Questions?

1. Why are orthodontic problems and gingival recession so prevalent in the USA and other new world countries?
2. Are they related or perhaps codependent, or iatrogenically induced?
3. Can these issues be prevented?
4. How about breathing disorders, impactions and aggressive ridge resorption?

Agenda

- Risk and Complications Associated with Orthodontic Therapy
- Clinical Representative Case Reports
- Evidence
- POPA and DSDS
- Summary
1. Recession

Recession ongoing

Connective tissue base contains muscle attachments

Is Gingival Recession a Consequence of an Orthodontic Tooth Size and/or Tooth Position Discrepancy? “A Paradigm Shift” Colin Richman DMD

25 patients 72 teeth GR >2mm Transaxial

AAP 2014, San Francisco Pre Orthodontic Periodontal Augmentation
RSBI Classification (Summary)

Class A: >1.5 mm of supporting facial bone when measured at the gingival osseous crest. (Ideal)
Class B: <1.5mm, but > 0.5mm. (Compromised, but potentially stable)
Class C: < 0.5mm facial bone. (High risk)

2. Relapse. No Fiberotomy (Edwards 1985)

320 Consecutive patients, CSF
4/6 – 12/14 years
Irregularity Index, Little
Rotational relapse < translational relapse
Max. arch > Mand. arch
Test < relapse than control

3. Root Resorption (iatrogenic complications)

4% Significant root resorption
Longer treatment times
Distance for tooth movement
Hyaline necrosis induced.
Bicuspid Extractions 9-A 10-B 11-C 13-A

Hyaline Necrosis!

4. TIME
Patient need and wants!
White spot lesions
Caries - Gingivitis
Who knows what?

5. White spot lesions and decay (iatrogenic complications)
Survey of 350 patients
Partially reversed by fluoride <50%
> 95% develop at least one new WSL
> 22 months, 3 new WSL
> 33 months, 5.2 new WSL

Incidence of Caries Lesions among Patients Treated with Comprehensive Orthodontics.
What is the difference between traditional tooth movement, and PAOO™ induced tooth movement?

Primary Benefit
Hard and soft tissue augmentation
Better orthodontic stability + less risk of gingival recession
Secondary Benefit
PAOO™ > RAP effect
Accelerated wound healing - teeth move faster
Distraction
The Regional Acceleratory Phenomenon - Frost, 1983. Henry Ford Hospital Medical Journal

Hyaline necrosis versus Osteopenia
Corticotomy stimulates RAP - Osteopenia
Biologically vs. mechanically mediated tooth movement. Tooth moves with its surrounding bony matrix.
Orthodontic Tissue Engineering (Murphy)

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Discovery consists of seeing what others have seen, and thinking what no one has thought.

Albert Szent Giorgi
1937 Nobel Laureate.

The great aim of education is not knowledge, but action.

12 years of applied PAOO™

45 year old.

8 months
How do we treat this case?

- Recession
- Esthetics
- Cross-bite/Malocclusion
- Periodontitis (7-9 mm PD)
- Gingivitis
- Time constraints
- Crowding

Patient Considerations

- Lifestyle
- Biological

Surgical Concepts
Patients with thinner mandibular cortices are at increased risk for orthodontic relapse.

Laura Rothe  U of Washington
Relapse - Stability

Stability of the mandibular dental arch following periodontally accelerated orthodontic therapy: Preliminary studies

Canine Model with bicuspid extraction

Resorption

Bone response to buccal tooth movements — with and without resorption alveolar deossation

CONCLUSIONS: Ancreath-expansion resulted in reductions in BISQ. Plasmarepositionals alveolar deossetion, in combination with ancreath expansion, increased tooth movements and tipping and produced less bone, less dense bone, and less mature bone.

Resorption

How does the amount of surgical insult affect bone around moving teeth?

Conclusions: Increased surgical insults produce less dense and less mature bone but have no effect on bone volume at 9 weeks after surgery. (Am J Orthod Dentofacial Orthop 2014;145:692-9)
• Recession
• Relapse
• Resorption
• Rejection of treatment
• White patches

Global human mandibular variation reflects differences in agricultural and hunter-gatherer subsistence strategies
Noreen von Cramon-Taubadel
Department of Anthropology, School of Anthropology and Conservation, University of Kent, Canterbury CT2 7NB, United Kingdom

Crossing the Chasm. Geoffrey Moore
Risk and Complications Associated with Orthodontic Therapy
Clinical Representative Case Reports
Evidence
POPA and DSDS
Summary

• Recession
• Relapse
• Thin phenotype
• Impacted third molars
• 4 bicuspid extractions
• Possible sleep disorders

Why?

Dr. James Gray - Orthodontist

AAP 2014, San Francisco
Pre Orthodontic Periodontal Augmentation

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14 year old – Phase 2, > 3 years
Crowding
Recession
Impacted teeth
Sleep disorders
Mal-occlusion

Dental Space Deficiency Syndrome
*DSDS*

Localized PAOOTM Orthodontics
Dr. James Gray

Lingual PAOOTM
A different patient

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My Journey

6 years

>20 years post treatment. Relapse, recession, decay

WHY?

Evidence

Ideal: 1.5 – 2mm

RSBI (Richman)

A: > 1.5mm
B: 0.5-1.5mm
C: < 0.5mm

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Pre Orthodontic Periodontal Augmentation

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PAOO™: manipulated wound healing (deliberate surgical injury of bone)
Hard and soft tissue augmentation to accommodate features of DSOD

**Biologically driven and indicated**
Distraction versus hyaline necrosis

**Lifestyle election** includes ‘Rapid Tooth Movement’ - RAP effect

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**Advantages: Corticotomy + Augmentation**
(Risk Management, iatrogenic orthodontic therapy)

- Significantly shorter treatment times (Lino et al.)
- Fewer extractions
- Less root resorption (Ren et al.)
- Enhanced alveolar support/facial profiles
- Enhanced long-term stability (Sebaoun et al.)
- Avoidance of marginal orthognathic surgery (Kim et al.)
- Less risk of gingival recession (Ahn et al.)
- Enhanced case acceptance

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**Disadvantages: Corticotomy and augmentation**

- Additional cost, if not completed concurrently with conventional periodontal surgery
- "Window" of opportunity – 6 months
- Excellent coordination of care between Periodontist, Orthodontist and Patient
- Unrealistic expectations
Identity crisis
No love
No respect

Pre Orthodontic Periodontal Augmentation

‘One Diagnosis, Multiple Treatment Plans’

‘Cases-PAOO™’

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Localized treatment

Localized treatment - 4 months

A different patient

Periodontal Tissue Bio-engineer
Thepopablog.blogspot.com

We deal in New and Used Bone
Human and Bovine!