Considerations Related to the Duration of Orthodontic Treatment

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The appearance of Dr. Begg's article in 1956[1] had a profound effect upon the orthodontic profession. In a desire to provide "the latest and the best" for their patients, many orthodontists expended considerable time and effort to master this technique and apply it to their practices. Other thoughtful practitioners, although unwilling to reject the mechanotherapies they were using, were nonetheless impressed with Begg's results and the speed with which he obtained them. After careful study, modifications were made in existing appliances in an attempt to obtain some of the advantages of Begg treatment for their patients.[2,3,4]

Imitation is the sincerest form of flattery. In this instance, however, it has not always been appreciated. Instead, a certain amount of antagonism has developed where alternative mechanotherapies are sometimes evaluated with an undue emphasis on the number of archwires used and the duration of treatment. This type of thinking could have a downgrading effect on the profession. It could and, in fact, already has given rise to the impression in some quarters that orthodontics is a short-term procedure and rapid treatment a virtue. It would seem that a review of available information is in order at this point to determine the validity of this assumption and to clarify our conception of the nature of orthodontics.

Strang has defined orthodontics as "that science which has for its objective the prevention and correction of malocclusion of the teeth and associated dento-facial disharmonies."[5] Malocclusion has been classified by Angle on the basis of cuspal relationship and by research workers in cephalometrics according to the relationship of the teeth to various facial and cranial structures. "Norms" based on the cephalometric appraisal of subjects whose teeth and faces appeared harmonious to a particular investigator have been established. Harmony though, like beauty, exists in the eyes of the beholder, and esthetic standards vary in different areas, eras and racial groups. Even in our own profession in this country, there are those who prefer flat faces and those who prefer voluptuous lips. There are those who call Angle's ideal, Old Glory, a bimaxillary protrusion.

A fundamental axiom in biology is that variation is the invariable rule. No two individuals are exactly alike. Neither are both sides of the same individual identical. We would therefore expect to find considerable variation in both the occlusions and dentofacial configurations of different individuals just as we would in any other somatic characteristic studied.

When we treat a patient orthodontically, we are altering the morphology of normal, functioning tissues. We are not dealing with diseased tissues in most instances, but rather with dental alignments and facial structures whose modification, we believe, will benefit our patients. We are all aware of the etiological significance of endocrine disorders, oral habits, mouth breathing, improper swallowing and premature loss of deciduous teeth in the development of malocclusion. However, to speak of the etiology of malocclusion in patients with familial maxillary overdevelopment, bimaxillary protrusion, or mandibular prognathism makes as

much sense as discussing the etiology of big feet, slender fingers or bushy eyebrows. Evidently those factors responsible for the morphology of the rest of the body also play a major role in determining the maxillofacial configuration.

Orthodontics is unique in the healing arts. With our appliances, pressures are applied to the teeth which move due to the cellular reaction in the periodontal membrane. Simultaneously, the supporting alveolar bone is remodeled around the teeth in their new locations and the surrounding soft tissues conform to the changes in the underlying teeth and bone. As a result, it is possible to effect a gradual modification of the morphology or structure of healthy tissue.

Evidently heredity, as well as many environmental factors responsible for the development of a malocclusion, is beyond our control. The most we can hope to do, once growth is completed, is either to change or work within the limitations imposed by those factors responsible for the perpetuation of the malocclusion. Only if these perpetuating factors have been controlled and the new occlusion is in harmony with the neuromuscular environment will the result be stable. That this is not usually accomplished is evidenced by the almost universal phenomenon of some degree of relapse.

Although some occlusal disharmonies are amenable to rapid correction and are self-retaining, the alteration of an individual's inherited dentofacial morphology may require years of orthodontic supervision. In the mixed dentition stage, treatment is often helpful in modifying the developing dental and facial structures and in causing the permanent teeth to erupt more favorably. After the permanent dentition has erupted, active mechanotherapy may be employed to effect what we consider an optimum occlusal relationship as well as an improvement in facial esthetics. In other words, when we treat an orthodontic patient, we attempt to place the teeth where we believe they belong. Since very little is done to change either basal bone, the oral musculature and its innervation or the structure of the periodontal tissues, a period of retention is necessary in most cases. At times, permanent retention is required to avoid serious relapse. It would seem obvious that if a case required orthodontic treatment, the correction obtained should be retained. Because of certain assumptions of questionable validity, this is sometimes neglected. The assumptions I refer to are first, that treatment should be completed in a short time; second, that a properly treated case will not relapse; third, that a certain amount of relapse is preferable to permanent retention and fourth, that the case will never relapse to as severe a condition as existed before treatment.

When a patient is dismissed with inadequate attention given to retention, a disservice may be done both to the patient and the reputation of the orthodontic profession. If our commitment to rapid treatment is such that retention is neglected, research and our diagnostic ability should be directed toward providing us with a means of deciding which cases will hold up without retention so that we can limit our practices to their treatment.

Were we so to limit our practices, life might be easier for us. However, this would deprive many individuals who are severely handicapped, both dentally and facially, of the benefits of orthodontic treatment. If we believe orthodontics to be an important health service capable of both increasing the longevity of the dentition and improving dental and facial esthetics, it would be wrong to deny it to these unfortunate people.

Since orthodontics is a health service, one might question the justification of

denying it to those children in the early mixed dentition stage who could benefit from it both dentally and psychologically. In addition, if we wait until the malocclusion has developed fully, prevention is being ignored. A developing malocclusion can be intercepted only if the patient is seen early. It is believed that prevention should be our goal as it is in the other healing arts.

Early habit control, early cross-bite correction, the retraction of protruding maxillary incisors, conservation of the leeway space, extraoral force and serial extraction procedures can be enormously beneficial to our patients. Sometimes, like the proverbial stitch in time, early intervention can prevent the development of a malocclusion of the permanent dentition. More often, the over-all treatment time is increased particularly when we are dealing with a marked dentofacial imbalance. However, this disadvantage is more than offset by the advantages of decreased tissue trauma, the ability to avoid extraction in certain cases, decreased psychological trauma associated with an earlier esthetic improvement, and the possibility of accomplishing more in treatment when growth is favorable.[6]

The technical ability to effect controlled tooth movement with dispatch and with minimal anchorage loss, tissue damage and patient discomfort is of prime importance in orthodontics. We can be justly proud of our accomplishments in this area to date and research leading to further improvement should certainly continue. However, all mechanotherapy should be viewed in proper perspective. In all of the healing arts, technique must be subservient to diagnosis. A malocclusion should not be allowed to develop to the point where a particular appliance can be used. The technique should be a tool to use where indicated and not to guide treatment. Instead, decisions as to when, how and how long to treat should be based on sound biologic principles. Regarding retention, it is obvious that a self-retaining case is best and we should certainly strive to achieve this wherever possible. Unfortunately, we are far from the point where all of our cases are self-retaining regardless of the mechanotherapy employed. This fact should be appraised realistically so that appropriate action may be taken.

From this brief review of some of the factors involved in orthodontic treatment we can conclude that many malocclusions are not amendable to rapid correction. This is not meant as a justification of technical ineptitude or improper diagnosis. Reference is made instead to the fact that, when we treat malocclusions, in many cases we are altering the patient's inherited morphology. In these cases early intervention is often beneficial to the patient, even though this may add years to the treatment time. After active treatment of the permanent dentition has been completed, these individuals may require prolonged retention if they are to enjoy lasting benefit from our and their combined efforts. All of this can amount to many years of treatment. It is true that much of this time is spent in developmental and retention supervision. However, patients don't always make the distinction and, at times, suffer from "righteous" indignation because they have been under orthodontic treatment for five or six years. It is believed that the foregoing has demonstrated that this may not represent an excessive duration of orthodontic supervision but rather valid, proper treatment capable of rendering an optimum service to the patient.

The current emphasis on rapid treatment has fired the imaginations not only of the profession but of the public as well. If early intervention and retention were to be neglected as a result of misconceptions concerning the nature of malocclusion and the required dura-

tion of orthodontic supervision, the patient would suffer by not receiving an optimum service. This, in turn, could have an adverse effect on the profession. It is important, therefore, for us to clarify our thoughts on the nature of malocclusion and orthodontic treatment so that we can educate the public in this important but often misunderstood area.

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