

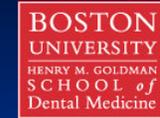
Influence of DI on Orthodontic Outcome Following Selective Alveolar Decortication



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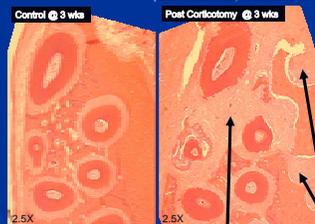


Introduction

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)



Sebaoun (MS Thesis, BU, 2005) demonstrated an increase in apposition and resorption of rat alveolar spongiosa adjacent to corticotomy incisions with 3X bone turnover and diminished bone density.

3X spongiosa turnover
(from: Sebaoun J-D, Masters Thesis, BU, 2005)

Discrepancy Index (DI) was released by the ABO as a measure of pre-treatment malocclusion severity. It is expected that orthodontic treatment outcome and retention success is related to severity of initial malocclusion

Objectives

To evaluate post treatment and retention outcomes relative to pre-treatment malocclusion severity in a population of patients treated with orthodontic therapy facilitated by selective alveolar decortication.

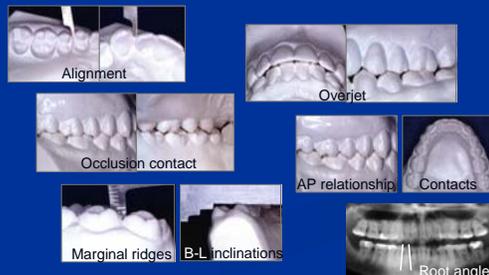
Methods & Materials

Sample

DI scores were derived from archived records of 77 patients treated by Accelerated Osteogenic Orthodontics™ (AOO™) by the same orthodontist (WMW) and periodontist (MTW). Pre-treatment study casts and radiographs for the 77 subjects were grouped into 4 groups according to total DI score or severity: 1=0-9, 2=10-19, 3=20-29, and 4=30+.

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; n=77), at least 1 year retention (T2; n=56) and at least 2 years retention (T3; n=23).



Results

At Post Treatment (n=77)

Kruskal Walls H-testing revealed statistical differences between DI severity group 3 (DI scores = 2 to 29) and the following DI severity groups:



Occlusion Relationship

group 3 vs group 1: 7.6 vs 1.7 (p=.001)
group 3 vs group 2: 7.6 vs 2.2 (p=.001)

At Retention-1 (n=56)



Occlusion Relationship

group 3 vs group 1: 7.9 vs 0.4 (p<.001)
group 3 vs group 2: 7.9 vs 2.3 (p=.003)



Overjet

group 3 vs group 1: 6.1 vs 2.2 (p<.02)

OGS Total Score

Total Score

group 3 vs group 1: 31.71 vs 15.2 (p<.03)

Conclusion

In the AOO™ sample studied, treatment of malocclusions with DI severity scores between 20 and 29 resulted in higher OGS scores for occlusion relationship at T1 and T2 and for overjet and OGS total scores at T2.