new surgical approach for acceleration of maxillary canine retraction in human with laser assisted flapless corticotomy and evaluate its effect on vitality of pulp and gingival sulcus depth.

Materials and methods: the sample comprised 15 Iraqi patients (9 females and 6 males; mean age 21.7), who were required extraction for their maxillary first premolars followed by retraction of the canines as part of their orthodontic treatment plan. The study was designed as a split-mouth study. Decortications were done in the second stage of orthodontic treatment using Er:YAG laser to perform series of holes mesially and distally to the canine at the side with more space between the canine and second premolar without reflecting a surgical flap. The net canine movements and molar anchorage loss were calculated after six weeks. Vitality test, radiographical assessment and gingival sulcus depth were investigated.

Results: The canines on the laser corticotomy side showed statistically higher mean value of retraction than their controls during six weeks period. There was no significant difference in anchorage loss between sides. pulp vitality response and post surgery gingival sulcus depth showed no significant difference between the pre-laser and post-laser surgery.

Conclusion: Based on the result of our study, flapless laser assisted corticotomy can be considered for acceleration of orthodontic tooth movement in humans.