

# A Link Between Occlusal Trauma & Periodontitis

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## Abstract

The role of occlusion in periodontics has been a controversial issue for many years. The emphasize should be given on the role of trauma from occlusion in periodontal tissues, which is essential to determine its impact on prognosis and treatment plan of clinical cases.

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## Introduction

The role of occlusal trauma in the initiation and progression remains a controversial subject in periodontology.

## Definitions

### Occlusal Trauma:

An injury to the attachment apparatus as a result of excessive occlusal force<sup>1</sup>

#### 1) Primary Occlusal Trauma:

Injury resulting from excessive occlusal forces applied to a tooth or teeth with normal support.

#### 2) Secondary Occlusal Trauma:

Injury resulting from normal occlusal forces applied to a tooth or teeth with inadequate support.

#### 3) Combined Occlusal Trauma:

Injury from an excessive occlusal force on a diseased periodontium.<sup>2</sup>

### Traumatogenic Occlusion:

Any occlusion that produces forces that causes an injury to the attachment apparatus.<sup>3</sup>

## Classification

1. **Acute Trauma:** Results from an abrupt occlusal impact such as biting on a hard object.

2. **Chronic Trauma:** develops from gradual changes in occlusion produce by tooth wear, drifting movement or parafunctional habits.

3. **Primary Trauma:** It is a tissue reaction, which is elicited around a tooth with normal periodontium. Such as high filling

4. **Secondary Trauma:** Tissue reaction in which occlusal forces cause damage in a periodontium of reduced height.

5. **Combined Trauma:** It is the injury that occurs to the periodontium resulting from abnormal occlusal forces that are applied to a tooth or teeth with abnormal periodontal support.

## Related Theories:

### A. Theory of Codestruction (GLICKMAN)

<sup>4</sup>explain the relationship between occlusion and periodontal disease. He described two regions in the periodontium: the zone of irritation (marginal and interdental gingiva and gingival and transeptal fibers) and the zone of codestruction (periodontal ligament, alveolar bone, cementum, transeptal and alveolar crest fibres). The plaque induced gingival inflammation was confined to the zone of irritation. Occlusal forces or traumatogenic occlusion affected the zone of codestruction but did not cause gingival inflammation.<sup>5</sup>

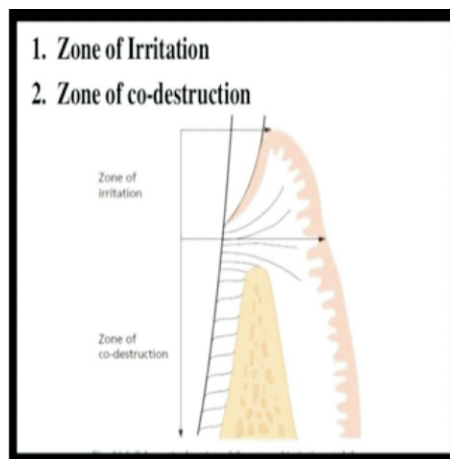


Figure No.2

B. Waerhaug<sup>6</sup> proposed that there was no proof that occlusal trauma caused or acted as a cofactor in the formation of angular defects. He believed that infrabony pockets were associated with the advancing "plaque front" or apical growth of subgingival plaque and the formation of either horizontal or angular bone defects were dependent on the width of the interproximal bone.<sup>7</sup>

### Stages of Tissue Response to Occlusal Forces-

#### \* Stage-1: Injury

- Slightly excessive pressure and tension.
- Increased pressure and tension
- Severe tension.

#### \* Stage-2: Repair

- Central buttressing
- Peripheral buttressing

#### \* Stage-3: Adaptive Remodelling.

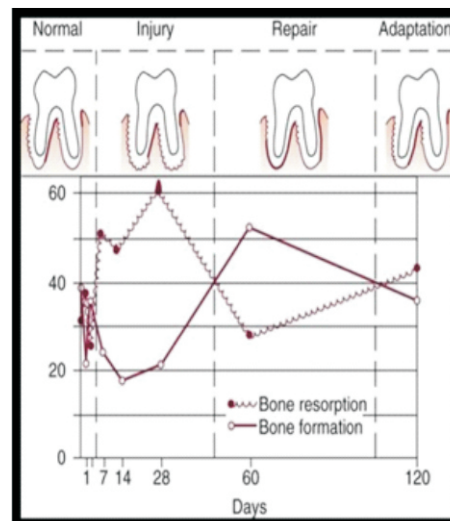


Figure No.2

## Clinical Signs & Symptoms:<sup>8</sup>

### 1) Progressive Mobility

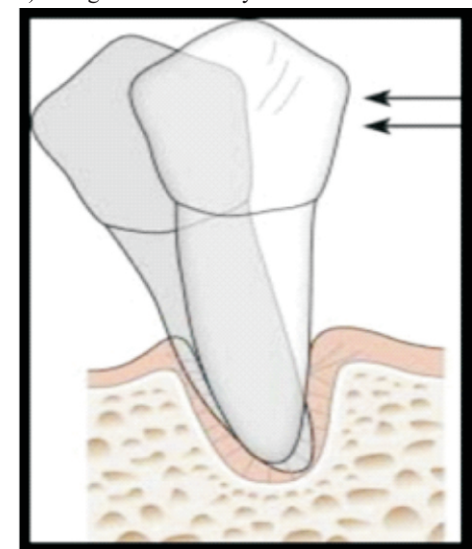


Figure No.3

- 2) Pain on chewing or percussion
- 3) Fremitus
- 4) Occlusal prematurities/discrepancies
- 5) Wear facets in the presence of other clinical indicators
- 6) Tooth migration
- 7) Chipped or fractured tooth
- 8) Thermal sensitivity

## Radiographic Features

- 1) Widened PDL space
- 2) Bone loss (Furcations; vertical; circumferential)
- 3) Root resorption

## Treatment Considerations:<sup>9</sup>

- 1) Occlusal adjustment
- 2) Management of parafunctional habits
- 3) Temporary, provisional or long-term stabilization of mobile teeth with removable or fixed appliances
- 4) Orthodontic tooth movement
- 5) Occlusal reconstruction
- 6) Extraction of selected teeth

### \* Occlusal Adjustments-

Occlusal adjustment or selective grinding is defined as reshaping the occluding surfaces of teeth by grinding to create harmonious contact relationships between the upper and lower teeth.<sup>10</sup>

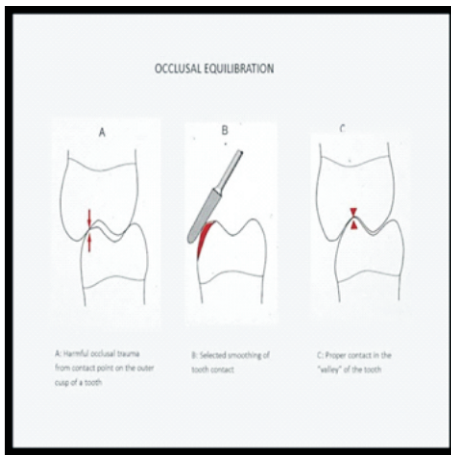


Figure No.4

#### i) Indications

- 1) To reduce traumatic forces to teeth that exhibit Increasing mobility or fremitus to encourage repair within the periodontal attachment apparatus.
- 2) To achieve functional relationships and masticatory efficiency in conjunction with restorative treatment, orthodontic, orthognathic surgery or jaw trauma
- 3) Reduce the damage from parafunctional habits.
- 4) To reshape teeth contributing to soft tissue injury.



Figure No.5

#### ii) Contraindications

- 1) Occlusal adjustment without careful pre-treatment study, documentation, and patient education.
- 2) Prophylactic adjustment without evidence of the signs and symptoms of occlusal trauma.
- 3) As the primary treatment of microbial-induced inflammatory periodontal disease.
- 4) Treatment of bruxism based on a patient history without evidence of damage, pathosis, or pain.
- 5) Instances of severe extrusion, mobility or malpositioning of teeth that would not respond to occlusal adjustment alone.

#### \* Splinting

##### • Indications

- 1) Stabilize teeth with increasing mobility that have not responded to occlusal adjustment and periodontal treatment.
- 2) Stabilize teeth with advanced mobility
- 3) Facilitate treatment of extremely mobile teeth by splinting them prior to periodontal instrumentation and occlusal adjustment procedures.
- 4) Prevent tipping or drifting of teeth and extrusion of unopposed teeth.
- 5) Stabilize teeth, when indicated, following orthodontic movement.
- 6) Splint teeth so that a root can be removed and the crown retained in its place.

##### • Contraindications

- 1) When the treatment of inflammatory periodontal disease has not been addressed.
- 2) When occlusal adjustment to reduce trauma and /or interferences has not been previously addressed.
- 3) When the sole objective of splinting is to reduce tooth mobility following the removal of the splint.

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