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THE EDITOR'S CORNER

Another Solution for Single-Tooth Ectopias

Single-tooth ectopias can be extraordinarily frustrating. Clinical problems associated with individual teeth in linguo- or palatoversion include difficulty in attaining a suitable purchase on the tooth to allow the application of translatory forces, occlusal interference with tooth movement, and excessive labial crown torque following treatment. Dealing with any of these situations usually represents quite a challenge.

If a bracket is bonded to an ectopic tooth in as nearly an ideal position as possible, it is likely to interfere with occlusion. The problem is further compounded if the patient has a crossbite, where the opposing tooth will interfere with any bracket placed on the labial surface of the ectopic tooth. More often than not, the patient knocks the bracket off in the first week after the bonding appointment, unless some technique is employed to disclude the dentition. Such methods include bonded posterior occlusal composites, removable bite blocks, and anterior bite ramps—each accompanied by its own set of side effects.

Bonding composite resin to the occlusal surfaces of posterior teeth is probably the most common disclusion technique. Most orthodontists I know use the same resins that their practices employ for direct or indirect bonding. These composites were not intended to withstand the wear and tear of mastication, but since the occlusal resin is generally in use for less than a year, abrasion and attrition are not often a problem. If the composite does wear off before its purpose is completely served, you just add more as needed. Other practitioners employ the posterior composites used by restorative dentists; these withstand masticatory forces better than direct-bonding composites do, but they are unnecessarily expensive and more difficult to remove when the time comes. Colored composites are easy to distinguish from anatomical enamel for debonding, but I have never had a patient who did not complain about the conspicuous color. A more serious complication of bonded posterior composites is the intrusion of both the teeth to which they are bonded and the teeth that oppose them. This unavoidable intrusive effect can result in a

single-tooth open bite that may never close satisfactorily.

Removable posterior bite blocks also tend to intrude the posterior dentition, but since they generally involve a broader distribution of occlusal forces, the net intrusion of any one pair of opposing teeth is minimized. There are two more significant problems with removable posterior bite blocks. The biggest is obvious—patient compliance. Since bite blocks are invariably uncomfortable, many patients either don't wear them at all or don't wear them enough to bring about the desired effects. The other major problem is that even the most compliant patient will remove the bite blocks for eating, which results in occlusal contact that will either oppose the desired tooth movement or knock the bracket off.

Anterior biteplanes have the same issues of compliance and occlusion, as well as a substantial bite-opening effect. This may be desirable in low-angle, deep-bite cases, but can be catastrophic in high-angle, anterior-open-bite cases.

Excessive labial crown torque usually results from dragging an ectopic tooth labially, crown first, by means of a labially bonded bracket. Since the bracket is significantly distant from the center of resistance of the tooth, labial tipping is almost inevitable. The usual way to deal with undesirable torquing is to induce a force couple by filling the rectangular bracket slot with a rectangular wire and applying labial root torque to counteract the labial crown torque. This can be difficult to achieve in practice, however, because any wires that are resilient and flexible enough to accommodate the severe interbracket discrepancy of an ectopic tooth are generally not tough enough to generate a sufficient counter-rotational moment.

In the August 1997 issue of JCO, Drs. Shouichi Miyawaki and Yasuhiro Koh offered one solution to the problems associated with linguoverged ectopias. The case they presented involved a severely crowded upper arch with both upper lateral incisors in palatoversion and locked in crossbite with their mandibular antagonists. Following extraction of the first premolars, the upper canines were distalized with a fixed lingual appliance. A fan-type removable palatal expander was then employed to expand the maxillary anterior segment while the upper arch was leveled and aligned with the fixed appliance. The end result was an entirely acceptable occlusal and esthetic outcome. The advantages of the Miyawaki-Koh approach include relatively rapid treatment and the esthetic advantages of lingual brackets; disadvantages include the same dependence on patient compliance mentioned above, due to the use of a removable expander.

In this issue of JCO, Drs. Jae Hyun Park and Donald J. Sanchez present a new approach to dealing with single-tooth palatoversion. Their method, known as the "slingshot" technique, uses a button bonded to the lingual surface of the ectopic tooth, a power chain stretched from labial brackets on the adjacent teeth (hence the slingshot description), and a push-coil spring to keep the adjacent teeth from moving together and blocking the labial movement of the palatoverged tooth. An inverted labial bracket on the ectopic tooth, tied into a rectangular archwire, allows the root to lead the crown in labial movement, thus introducing a sufficient moment of rotation to overcome the undesired labial crown torque.

The Park-Sanchez technique is a creative new application of old technology. I trust that our readers will find it as useful as I have. RGK