Class II, Division 2 Malocclusion*

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In discussing Class II, Division 2 malocclusion the essayist would emphasize the fact that there is a very small percentage of cases found in this category. Probably this is the reason why comparatively little literature is in print dealing with this particular group of cases. These two facts prompted the Eastern Component to present this symposium. Owing to the fact that this was not a research project but purely a clinical study of methods of treatment and results obtained, we believed the material available was sufficient to serve our purpose.

For a historical review of the subject one quite naturally turned to Dr. Angle's text for the definition of this form of malocclusion. Therein is found the following words. "Division 2 (of Class II) is characterized specifically also by distal occlusion of the teeth in both lateral halves of the lower dental arch, indicated by the mesio-distal relations of the first permanent molars, but with retrusion instead of protrusion of the upper incisors."

It is interesting to note that in this definition Dr. Angle does not mention the distal relationship of the mandible as entering into the deformity. However, in his preliminary remarks on classification, page 35, seventh edition, he writes: "These classes are based on the mesio-distal relations of the teeth, dental arches and jaws, which depend primarily upon the positions mesio-distally assumed by the first permanent molars on their erupting and locking. Hence in diagnosing cases of malocclusion we must consider, first, the mesio-distal relations of the jaws and dental arches, as indicated by the relation of the lower molars with the upper molars — the keys to occlusion; and second, the positions of the individual teeth, carefully noting their relations to the line of occlusion."

Turning to the chapter on Treatment of Class II, Division 2, we do find Dr. Angle placing emphasis on the facial deformity caused by the distal position of the mandible and the lack of vertical growth below the nose.

On page 514 he states: "the result of distal occlusion and recession of the jaw and chin greatly mars the facial lines."

Consequently it seems reasonable to deduct that Dr. Angle was considering the relationship of the mandible to facial structures, as well as occlusion of the teeth, in classifying a Class II case.

He considered Division 2 easier to treat than Division 1 and describes his treatment as follows: "Briefly it consists in moving distally all the molars, premolars and canines of the upper arch about one-half the width of a premolar tooth, with a simultaneous and equal mesial movement of the lower arch, thus establishing the normal relations and functions of all their inclined planes and the best possible balance of the facial lines."

The excessive closed bite which is so evident in Class II, Division 2 cases is called to the attention of the student by Dr. Angle in only one case report. He attributed this to the fact that the "molars have failed to erupt to their normal length, allowing the lower in-

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cisors to come in contact with the vault of the arch, while the cutting edges of the upper incisors pass beyond the gingival margins of the lower. Of course, this abnormal telescoping of the incisors is due in no small degree to the tipping downward and inward of the upper incisors from their normal angle, and the tipping lingually of the lower incisors, and although such a condition is more or less present in all cases belonging to this division, yet it is here present to an unusual degree, the principal reason being that the molars have not fully erupted" (Fig. 1).

Fig. 1 Illustration of a Class II, Division 2 case taken from Dr. Angle's Seventh Edition, page 529.

In Calvin Case's *Dental Orthopedia,* on page 287, is an illustration in which the plaster facial reproduction clearly indicates a Class II, Division 2 malocclusion. Dr. Case terms it "a general bi-maxillary infra-occlusion." He treated this by a universal elevation of all of the buccal teeth, opening the bite primarily with crowns on the molar teeth to separate the premolars in order that they could be elevated with elastics, and then removing the crowns from the molars and elevating these in turn. Whether the result was permanently stabilized is not mentioned.

Milo Hellman, in a paper on Class II cases, reports his deductions from measurements on skulls exhibiting Class II relationships of the teeth. He states, quoting from Gordon C. Swann's paper, that in Class II, Division 2 cases "the maxillary alveolar process appears to have drifted anteriorly; the teeth therein consequently were in mesial relation to those of the mandible."

Earle W. Renfroe, in the *Angle Orthodontist,* Vol. 18, pages 12-15, reports a *Cephalometric Study of Facial Patterns Associated with Class I, Class II, Division 1, and Class II, Division 2 Malocclusions.* Transcribed from his deductions are the following conclusions:

1. That Class II malocclusions of both Division 1 and Division 2 types are not characterized by any lack of development of the mandible.

2. That the maxillary first permanent molar, instead of being anterior to its normal position in Class II malocclusion, has a tendency to lie more posteriorly, as previously pointed out by Hellman, Oppenheim and Baldridge.

3. That Class II cases are characterized by a posterior position of the mandible as claimed by Angle.

4. That the angle of the mandible is larger in Class I than in Class II cases of either division.

5. That while the dental arch is posterior in Class II, Division 2, the chin point is almost as far forward as in Class I. This arises through the fact that the Class II, Division 2 case is a more square type with a mandibular border that is more nearly horizontal.

In 1933, the Eastern Component presented a paper before this Society entitled *"A Clinical Study of Cases of Malocclusion in Class II, Division 2."* In that report there are certain paragraphs which the writer believes are worth repeating. Attention in the report was focused largely upon the mandible. I quote the following:

"Anteroposteriorly, the mandibular denture appears somewhat 'stubby', owing to the lingual position of the incisor teeth, which is quite characteristic. There is seldom any curve of

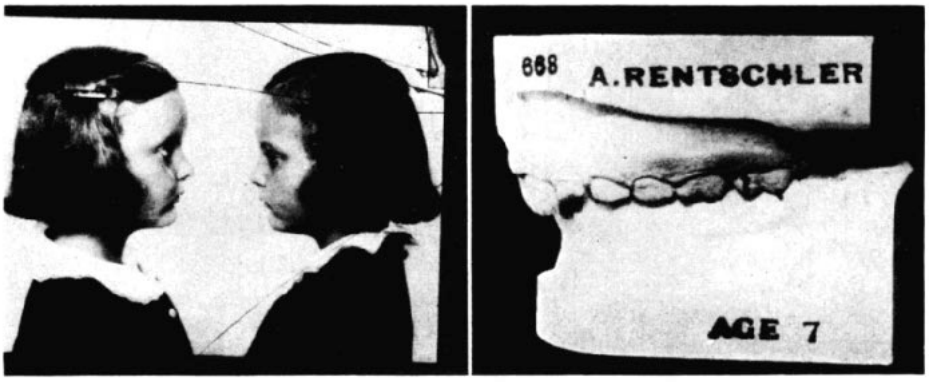

Fig. 2 The classic form of Class II, Division 2 characterized by a distinct reduction of vertical growth in the oral area of the face and distal relationship of the mandible to the cranium.

Spee. The molars and deciduous molars are arranged on a level in the horizontal plane with no tendency of the first molars toward mesial tipping. The incisors are on a plane that is considerably and abruptly occlusally located to that on which the molars are arranged."

"The vertical growth of the mandible in the molar and premolar regions is decidedly lacking" (Fig. 2).

"The mandibular denture is often more distally placed, in relation to the maxillary denture, than in Class II, Division 1. The profile photographs, however, seldom show any greater degree of disharmony in the facial lines than in Division 1" (Fig. 3).

The reason for this is given as hypertrophy of the mentales muscles which cover up the deformity and also the excessive closure of the mandible due to the reduced vertical growth which throws the chin farther forward.

Mention is also made of the possibility of forward shifting of the buccal segments of the maxillary denture as indicated by the axial perversion of the lateral incisors combined with their

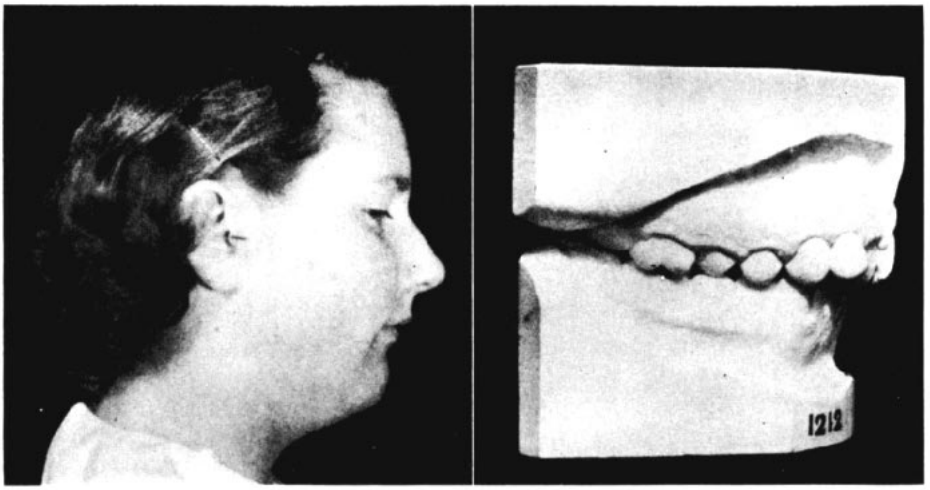

Fig. 3 Class II, Division 2 in the permanent denture. Note the distal relationship of the mandible to the cranium.

Fig. 4 A Class I case with occlusal tooth relationship simulating a Class II, Division 2 case.

overlapping of the central incisors. This, I believe, is an important observation.

In reviewing all of this literature one conclusion is quite in evidence. Some of the writers have classified their cases by tooth occlusion only, while others have classified them by mandibular positioning. That brings up the important question, "What is Class II malocclusion?"

Dr. Angle's text apparently does not make this clear enough to solve the question in the minds of many. Hence there probably will continue to be arguments as long as this classification is used. Personally, it seems logical, now that we know that the maxillary first molars are not always stationary guides, to take the bony foundations of the dentures as the more reliable indicators. We have a basis for this in Dr. Angle's statement previously quoted and again brought to your attention, i.e., "Hence in diagnosing cases of malocclusion we must consider *first* the mesio-distal relations of the jaws and dental arches."

Many orthodontists pay no attention to the position of the mandible in relation to the cranium in classifying Class II, Division 1 cases. They consider only cuspal relationships and hence we find many case reports in which Class I cases, with Class II relationship of the buccal teeth, designated as Class II cases. The same may be said of Class I cases with Class II, Division 2 cuspal adjustments. No doubt there are borderline cases in both of these divisions but the true Class II case presents a mandible in distal relationship to facial and cranial anatomy (Fig. 4).

In discussing the etiology of Class II, Division 2 the writer has only clinical deductions to offer. Heredity does enter into the problem, I thoroughly believe. Faulty growth patterns of facial and cranial structures are in evidence by the lack of vertical growth below the nasal area and by the distal positioning of the mandible. Muscular perversion, in the form of pressure against the maxillary central incisors, combined with excessive closure of the bite are mechanical factors to consider in the posterior positioning of the mandible.

In considering the prognosis associated with the treatment of Class II, Division 2 cases, there is one important factor that must be considered. I refer to the absence of vertical growth in the area of the face below the nasal passages (Fig. 5).

Clinical experience has demonstrated that success in stabilizing the corrected overbite present in these cases varies with the degree of vertical growth that

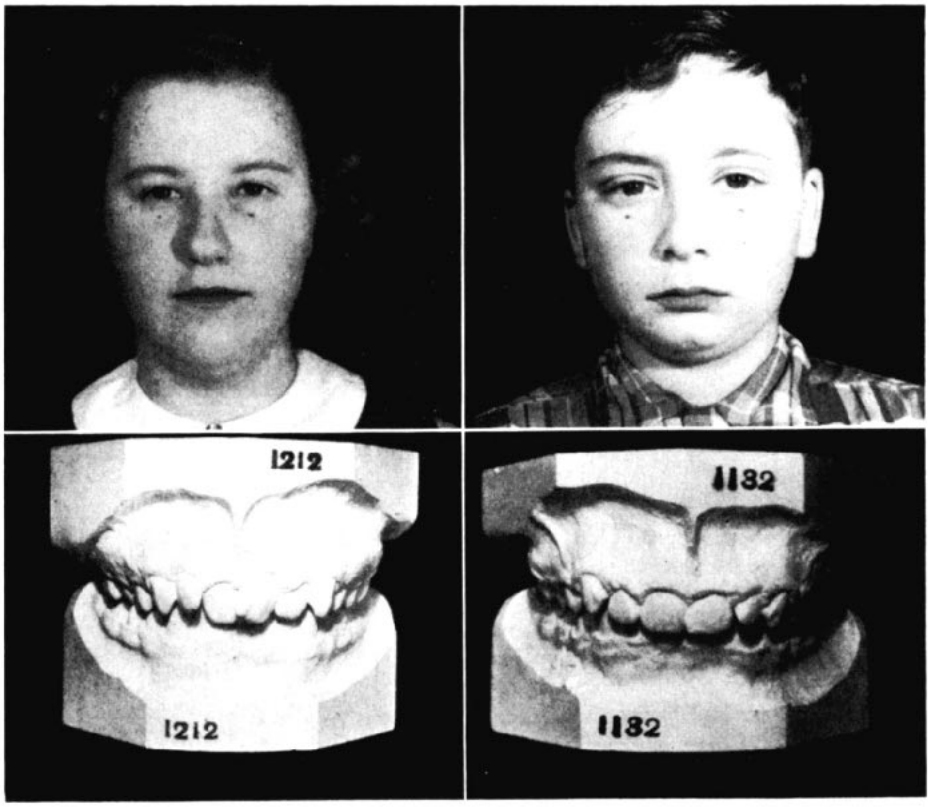

Fig. 5 Left, A Class II, Division 2 case with very good vertical growth in the oral area with a favorable prognosis for permanent stability of the corrected overbite.

Right, A Class II, Division 2 case with lack of vertical growth in the oral area and hence, a poor prognosis for permanent stability of the corrected overbite.

is present in the individual case under consideration. It would seem that muscular balance is a dictating factor in this situation. In other words, if there is marked evidence of lack of vertical growth in the facial area below the nasal passages, it is possible to correct the overbite in treatment; yet, subsequent to the removal of mechanical retention, a collapse invariably occurs.

This would indicate that muscle tension dictated this collapse. The corrected tooth positions remain undisturbed. On the other hand, if there is reasonably good vertical growth in the oral area, and in some cases of Class II, Division 2 there is, the corrected overbite obtained in treatment, by depressing the anterior teeth in both dentures, will remain well stabilized.

Therefore in rendering a prognosis in these cases, it is essential that the vertical height in the oral area be carefully observed and deductions influenced by this factor.

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