

Class II, Division 2, A Challenge

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One of the more interesting of the varied types of malocclusion confronting us is Class II, Div. 2 malocclusion. Although not as frequent in occurrence as the Class II, Div. 1 type, it has always presented a challenge to me in both diagnosis and correction. Division two is usually characterized by a marked over-bite, with the incisal edges of lower anteriors making contact with the soft tissue of the palate, an inverted upper occlusal plane, often two distinct occlusal levels in the lower denture, one for the anteriors, and the other for the posteriors, an abnormally large freeway space and well developed and active muscle fibers of the orbicularis oris, and sometimes of the mentalis muscle.

As an aid in proper diagnosis, correct centric must be determined before occlusal interferences come into play displacing the mandible. To accomplish this, the patient may be forced to tire the masticatory muscles by holding the mouth in wide open position for some period of time and then closing very slowly until the first prematurity is felt. Those cases which indicate a Class I molar relation at this time are, in truth, Class I malocclusions and should be treated as such by ironing out the upper anterior crowding, usually removing the prematurity in so doing, and allowing the mandible to assume its proper path of closure without previous distal displacement. These are not true Class II, Div. 2 malocclusions.

If after placement and wearing of a maxillary bite plate, the posterior bite reveals itself as cusp to cusp rather than a full Class II, the treatment plan utilized should be typical Class II, Div. 1 correction, with elastics, after the upper anterior crowdings are unraveled. If the occlusion persists as a full Class II molar relation after bite plate disorientation and correction of the crowded upper anteriors, intermaxillary elastics are utilized for a period of time. If Class I molar relationship is not approached, consideration is given to sacrifice of the upper first bicuspids.

If the lower anteriors are crowded, they are usually found tipped lingually. This may be confirmed by model examination or by examination of a cephalometric roentgenogram of the patient. Every possible effort must be made in Class II, Div. 2 malocclusion to avoid sacrifice of lower bicuspids when formulating a treatment plan because of the strong danger of later relapse of the corrected overbite. The lower anteriors have usually been forced into a crowded position because of their relations to the lingual of the upper incisors and the closed bite. Their incisal edges may have most irregular angular facets worn into the enamel and their interproximal contacts may have been worn flat in unusual areas due to the crowding, most often toward the labial or lingual, rather than on the mesial or distal. My office procedure dictates grinding the erratic incisal edges with diamond stones, and restoration of the affected contact areas with diamond strips to the shape they should have been prior to having come under the influence of the erratic inter-

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proximal wear in the malocclusion. Only then are the appliances fashioned and inserted. Possibility of slippage of these contacts after the retention period is discontinued is thus minimized. On occasion the upper incisors also require mild trueing to restore them to more normal anatomical shape. Let me repeat; this basic shape restoration is accomplished during the early stages of correction, after the maxillary bite plate is inserted, but prior to banding the teeth. If it is done at the late stages of the correction, it may result in throwing the corrected occlusion and midline off in the anterior region and, in addition, the teeth remain sensitive over a long period of time. Incidentally, in those crowded Class I malocclusions requiring correction by sacrifice of bicuspids, this same restoration of contact area shape would appear to be a necessity for stability of the end result. I must emphasize, at this time, that its purpose, however, is definitely not to gain arch length as an aid to correction, rather, to insure a stable end result. It may also serve the equally important purpose of restoration of tooth size harmony. I am well aware of the controversy this may create, but I am certain of its necessity in selected cases. Perhaps too much emphasis has been placed in the past on occlusal equilibration of the corrected case, and too little attention paid to contact area equilibration.

If the treatment plan necessitates sacrifice of both upper first bicuspids, the upper cuspids are retracted, followed by the retraction of the upper incisors, leaving the posteriors permanently in Class II relation in the finished result. Utilizing more conventional corrective measures by means of Class II elastics over a long interval of time may result in dragging the lower denture forward, from its base, as well as creating a forward replacement of the mandible in

toto. The mesial or forward replacement of the mandible is a desirable factor provided no damage occurs to the T.M. joint and supporting structures in so doing. The forward movement of the lower denture from its base yields an unstable result and as such is undesirable. The unbalanced soft tissue pattern resulting from this slowly returns to its previous position of equilibrium at the expense of forcing the anterior teeth back onto supporting bone.

If we could somehow insure the forward replacement of the mandibular base in these cases without dragging the mandibular denture farther forward than mandibular base has moved, we would indeed have the answer to treatment of all Class II malocclusions. I believe that our most successful cases of this class are those in which there has been some forward repositioning or replacement of the mandible and contained dentition. Apparently, there is adjustment possible in many cases in the neuro-muscular pattern, in the ligamentous limiting and suspensory fibers and consequently in the position of the condyle in its glenoid fossa. Indeed, this may be why we are successful in treating Class II cases in the mixed dentition stage by a combination of headgear and bite plate. Perhaps it is due to the unlocking of the bite and forward return to more normal positioning of the mandible that achieves the correction, at least as often as it is the action of the headgear on the maxilla. In these youngsters, in the mixed dentition stage of development, the neuro-muscular pattern is more plastic than that of an older age and accommodates and re-orient itself more readily. In the adult, the potential for replacement of the mandible is therefore not as good, and sacrifice of tooth units must more often be resorted to in corrective therapy.

One marked handicap in correction is

our reliance on Class II elastics. They aid in relocating the mandible but also, unfortunately, move the mandibular dentition forward off basal bone, a good cause for later relapse of the lower anteriors. Reinforcement of the so-called lower anchorage by means of the headgear is not the complete answer to this problem; nor is the answer the prolonged wearing of a lower retainer. The use of intermaxillary elastics is a wonderful aid in orthodontic correction, but I fear that overindulgence in their use frequently causes a relapse of the lower arch after the stabilization period is terminated.

One problem associated with Class II, Div. 2 malocclusions is that of the closed bite and lack of vertical growth of the posterior segments. Placement of a bite plate allows the upper posterior segments to grow both vertically and buccally, for that is their path of eruption. Similarly it allows the lower posterior segments, to a lesser degree, to grow both vertically and lingually, for that is their path of eruption. It may act to depress the lower anterior teeth slightly. Depending on the construction of the bite plate, it may depress the upper anterior teeth, or flare them labially. Obviously, the occlusal contact resulting from the supraeruption of the posterior teeth is traumatic, with prematurities. If the bite plate is discontinued, these teeth are forced back to their previous occlusal level by the bite, thus reducing these created prematurities. However, if the lower arch is widened slightly, and the upper arch constricted slightly immediately after the bite has been opened by a bite plate, harmonious occlusal contact is maintained without prematurities. This may be accomplished by placing lingual crown torque on the upper, and to a lesser degree, buccal crown torque on the lower posterior segments with the

edgewise appliance, supplementing this with the use of cross-bite elastics. When the bite has been opened and the occlusion of the posteriors restored, vertical elastics must be used during the remainder of the correction to stimulate vertical growth. When the stabilization phase approaches, retainers incorporating a bite plane to maintain the open bite must be utilized full time for a long period of time. The use of a tooth positioner is contraindicated here because it will not maintain the corrected closed bite.

There are, fortunately, just a few cases of Class II Div. 2 malocclusion which do not on close scrutiny reveal an abnormally large freeway space. These present a problem in correction of the overbite, for although the bite may possibly be opened to a slight extent and this may be tolerated since the amount of normal freeway space varies, a considerable portion of the overbite still remains. Selective equilibration of the teeth in centric and protrusive positions, followed by prolonged retention with a Hawley retainer incorporating a bite plate, may be the only method at present at our disposal to handle this type of problem.

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