

Orthodontic Treatment and Retention Changes Following Selective Alveolar Decortication



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Orthodontics

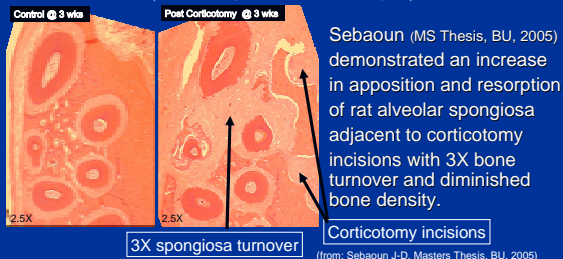


Introduction

Decortication-facilitated orthodontics is a relatively new technique combining braces and alveolar corticotomy plus grafting. (Wilcko, WM, et al. Internat J Perio Restor Dent 21:9-19, 2001) Dental arches are decrowded and finished in 60-70% less active orthodontic treatment time. (Wilcko WM, et al. World J Ortho 4:197-205, 2003)



Decortication is an incision made into cortical bone that is made after the orthodontic appliances have been placed. Surgical scarring of alveolar bone induces an increase in hard and soft tissue turnover, a process collectively known as Regional Acceleratory Phenomena or RAP. (Frost HA, Orthop Clin of N Amer 12:725, 1981)



If the purpose of orthodontic retention is to hold the treatment result until the periodontium reorganizes (turns-over), then enhanced alveolar turnover should reduce relapse of treatment outcome.

Objectives

- 1) To evaluate non-extraction orthodontic treatment and retention outcomes with selective alveolar decortication plus augmentation grafting (AOOtm).
- 2) To assess post orthodontic treatment changes during retention following selective alveolar decortication and augmentation grafting.

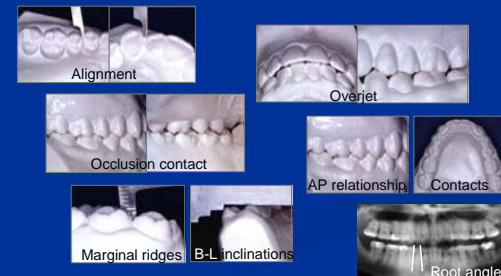
Methods & Materials

Sample

All patient subjects (n=51) underwent selective alveolar decortication (AOOtm) and were treated by the same 2 clinicians (WMW & MTW). Selection criteria included: non-extraction therapy with straight-wire fixed orthodontic appliances, availability of study casts and panoramic radiographs at immediate post treatment (T1), at least 1 year retention (T2), and all patients treated during retention using the same protocol.

Data of Interest:

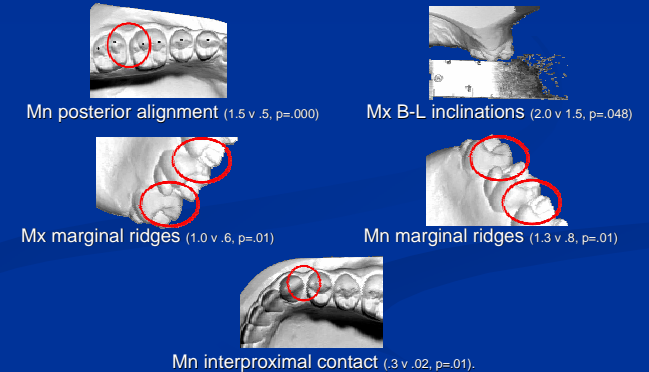
Using the 9 ABO Objective Grading System (OGS) criteria (alignment, occlusion contact, marginal ridges, B-L inclinations, overjet, AP relations, interproximal contacts, root angulations, and total score) subdivided into 17 criteria (Mx, Mn, anterior, posterior), study cast and panoramic records were scored at immediate post treatment, (T1), at least 1 year retention (T2) and at least 2 years retention (T3).



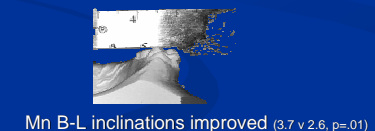
Results

From Immediate Post Tx to Retention-1 (T1 to T2; n=51)

Wilcoxon signed-rank non-parametric testing revealed 5 of 17 study variables improved ($p < .05$) from T1 to T2 (n=51) as follows:



From Retention-1 to Retention-2 (T2 to T3; n=24)



Conclusion

Orthodontic treatment combined with selective alveolar decortication and augmentation grafting resulted in improved orthodontic treatment outcome during the retention period; **relapse was absent**. The conclusions are likely due to tissue memory loss due to high tissue turnover from AOOtm, and increased thickness of cortices and alveolar volume from the augmentation grafting.