

## Drugs and Orthodontics: Bane or Boon

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The awareness towards orthodontic treatment among general public has risen a lot. Orthodontic tooth movement is basically a biologic response towards a mechanical force. Osteoclast and osteoblast cells mediate bone resorption and deposition, which eventually produces tooth movement.

Researches conducted by authors like Yamasaki <sup>1</sup>, Davidovitch <sup>2</sup> showed that the rate of orthodontic tooth movement can be altered by applying certain drugs locally or systemically. The aim of this review article is to highlight the promoter and suppressor drugs and their effect on rate of orthodontic tooth movement.

### **Promoter drugs**

These agents basically enhance bone resorption. They couple with the secondary and primary inflammatory mediators and enhance tooth movement they are

- i. Prostaglandin's <sup>1</sup>
- ii. Leucotriens <sup>4</sup>
- iii. Cytokines <sup>5</sup>
- iv. Vitamin d <sup>6</sup>
- v. Osteocalcin <sup>7</sup>
- vi. Corticosteroids <sup>8</sup>

Except vitamin d and Corticosteroids the other above said agents are not that much widely used in medical profession. Since bone turn over rate will be more for those patients under any of the above said drugs, care should be taken by utilizing low forces or by giving increased duration between appliance activation appointments.

### **Suppressor agents**

These agents basically reduce bone resorption.

Nonsteroidal anti-inflammatory agents <sup>9</sup> -- they interfere with arachidonic acid metabolism, blocks production of primary and or secondary messengers.

Bisphosphonates <sup>10</sup> – bind with calcium ions, promotes apoptosis of working osteoclasts.

Since NSAIDs are freely available over the counter, patients should be advised not to take these drugs during orthodontic treatment, without the dentist's knowledge. One drug of choice for the patients under orthodontic treatment is acetaminophen <sup>9</sup>, whose mode of action is central rather than peripheral

The bisphosphonate groups of drugs are economically more in cost and not easily available over the counter, but they are the drugs of choice for patients with osteoporosis. A thorough medical history will definitely reveal whether the patient is under such a treatment, caution should be taken while taking up these patients for orthodontic treatment

### **Conclusion**

A thorough knowledge about the drugs is mandatory for those dental professionals dealing with patients under orthodontic treatment.

There are more chances for the patients to take NSAIDs inadvertently. This might slow down the rate of orthodontic tooth movement, which will eventually increase the total treatment duration.

## **Future trends**

### Promoter agents

The duration of orthodontic treatment is usually 18 months, this extended duration can be reduced by applying promoter agents locally near the moving unit, (i.e. anteriors)

### Suppressor agents

At present orthodontic mini implants are used to aid in anchorage, when compared to headgears which also aid in anchorage these implants costs more. Moreover most of the patients deny wearing headgears. Alternatively the suppressor agents can be delivered locally near the anchor unit (i.e. molars) to enhance anchorage and retention.

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