

Restoring and Maintaining Periodontal Health with Orthodontic Treatment

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Highlights of the Presentation

- Both orthodontically treated and periodontally treated cases share a common problem **RELAPSE**.
- Long term health and stability must be key objectives of orthodontic treatment
- Focus on orthodontics as a health profession.
- Orthodontic root resorption is self limiting but bone loss can be perpetual.
- All forms of malocclusion, moderate to severe in nature are detrimental to periodontal welfare.
- Apical 1/3rd of root surface area is about one fifth that of cervical third.
- Percentage of bone support needed to move an isolated tooth can be as little as 20% of the apical root surface.
- Periodontal Biotype is one of the critical factors in orthodontic treatment outcomes.
- Bone regeneration, around a periodontally damaged tooth starts early during orthodontic treatment.

Objectives of Orthodontic Treatment

- Avoid damage to hard and soft tissues, including TMJ
- Establish skeletal harmony
- Restore normal muscle function
- Achieve good dental relationships
- Enhance Health, Function, Comfort and Esthetics
- Long term stability

Proper orthodontic treatment can and does play an important role in maintaining teeth for life.

Questions to Consider

- Is malocclusion an etiological factor in periodontal disease?
- Is orthodontic treatment detrimental to periodontal health?
- How can orthodontic treatment compliment the periodontal welfare of a patient?
- Is alveolar bone loss reversible?



Both cementum and alveolar bone offer attachment to periodontal fibers. Therefore, root resorption is also a form of periodontal breakdown.

Role of Malocclusion in Etiology of Periodontal Disease:

- Direct Trauma - impingement
- Indirect trauma - open contacts/ improper inclinations of teeth
- Increased stress
 - Minimal Overjet- Fremitus
 - Deepbite
 - Crossbite
- Promoting formation of Biofilm
 - Crowding
 - Open Contacts
 - Non - Functional teeth - Buccal X-Bite, Openbite, Supra Eruption
 - Poor Inclinations of teeth
 - Incompetent Lips

Crestal Bone Loss vs. Linear Root Resorption

- Percentage of Root/ Bone support needed for tooth movement
60% / 50% / 40% / 30% / 20%
- Facts:
 - 33% of Apical Root Loss = 11 % of Perio support
 - 33% of Crestal Bone Loss = 55 % of Perio support

“It is a fact that crestal bone loss is more detrimental to the survival of a tooth and quality of life than external root resorption.”

Potential Damage to Periodontium by Orthodontic Treatment

- Gingivitis - transient
- Increased periodontal spaces - Fremitus
- Increased periodontal spaces – "Wiggling" effect from removable retainers
- Periodontitis - Loss of bone/ Gingival recession/ Dehiscence
- Fenestration
- Root Resorption

- ### Markers for bone volume
- **Biotype-Palpation of roots**
 - **Length of clinical crowns**
 - **2D and 3D imaging**

Teeth Effected by Periodontal Disease

Potential Disadvantages:

- Compromised esthetics
- Discomfort – Sensitivity & Mobility
- Speech impediment
- Abrasion/ Decay
- Food trap/ Biofilm
- Systemic effects
- Social impairment
 - Halitosis
 - "Picking" at teeth
 - Aspiration sounds during and after mastication

Maintaining Natural Dentition with Periodontal Disease

Advantages:

- Psychological
- Less Expense
- Long Lasting (with continued care)

BASIC CONSIDERATIONS OF ORTHODONTIC TREATMENT – Focus on orthodontics as a health profession

1. Prior to any treatment, collect and review complete orthodontic records, document and inform.
2. Group the findings into Dental, Periodontal, Muscular, Skeletal and TMD categories.
3. Determine the limits imposed by bone volume.
4. Plan to treat the cause (as in all cases).
5. Consider the effects of orthodontic treatment on teeth, PERIODONTIUM, jaw bones, muscles, TMJ and psychology.
6. Respect prerequisites for orthodontic treatment; space/ healthy periodontium/ time and Newton's 3rd Law of motion.

BASIC CONSIDERATIONS OF ORTHODONTIC TREATMENT – Focus on orthodontics as a health profession - Continued

7. Treat early. Create an environment for "normal" eruption of teeth.
8. Prior to lower extractions, consider inclinations of incisors, ANB and vertical growth pattern.
9. Place brackets at least 2mm from gingival tissues and bonded retainers no more gingival than middle of teeth.
10. Orthodontic treatment may modify environmental factors but not bone biology. Relapse is a reality, therefore, retain for life.
11. Measure your success 5+ years after debonding.
12. Observe and adjust.

Measurable Outcomes of Orthodontic Treatment in Periodontally Challenged Cases

- Bleeding upon probing
- Depth of the sulci
- Gingival color, contour and stippling
- Radiographic bone levels
- **Longevity of teeth with normal function and comfort**

Additional Guidelines for Orthodontic Treatment

1. Reduce levels of orthodontic forces (round wires, Lewis brackets, self ligation, etc.).
2. Minimize bodily tooth movements into edentulous areas in periodontally compromised patients.
3. Do not over do it. Correct malocclusion to a justifiable compromise.
4. Aim to establish lip competency.
5. Prophy every 3 months.

From my 40 years of experience treating patients and cases presented this morning, I believe that with :

- orthodontically improved malocclusion, in all three planes of space,
- good hygiene/ dental care/ diet and elimination of detrimental habits,
- absence of relevant systemic diseases, trauma and
- indefinite bonded retention with passively placed flexible multi-strand wires.

A person, even with severe periodontal disease, can maintain his/her teeth for life.
