Periodontally Accelerated Osteogenic Orthodontics (PAOO)

a.k.a.Wilcodontics (TM)

COLIN S. RICHMAN

PERIODONTICS • ORAL MEDICINE • DENTAL IMPLANTS

D.M.D., B.D.S., L.D.S., R.C.S., H.D.D

DIPLOMATE, AMERICAN BOARD OF PERIODONTOLOGY

1305 Hembree Rd, Suite 104
Roswell, GA 30076

P 770.442.1010
C 404.784.7272
F 770.475.7658

CSR@DRCOLINRICHMAN.COM
WWW.DRCOLINRICHMAN.COM

Risk factors associated with conventional orthodontics. Above—gingival recession following orthodontic treatment, many years post-treatment. 67 year old

Below: Iatrogenic root resorption + gingival. recession. 29 year old (Pan and clinical)

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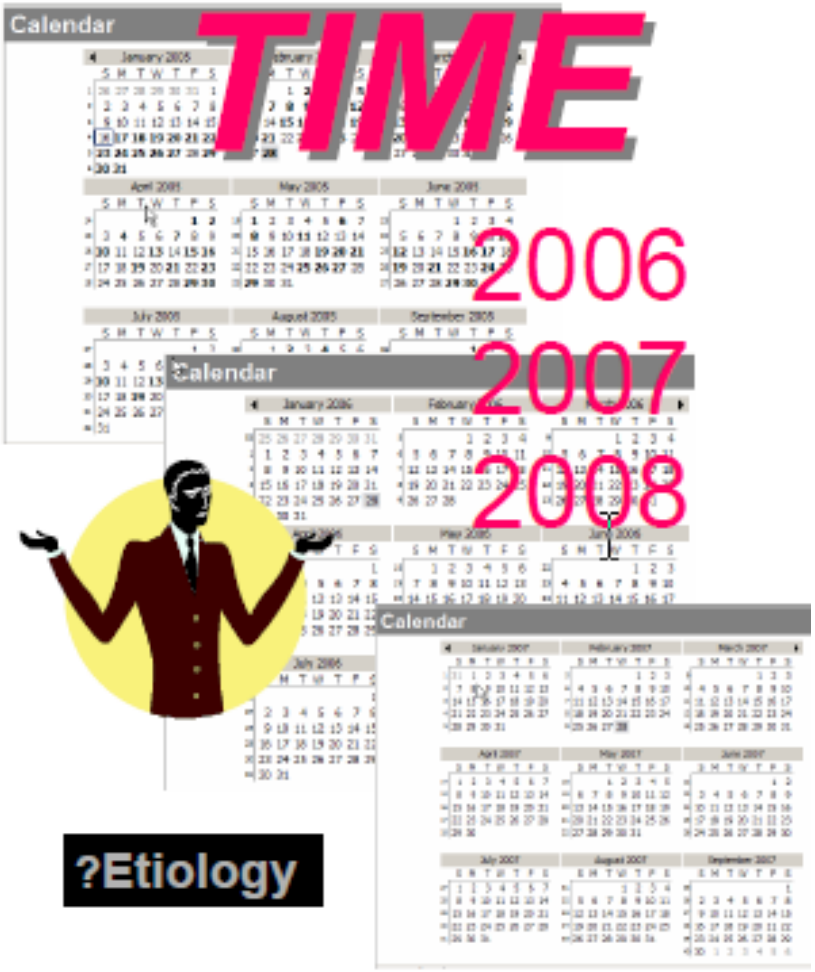
Risk factors associated with conventional orthodontic therapy. Complications include: recession, relapse, decalcification, plus patients not committing to treatment due to extensive time involved in undergoing therapy..



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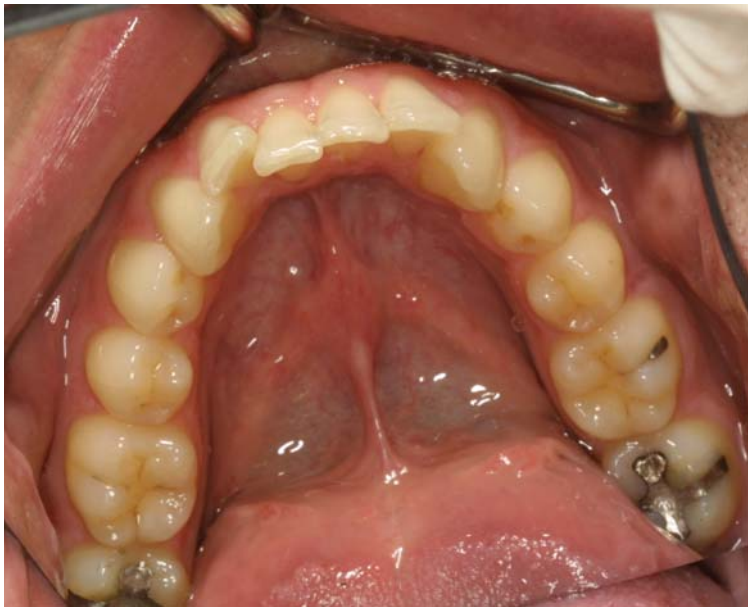
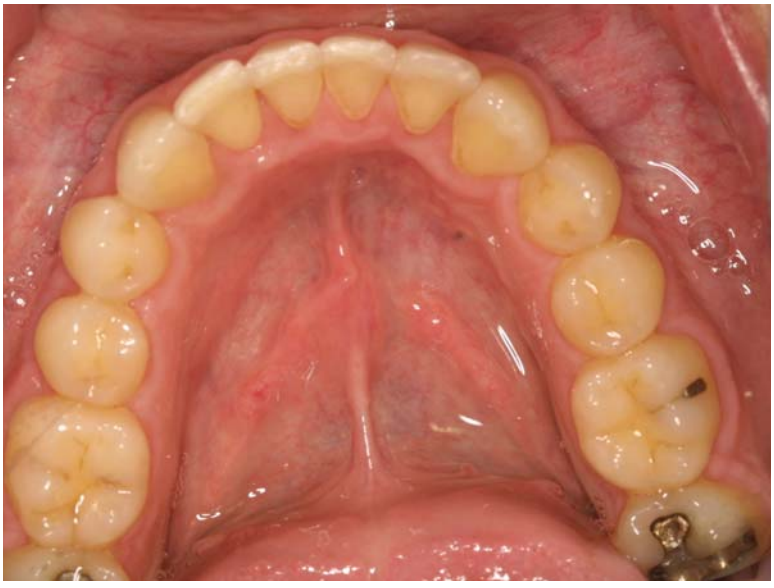
A

Pre-treatment. Severe overbite relationship with excessive tooth wear. (ro_m)



7 year post treatment. Absolute stability (ro_m)

A



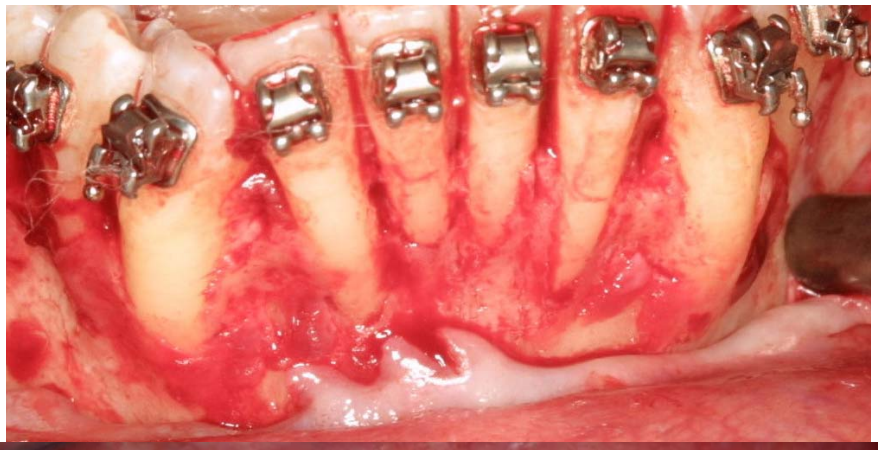
B

7 months active orthodontic treatment with PAOO.

Middle image: note risk of fenestrations and dehiscences

Lower image—5 years stability.

B



Orthodontic therapy previously completed twice.

Third program at our office with PAOO.

Note 6 year of tooth and gingival stability.

Left side pre-treatment, right side 6 year post treatment stability. (ka_p)

C






D

Pre treatment left side, 4 year post treatment right side.

Note long-term muco-gingival stability (an_h)



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Surgical views; Note dehiscences and fenestration. (an_h)

D






Orthodontic treatment completed in 9 months, followed by restorative treatment.

Above, pre treatment, opposite page, 5 years post treatment .Note extent of mandibular anterior intrusion Pnt: Bla

E

Diagnosis: Constricted envelope of function, due to premature removal of bicuspid teeth. Treatment plan, open bicuspid spaces and develop an appropriate overjet/overbite relationship. Orthodontic treatment time—8 months. Pre-treatment images above; post treatment images below. (He_D)

F

7 year post treatment. Bicuspid spaces opened in the mandible and dental implants placed to replace previous extracted bicuspids creating a more favorable overbite, overjet relationship. (Low lip line. Note extent of mandibular anterior intrusion). (He_d)

F

G

Two dimensional imaging is deceptive in evaluating the amount of facial bone. Thus the need for CBCT assessment and the need for a RSBI evaluation prior to initiating orthodontic therapy.

Note the abundant presence of dehiscences and fenestrations seen at the time of PAOO surgery. Abundant soft tissue is deceptive.

Pre-treatment left side, 5 year post treatment, right side. (St_g)

5 year post treatment. Muco-gingival complexes are all stable. (St_g)

G

H 18

High risk patient including:

Existing gingival recession,

Crowded mandibular anterior teeth.

Root proximity problems, and thin interdental bone.

Periodontitis in all posterior teeth (6-8mm probing depths). (wh_m)

H

8 months of orthodontic treatment with four bicuspid extractions resulted in favorable tooth alignment, no iatrogenic orthodontic complications and stability 8 years later. (wh_m)

Note long-term stability of all muco-gingival complexes especially #6 and #11.

Ankylosis:

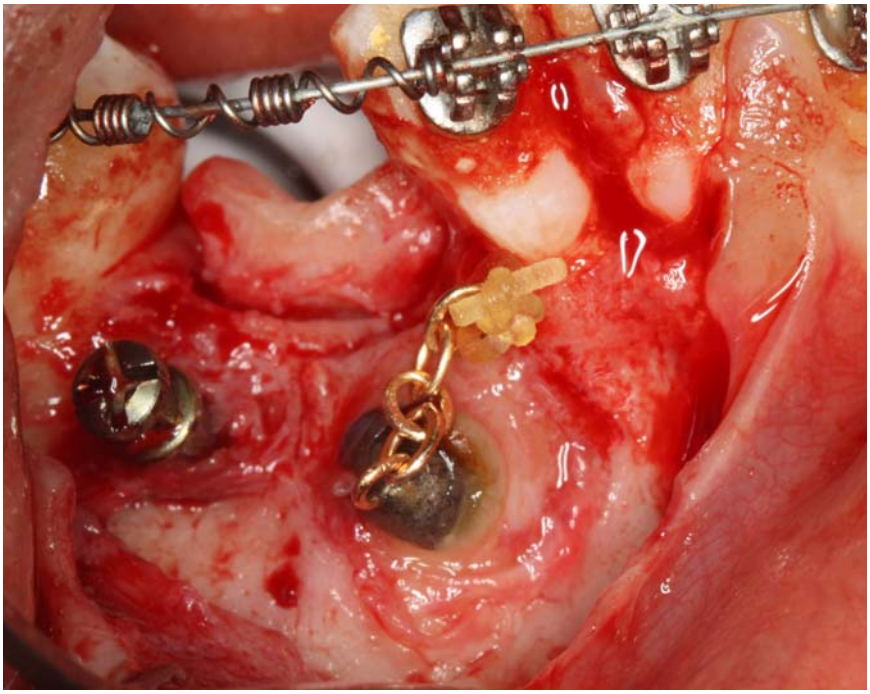
3 years of traditional orthodontic treatment failed to move #8/9 into position. 3 months following PAOO and luxation, #8 and #9 are in correct orthodontic alignment.

Ankylosis: #27 ankylosed and not responding to traditional orthodontic treatment despite previous exposure.

PAOO and luxation, #27 in vertical orientation three months later.

Note quality of gingival tissue around #27. (lower right)

J

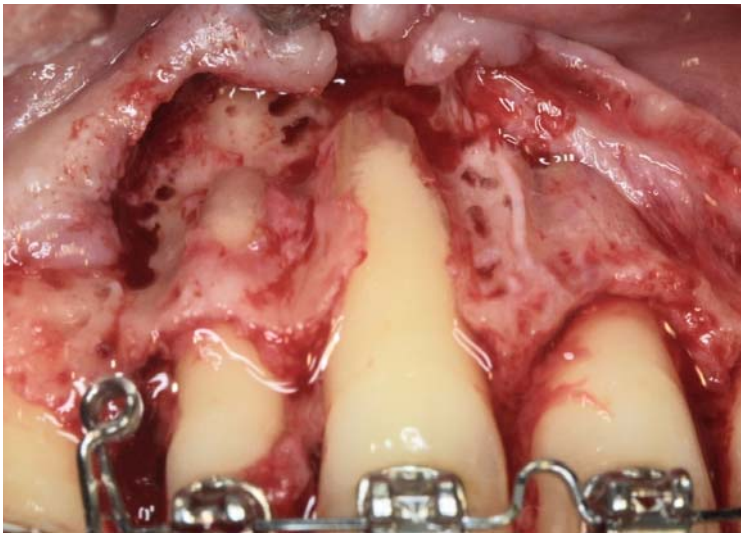


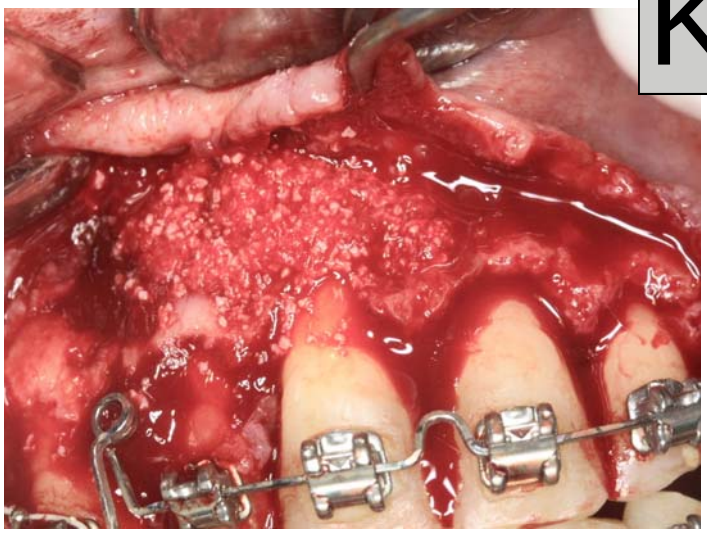
Ankylosis #8, PAOO and luxation (UR); grafting allograft, hard and soft tissue.

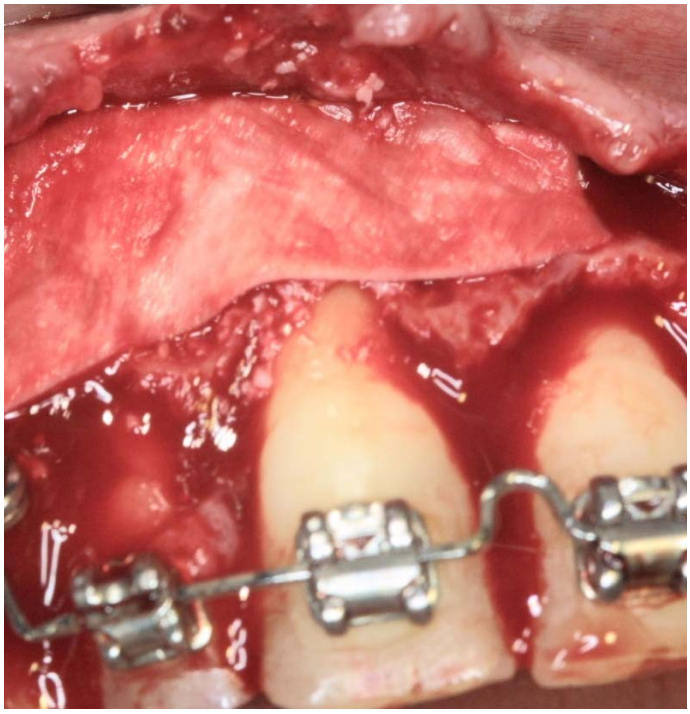
Middle image, right side radiograph, 2 year post treatment CT scan showing osseous like structure on facial aspect;..

Lower image, two years post treatment.

K







Teenager, less than 6 months in orthodontic appliances. Orthodontic ttreatment coupled with simultaneous PAOOO

L

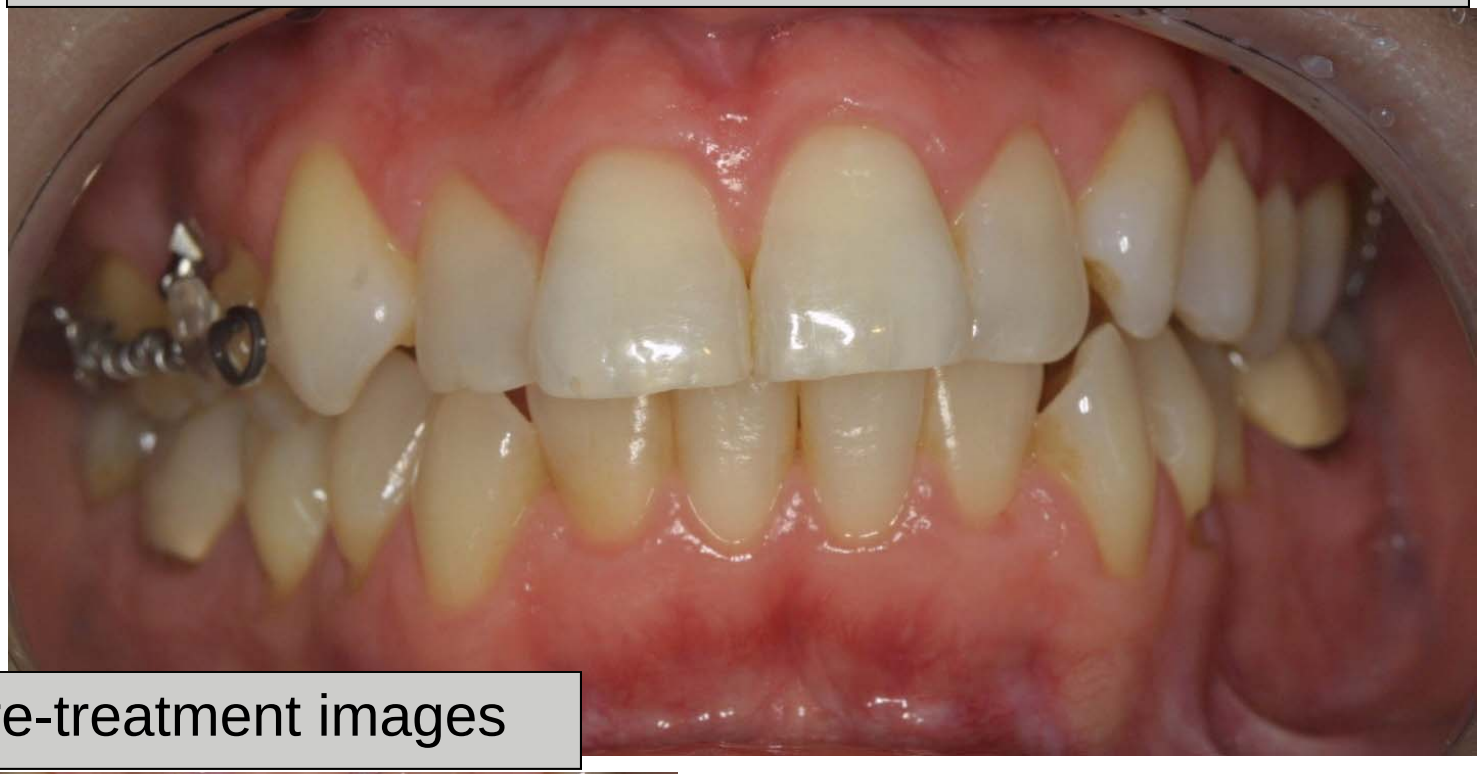
Bel_j

M

Pre-treatment -left side. Note potential risk factors for additional recession associated with orthodontic expansion especially on canines.

Right side above: representative dehiscences and fenestrations noted at the time of PAOO surgery. These areas where grafted with both hard and soft tissue allograft agents. Appropriate corticotomies where performed.

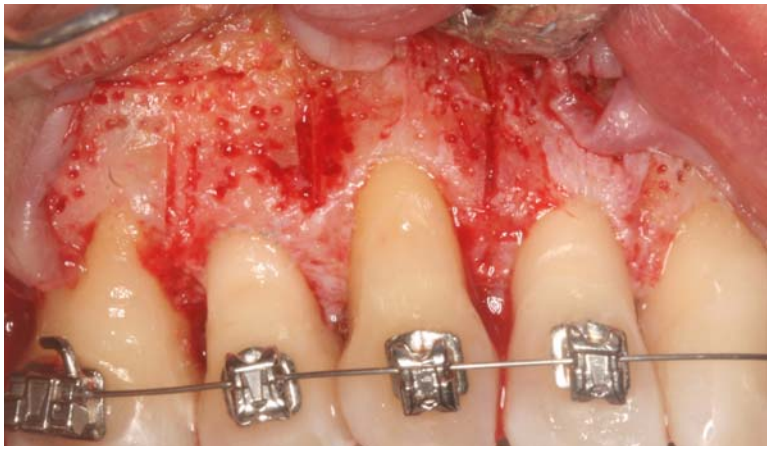
Right side middle and bottom: 5 years post treatment. Note gingival stability. Also note buccal thickness (represented by elimination of root prominences seen on left side) (ma_d)

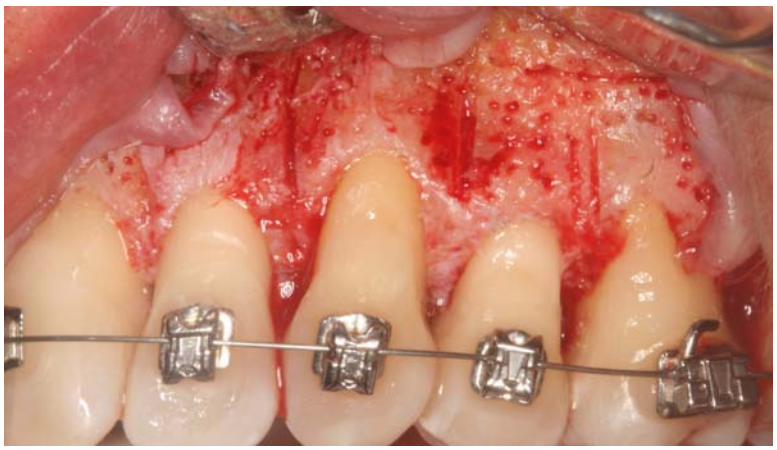


Pre-treatment images

M

6 year post-treatment images

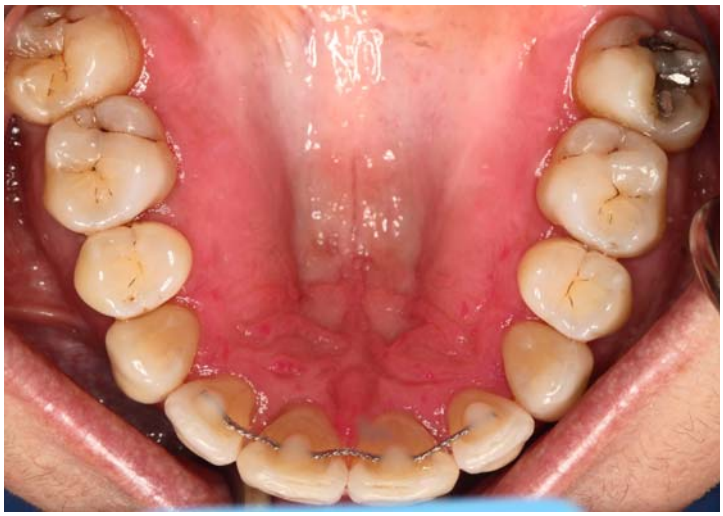


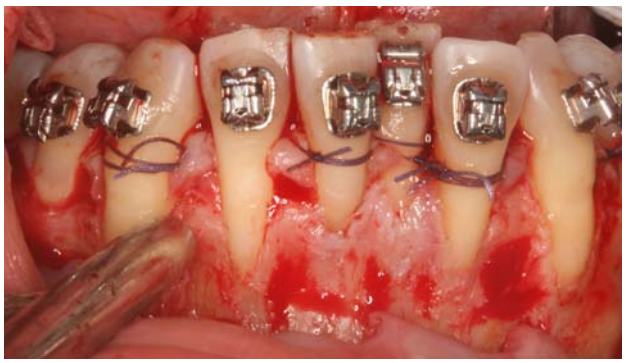


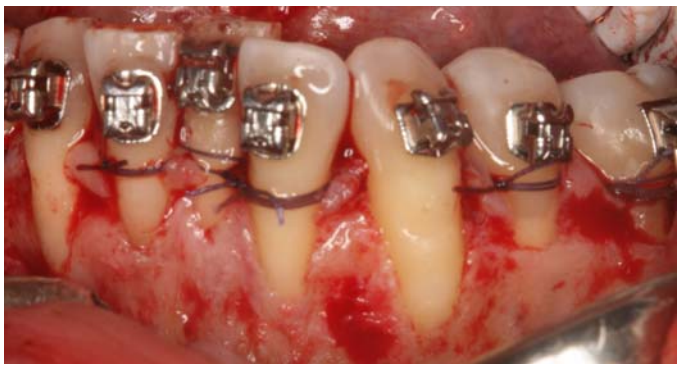
Pre treatment + PAOO surgery. Orthodontic treatment initiated day of surgery. Treatment duration: 8 months.

N

Ber_p







3 year follow up. Note gingival and tooth position stability.

Is Gingival Recession a Consequence of an Orthodontic Tooth Size and/or Tooth Position Discrepancy? "A Paradigm Shift"

Colin Richman, DMD

Abstract

BACKGROUND: Gingival recession (GR) is a commonly observed dental lesion. The underlying etiology has not been clearly identified, although several theories have been suggested. Tooth crowding or tooth malalignment is also frequently observed, with both conditions appearing to be more prevalent in developed countries with heterogeneous populations. **MATERIALS AND METHODS:** A total of 25 consecutively treated patients representing 72 teeth and demonstrating facial clinical GR of > 3 mm were examined clinically, photographically, and with 3-dimensional radiology using cone-beam computed tomography. All examined teeth presented with normal interproximal probing depths and attachment levels (< 4 mm). Tooth position or tooth volume plus the associated adjacent alveolar bone volume and GR were analyzed. This group was further evaluated during periodontal surgery for associated alveolar bone fenestrations or dehiscences. **RESULTS:** All teeth demonstrating > 3 mm of GR presented with significantly prominent facial tooth contours and associated alveolar bone dehiscences. Most involved teeth presented with their root structures extending beyond the facial alveolar bony housing (fenestrations). This represents a discrepancy between tooth size and alveolar bone dimensions in the buccolingual, axial, and sagittal orientation. Fewer involved teeth were malpositioned toward the buccal aspect. Both conditions were associated with facial alveolar bone dehiscences and associated GR. **CONCLUSIONS:** This study suggests tooth volume and/or tooth position within the alveolar bony housing strongly correlate with GR. All nonperiodontitis-involved teeth with GR were associated with either wider teeth or facially aligned teeth. However, it is emphasized that all facially aligned teeth, or "larger" teeth, do not necessarily present with GR. Based on these findings, the radiographic-supporting bone index is proposed. This index should facilitate appropriate evaluation of the alveolar bone supporting the mucogingival complex, both on the facial and lingual aspect of teeth. Further investigations are needed to support these preliminary data.

Global human mandibular variation reflects differences in agricultural and hunter-gatherer subsistence strategies

Noreen von Cramon-Taubadel[1]

Department of Anthropology, School of Anthropology and Conservation, University of Kent, Canterbury CT2 7NR, United Kingdom

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Variation in the masticatory behavior of hunter-gatherer and agricultural populations is hypothesized to be one of the major forces affecting the form of the human mandible. However, this has yet to be analyzed at a global level. Here, the relationship between global mandibular shape variation and subsistence economy is tested, while controlling for the potentially confounding effects of shared population history, geography, and climate. The results demonstrate that the mandible, in contrast to the cranium, significantly reflects subsistence strategy rather than neutral genetic patterns, with hunter-gatherers having consistently longer and narrower mandibles than agriculturalists. These results support notions that a decrease in masticatory stress among agriculturalists causes the mandible to grow and develop differently. This developmental argument also explains why there is often a mismatch between the size of the lower face and the dentition, which, in turn, leads to increased prevalence of dental crowding and malocclusions in modern postindustrial populations. Therefore, these results have important implications for our understanding of human masticatory adaptation.

diet | phenotypic plasticity | mastication | skull