READER'S FORUM

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Comparison of treatment effects between
four premolar extraction and total arch
distalization using the modified C-palatal
plate.

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I would like to appreciate the efforts that the authors made to carry out such a great research. For an orthodontist, the decision to extract is always one of the most critical clinical judgments in treatment planning and therefore interesting subject. As a reader, I would like to ask several questions that are listed below.

Q1. The modified C-palatal plate (MCP) group presented retraction of 3.35 mm maxillary and 1.66 mm mandibular central incisors with the combined use of MCP and Class III elastics. It was noted that when more aggressive distalization steps were taken in the mandible by using temporary anchorage devices, the MCP could have functioned to result of greater retraction of the soft-tissue profile. So what are the benefits of treating these patients needing large amount of anterior retraction with non-extraction rather than extraction method? If there are no anatomical limitations, what is the maximum amount of molar distalization (in mm) thought to be more effective than extraction?

Q2. As noted in this journal, treatment involving extraction may result in unexpected complications such as injury to the adjacent alveolar structures and occlusal disturbances and extraction space opening. There-

fore, the tendency towards choosing non-extraction approaches has been increasing because of the availability of minimally invasive treatment modalities. However, total distalization method may also possibly make occlusal disturbances due to molar and incisor intrusion, extrusion, tipping. So are there any possible side effects or relapse problems in total distalization?

Q3. Crowding on MCP group in pretreatment stage was 3.3 mm and central incisor retraction after treatment was 3.35 mm. While there were no rigorous space-gaining mechanics such as IPR or expansion, 3.97 mm of molar distalization was made, which is less than expected (expected amount could be estimated to 5 mm, 1.65 + 3.35 mm). What could be the reason?

Q4. Our clinic makes distalization with elastomeric chains and nickel-titanium coil springs on palatal screws, and although there are differences in case by case, the movement rates are quite slow compared with bone-anchored pendulum type. In Figure 4, treatment using MCP made 300 g of force per side approximately with only elastomeric chains. Is there any additional method to make distalization occur faster in treatment using MCP?

Q5. When comparing the pretreatment variables between MCP group and premolar extraction (PE) group, no significant main effect was observed. What standards did you have when you decided extraction or not? And when planning treatment procedures what is the major anatomical reference point on which you decide the amount of distalization? Is there any other factor that make restrictions on the quantity of distalization?

Questioned by

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We appreciate the readers' interest as well as the valuable comments concerning various aspects of the study. As stated, whether to extract is one pivotal question that every orthodontist must answer before taking on any clinical cases. In this investigation it was not our intention to undermine the significance or value of premolar extraction but, rather, we simply hoped to highlight the differences in treatment effects between two opposite approaches. Please let us attempt to clarify some of the insightful questions expressed by Dr. Ha.

A1. Obviously, preservation of the premolars may be the most significant benefit of the non-extraction approach associated with MCP. It should be noted that its merit goes further than simply keeping more teeth at older age as the risk of reopening of the extraction site could be entirely avoided.

If the maximum amount of molar distalization is to be more effective than extraction treatment in a hypothetical situation of no anatomical limitations, it simply has to be greater than the mesiodistal dimension of a single premolar. In this study however, the lower incisors retracted more in the PE group by 3.42 mm from the vertical reference line (VRL; that is, 5.08–1.66 mm) or 2.67 mm from the mandibular VRL (that is, 4.08–1.41 mm). Thus, it may be assumed that, to be equally or more effective than extraction approaches, the maxillary first molars in the MCP group should be distalized at least that much more in addition to 4.0 mm reported in this study.

A2. In the area of side effects associated with the MCP therapy, inflammation of the palatal soft tissue surrounding the anchor miniscrews of the appliance may be worthwhile mentioning. To control this untoward effect, it is recommended that a good oral hygiene should be maintained using Waterpik (Water Pik, Inc., Fort Collins, CO, USA) on the palatal area a few times a day and, when needed, chlorhexidine gluconate may be applied judiciously as well. Regarding the relapse issue, any sound

proven rules or clinical pearls to reduce such tendencies still apply in distalization therapies while the use of MCP does not expose the treatment outcome to any other additional risk of relapse.

A3. Many factors may have played a role while it is difficult to pinpoint which should be responsible for what portions of such discrepancies. For example, it can be speculated that a more tapered maxillary anterior segment, frequently found in Class II malocclusion, may have taken a more expanded congruent shape with the net result of additional space. Similarly, de-rotation of the maxillary premolars and molars may have taken effects to contribute to the differences in question.

A4. In contrast to the pendulum appliance, MCP tends to produce more bodily movement of the molars during distalization, which in turn may be responsible for slower rate of the molar movement. Depending on the rate and direction of retraction, the amount as well as vector of elastic force may be modulated during MCP adjustment visits. In addition, a small occlusal resin build-up may be temporarily used on the molars if it is suspected that desired retraction is hindered by tight interlocking posterior occlusal relationship between the upper and lower arches.

A5. MCP is an effective and versatile appliance. In my opinion one of the major factors that divide between extractions versus MCP treatment approaches could lie on feasibility of positioning the mandibular incisors at the intended sites at the end of treatment without premolar extraction. In other words, if extraction is mandated in the mandibular arch, extraction treatment may be preferred for the maxillary arch as well. Conversely, if the mandibular incisors can be placed at the desired position with appropriate inclination without extraction, distalization facilitated with MCP may be favored in the maxillary arch.

Answered by

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