Orthodontic Treatment and Retention Changes Following Selective Alveolar Decortication

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Introduction

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

Methods & Materials
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 N Amer 12:725, 1981)

Sample
All patient subjects (n=51) underwent selective alveolar decortication (AOOtmtm) and were treated by the same 2 clinicians (WMW & MTW). (WMW & MTW)

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 angles, 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 all patients treated during retention using the same protocol.

Result
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:

- Mn posterior alignment: (1.5 v 5, p=.000)
- Mx B-L inclinations: (3 v 1.5, p=.006)
- Mx marginal ridges: (7 v 6, p=.01)
- Mx interproximal contact: (3 v 2, p=.001)
- Mn B-L inclinations improved: (3.7 v 2.6, p=.01)

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 AOOOtmtm, and increased thickness of cortices and alveolar volume from the augmentation grafting.