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Raised Chondroitin Sulphate Levels around Maxillary Posterior Teeth during Group Maxillary Posterior Tooth Intrusion

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It is vital to investigate orthodontic force magnitude for intruding maxillary posterior teeth in order to treat anterior open bite without collateral effects. Chondroitin sulphate (CS) levels, detected in gingival crevicular fluid (GCF) could be used as a biochemical marker of alveolar bone remodeling during orthodontic tooth intrusion.

Objectives: To compare CS levels around maxillary posterior teeth between unloaded and loaded periods during maxillary posterior tooth intrusion.

Materials and Methods: Seventy teeth (60 experimental, including 20 maxillary second premolars, 20 first and 20 second molars; and 10 control right mandibular first molars), from ten patients exhibiting anterior open bite and skeletal open configuration and requiring orthodontic maxillary posterior tooth intrusion, were selected. Miniscrew implant (MI) was placed in midpalatal area, and two Nickel Titanium closed-coil springs (generating 100 g of force each) were used to generate orthodontic force for group maxillary posterior tooth intrusion. GCF around maxillary posterior teeth was collected with Periopaper (r) strips for 8 consecutive weeks. CS levels were calculated using ELISA with our novel WF6 monoclonal antibody.

Results: During the unloaded period, medians of CS levels around maxillary second premolars, first molars, second molars and mandibular first molars were 0.0138, 0.0186, 0.0656 and 0.3957 ng/ μ g of total protein, respectively, and 6.6740, 13.4543, 6.5704 and 0.1138 ng/ μ g of total protein respectively, during the loaded period. The medians of CS levels around maxillary second premolars, first molars and second molars were significantly raised.

Conclusions: Biochemical assessment using CS levels in GCF showed that this particular Massisted-treatment modality for maxillary posterior tooth intrusion was effective.



Maxillary Protraction Using Temporary Anchorage Device (TAD) in a Patient with Class III Skeletal Relationship: A Non-Invasive Method to Provide Skeletal Anchorage

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Tooth-borne facemask therapy has undesired side effects, especially incisor proclination. Recently, TAD has been recommended to provide skeletal anchorage for facemask therapy due to convenient use, no need of general anesthesia, and no undesired dental effect.

Objectives: To report, clinically and cephalometrically, dentofacial effects of maxillary protraction after facemask therapy using TAD as skeletal anchorage for maxillary protraction therapy.

Materials and Methods: A 13-year-old girl with maximum pubertal growth spurt (hand-wrist radiograph: MP3cap; cervical vertebrae maturation: CS3) had facemask therapy due to retrognathic maxilla. She had Class III skeletal ($ANB = -3^\circ$) and dental relationships, negative overjet, positive overbite and normal vertical configuration. TADs (3M Unitek, Monrovia, CA, USA), sized 1.6 x 10.0 mm, were placed bilaterally at modified infrazygomatic crest sites. This TAD system was selected as TAD O-cap with inner O-ring can easily connect to TADs' head. Force application was performed using rubber band ligated to TAD O-cap which was later placed on TADs' head. Protraction force of 200 g was calibrated and used for 6 months.

Results: From lateral cephalometric analysis, Class I skeletal ($ANB = 0.5^\circ$) and Class II molar relationships, slight improvement of maxillary prognathism, upper molar extrusion, clockwise rotation of mandibular plane, increase of lower anterior facial height, lower incisor retroclination, positive overjet and overbite were observed. Interestingly, there was no change in upper incisor inclination.

Conclusions: Use of TAD as skeletal anchorage is a possible and non-invasive option to provide anchorage for maxillary protraction therapy