Relapse of Orthodontic Treatment

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Why do successfully treated malocclusions fail? The subject of failures is as vast as the field of orthodontics itself. In fact, every time we as orthodontists undertake to treat a malocclusion we assume that the odds favor success but the possibility of failure, if not total, exists in some degree. Some of the factors that contribute to successful treatment are obvious, such as a good skeletal pattern, nicely formed teeth, a good growth potential, and well-coordinated functional patterns. Also apparent are some factors that make the outcome of treatment questionable, for example, poor dentofacial relationships, unfavorable growth direction or potential, teeth that leave much to be desired anatomically, abnormal orofacial habits, and a patient who is indifferent to having orthodontic treatment in the first place.

A discussion of relapse requires a definition of the terms and statement of standards. Webster defined relapse as "A slipping or falling back, especially into a former bad state." This is not to mean that many cases evaluated and observed in preparing this study relapsed completely. In fact, only two were complete relapses. For all others it was a matter of degree, some more, some less. Probably none of us here could agree on the extent of relapse of many cases. What some would call satisfactory, others would criticize severely. Stated another way, a discussion of this kind must be subjective to some extent, in spite of trying to remain objective throughout. Specifically, the tangible observable characteristics of dental relapse are: (1) interdigitation, as in relapse of a Class II case, (2) lateral relapse as in crossbites, (3) crowding, (4) overbite, (5) overjet, (6) open bite, and (7) rotations. Any tendency for relapse that was in excess of twenty per cent was considered a partial failure. Observations regarding rotations were not considered for this study.

In a combination of observations such as this, it became difficult at the outset to categorize cases or to apply statistics in any reasonable and, to me at least, logical manner. Many variable characteristics appeared qualitatively and quantitatively. If these were to be classified further into groups according to type, age, and sex, the problem could become almost astronomical in the requirement of numbers of cases to provide the material for statistical study. Without statistical analysis of many measurements, the findings from the relapse material were largely derived from direct observation of the patient from the case records. In justifying this approach I quote from Hans Selye[11] in his book, *From Dream to Discovery*: "Somehow I feel much closer to Mother Nature when I can observe her directly with the sense organs she herself gave me than when there are instruments between us that so often distort the picture. Easily recognized, manifest changes in shape or behavior, are . . . less subject to instrument error . . ."

Observations and measurements on over one hundred cases provided the material for this discussion. Every malocclusion had some unfavorable characteristics that produced the dental irregularity. The number of these unfavorable factors assembled in the same patient and their interrelationship with each other apparently determined the possibility for success in treatment or had inherent factors which made the

outcome of treatment questionable and, in some, ultimately caused a relapse. This encompassed a number of different entities, i.e., the skeletal, the dental, and the muscular. Abnormal habits are an entity unto themselves and will be mentioned only incidentally as they may apply to certain cases that will be used as examples in the discussion. So many variables appeared that it was sometimes difficult to identify any one or even several of the many factors involved that indicated distinctly a favorable or an unfavorable prognosis for orthodontic treatment except in the extremes. However, certain patterns of facial morphology were highly significant in arriving at a valid prognosis and an effective treatment plan. Examination of some selected case records demonstrated how a number of favorable characteristics contributed to success in treatment and stability afterward. Conversely, several unfavorable factors assembled in one face predisposed only to a fair result and if enough were unfavorable, relapse occurred. Certain combinations of negative characteristics emerged which lead me to suspect that other cases with some of the same characteristics plus a sufficient number of other unfavorable ones might also be poor orthodontic risks. Considered together, a number of favorable factors can point to a good prognosis for stability just as several unfavorable factors can predispose to failure. Many variations characterized the faces in which it was our task to improve the anatomical relationships of the teeth and alveolar processes. The complexity of these compounded the problem.

If we accept the concept of the individual norm that there is no average normal person, rather, each individual deviates from the average in some way and, assuming that he is in good health, each is normal unto himself. The orthodontist is ambitious. Indeed, he is almost presumptuous in assuming that he can take the dental and growth patterns of an individual and by "distorting" them, as Sicher[12] has said, improve them anatomically, functionally and esthetically. Futhermore, he assumes that nature will accept these changes and he is not a little dismayed when she does not.

The form of the face is the sum total of the shape of its several parts. This configuration in each individual is the result of the way these parts grew, and this depends upon the inherited growth pattern of the individual. In everyone this pattern has yielded to some modifying influences, largely environmental, such as injuries, illnesses, allergies, oral habits, and even the orthodontist. In varying degrees each of these except the latter affects every individual, and it is only rare that any one of the above, by itself, produces a true malocclusion of any clinical significance. Rather it is pattern that determines facial morphology and, in most, this is the basis for a malocclusion. Just as the form of the face and its growth may determine a maloccluded dental apparatus, so do these factors contribute significantly to the ultimate success or failure of every treatment for malocclusion. The general morphology of the face and its various parts largely determine the direction that the growth of the several parts will take and, as we are well aware from the writings of Brodie[3,4] Björk,[2] Lande,[9] and many others, it is also growth that may account for the success or failure of a treated malocclusion. From among the many factors that may contribute to the success or failure of orthodontic treatment, a number of those that seemed highly significant provided the subject material for this discussion. They were not necessarily equal in importance. The order that follows is

arbitrary and implies no reasonable sequence in terms of importance as each affected the stability of a treated malocclusion.

Fixed variables were those factors observable in an examination of the study models, lateral cephalometric headplates, and dental x-rays. They were fixed in a given patient but, of course, varied from patient to patient. They were the characteristics with which the patient presented and over which we had little or no control, except for the positions of the alveolar processes and the teeth. They were, in fact, the anatomy of the patient. If we elected to treat the patient, we were faced with these characteristics. We planned and adapted treatment to them. These included the facial pattern, the muscular patterns, the tooth form, tooth size, the functional patterns of the mandible, the function of the musculature, and even the temperament of the patient.

The second entity was the one of true variables. These included growth, orthodontic treatment, the cooperation of the patient, and habit patterns. They presented unpredictable variations within any one patient and compounded some of the problems encountered during and following treatment.

In the light of modern research regarding faces and malocclusions, most of us accept the premise that malocclusion teeth are often innocent bystanders in a complex of dentoskeletal relationships that produce malocclusions. Most who work with cephalometrics will be quick to agree that skeletal relationships alone can largely determine the potential for success or failure of treatment in any malocclusion. But which relationships are most important is a subject for much discussion and controversy. Many relationships observable in lateral headplates were significant.

At the risk of omitting some that are important, three *skeletal relationships,* among many, appeared to have a direct bearing on treatment potential. They are well-known to all: (1) the facial angle (NPo to FH), (2) the Frankfort mandibular plane angle (FMA), and (3) the angle of convexity (NAPo).[5] This discussion offers nothing new regarding these measurements. However, it was the tendencies toward the mean or the extremes of these relationships and the number of them that tended toward one or the other that did count. If in a given patient all three of these measurements approximated the mean of an individual with a good occlusion, the prognosis for treatment definitely was favorable. For example, for the patient in Figure 1 the facial angle was 87 degrees, the mandibular plane angle 28 degrees, and the angle of convexity 8 degrees. Arch length was inadequate. This problem was compensated by the removal of the four first premolars. All other factors discussed in the following text appeared favorable. This indicated a good prognosis and subsequent events bore this out. No kudos were due the method of treatment or the orthodontist for this. The patient had the potential for success in treatment.

If all three skeletal measurements were far from the mean, it indicated caution. In Figure 2 the pattern was quite the opposite and the results were disappointing. Note that the facial angle was 79 degrees, the mandibular plane angle 35 degrees, and the angle of convexity 17 degrees. The functions of the facial musculature and the tongue were not good. Arch length was inadequate and growth potential was nil. Other factors were relatively favorable in this patient just as in Figure 1 above. The results were not

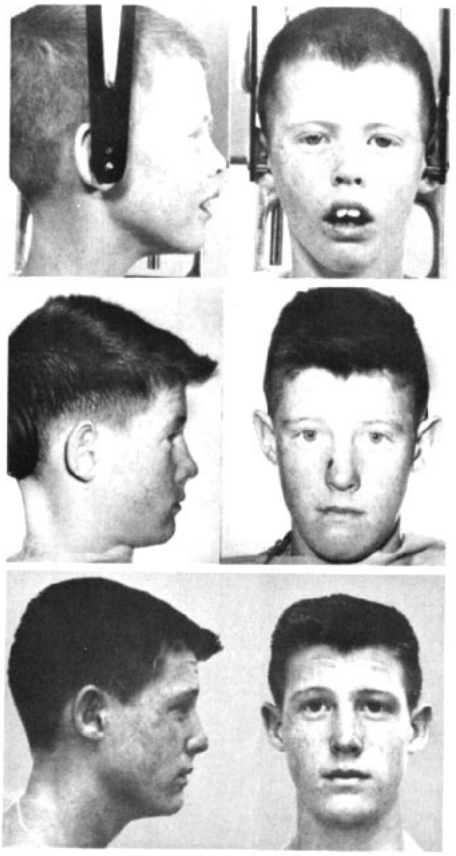

Fig. 1-A From top to bottom, the photographs before treatment, after treatment and after retention. The before photographs seem to indicate a lack of neuromuscular control of the lips. However, the patient was interested in sports and neuromuscular coordination appeared excellent. The results of treatment in regard to lip posture and tongue function bore out this.

Fig. 2-A The facial photographs. From top to bottom, before treatment, after treatment and after retention. Note the apparent bimaxillary protrusion at all three stages.

at all gratifying by most accepted standards, although the patient was pleased. The teeth did occlude at the end of treatment, but out of retention the mandibular anterior teeth developed some crowding. Three millimeters of overjet returned.

These two examples were clearly extremes. What made things difficult in most were the many combinations of variations and the subtle deviations from the ideal that characterized so many of the cases treated. How would we evaluate these factors if we were to subject such a study to statistical analysis or put the information into a computer for analysis? This is a problem for study which could possibly provide much valuable information. However, such a study requires accurate objective information. If the information gathered and used is not accurate, neither are any conclusions.

One simplification regarding facial pattern appeared. If two of the above

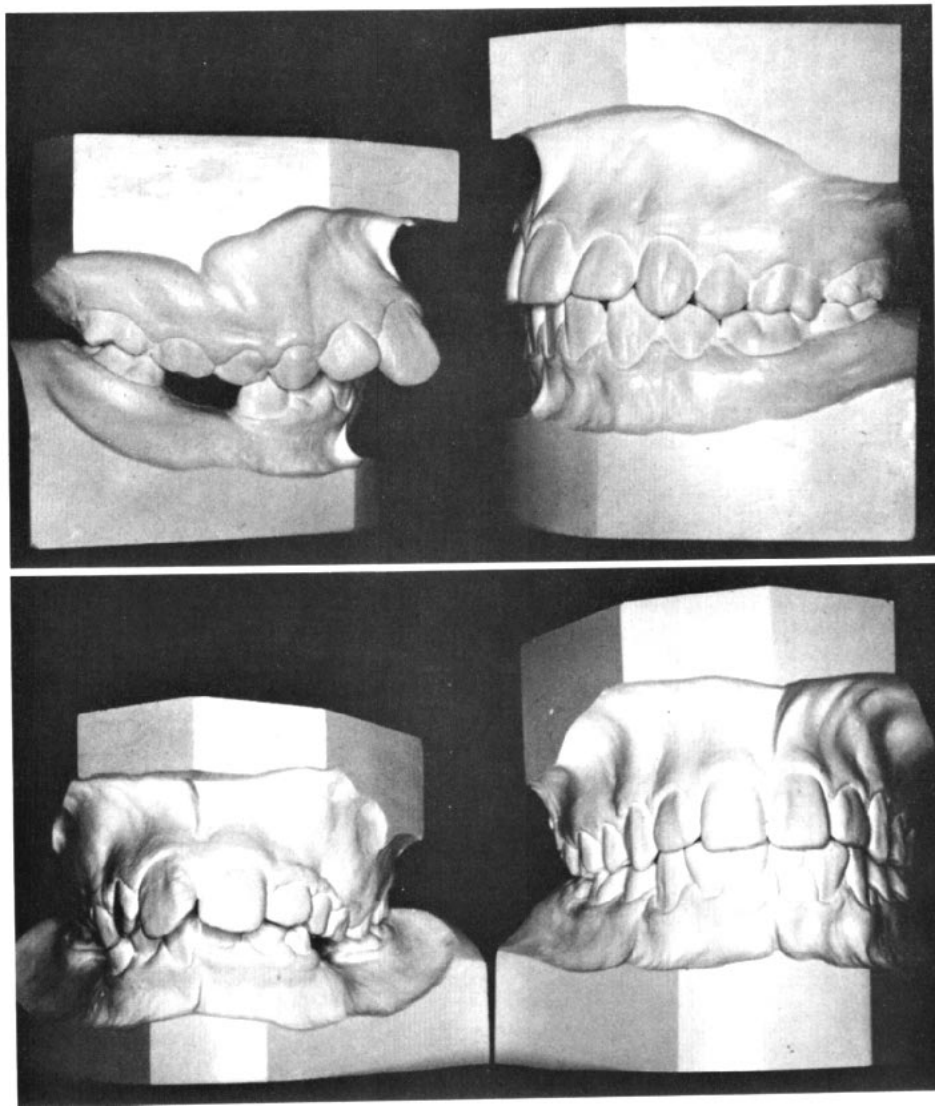

Fig. 1-B Above, left, the lateral view of the models before treatment and right, after retention. Below left, the anterior view before treatment and right, after retention.

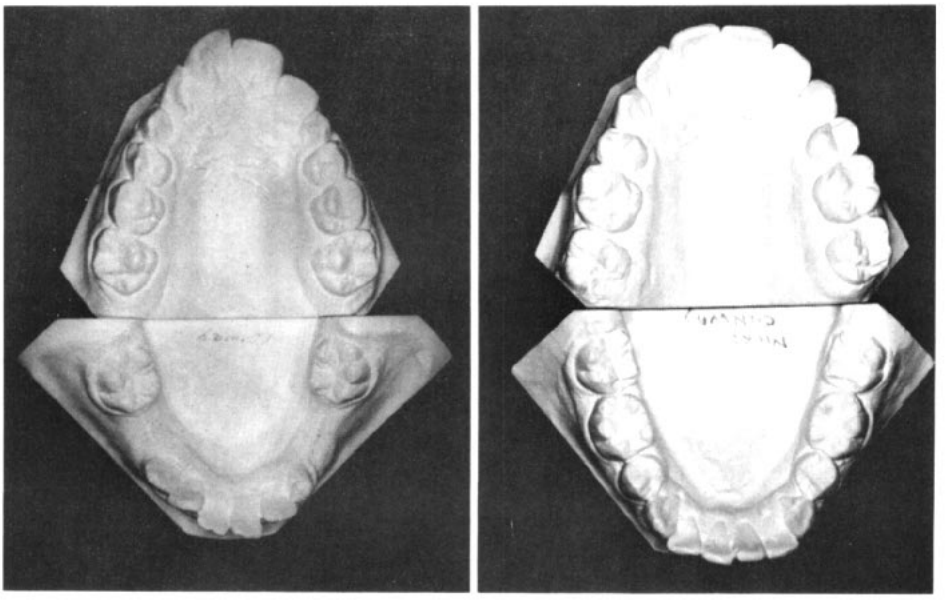

Fig. 1-C The occlusal view of the models, left before treatment and right after retention. Note the well-defined cusps on the molars and bicuspids. The general appearance was that of excellent tooth form.

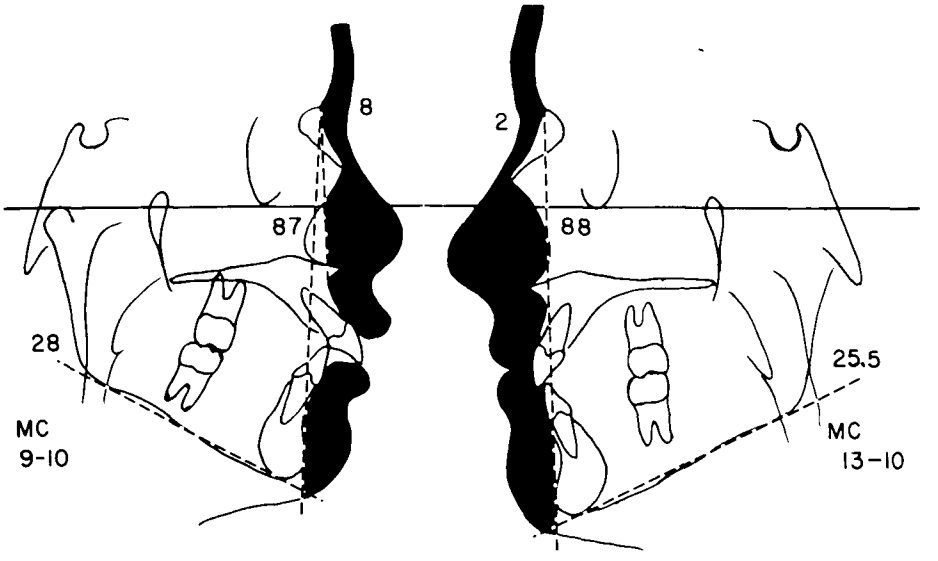

Fig. 1-D Left, the tracing before treatment. The mandibular plane angle was 28 degrees, the facial angle 87, and the angle of convexity 8 degrees. This was a favorable skeletal pattern. Right, the posttreatment headplate tracing. Treatment and growth contributed to a reducion of he mandibular plane angle to 25,5 degrees. The facial angle increased to 88 degrees. The angle of convexity was reduced to 2 degrees.

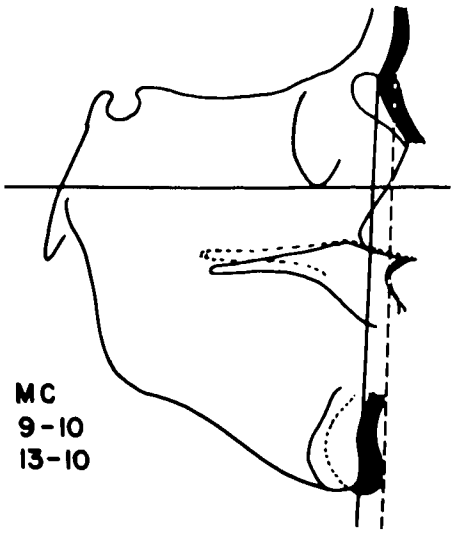

Fig. 1-E The headplate tracings were superimposed on the Frankfort plane and registered on a perpendicular from sella turcica. The superimposition has eliminated the factor of vertical growth. Note that the upper face and the mandible grew forward, whereas, apparently because of treatment, the forward growth of the premaxillary area was nil.

were favorable, this was more favorable than one, and one was more favorable than none.

Closely associated with skeletal pattern was *muscle*. This too we reckoned with in our assessment of patient potential for successful treatment or relapse potential. Muscular pattern apparently was no more amenable to change than was the skeleton. It was in the relationship of muscle to skeleton that the "orthodontic numbers game," as the late Wendell Wylie called it, failed completely. A lack of some sort of standard to supplement the tangible quotable skeletal measurements made difficult any observations regarding muscle. The results of treatment bore out Kloehn's[8] statement that "good environmental forces are necessary for a good stable result." For example, if the labial musculature was thick and flaccid, a significant reduction of overjet or of a bimaxillary protrusion produced little change in the soft tissue profile. Even if we succeeded dentally in improving this type of malocclusion in keeping with most popular standards, the lack of labial muscular restraint often allowed the corrected teeth, subsequently, to drift forward.

Conversely, consider the type of case that has moderate crowding, i.e., a lack of four or five millimeters of space in both dental arches. The facial muscle pattern is that of tight lips and the muscular pattern generally is hypertonic. Expansion in this type of case would be disastrous, for the musculature would not tolerate it. Extraction as part of treatment probably would produce a dished-in type of face. What to do? Possibly settle for a poor compromise either way.

Growth often treats the orthodontist better than he treats the patient. It is the important intangible in all of our patients young enough and fortunate enough to have it. It seemed predictable up to a point, but sometimes when or where least expected, it emerged either to improve on the artifacts of treatment or caused an apparently well-planned and well-treated case to fail. It is well-known to all of us that favorable mandibular growth response can contribute much to the success of treating a Class II, Division 1 malocclusion. Poor mandibular growth can make the results disappointing.

It seemed that tooth movement always progressed better and faster when growth was active. Growth also tended to cancel out some of the unfavorable side effects of the orthodontic appliance. For example, in treating any type of case simply placing the appliance caused the teeth to extrude slightly from the alveolar process. Leveling teeth and most types of Class II treatment caused further dental extrusion. In nongrowing patients the net effect

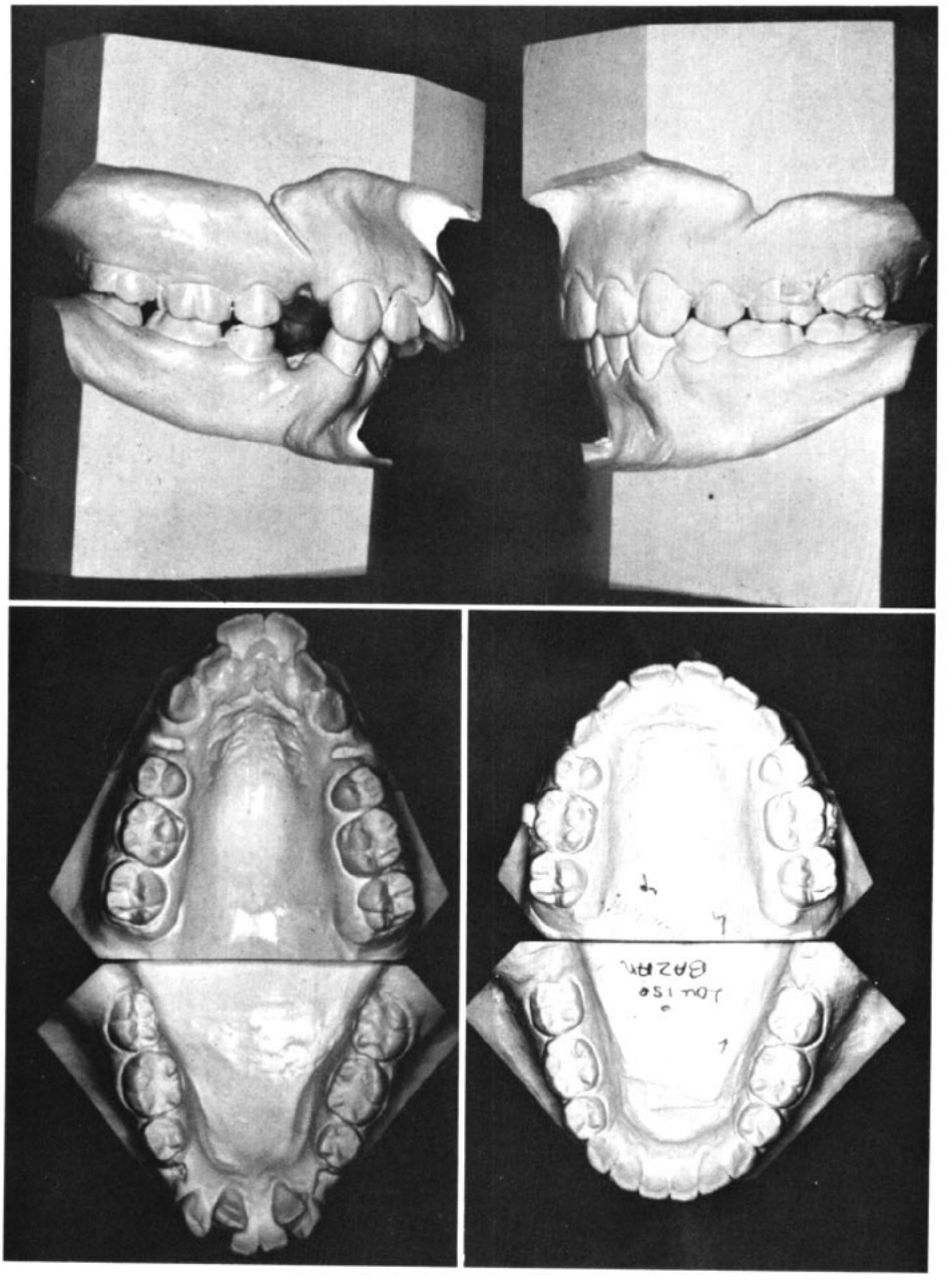

Fig. 2-B The study models. Above left, before treatment and right, after treatment. Below, the occlusal views before and after treatment, respectively.

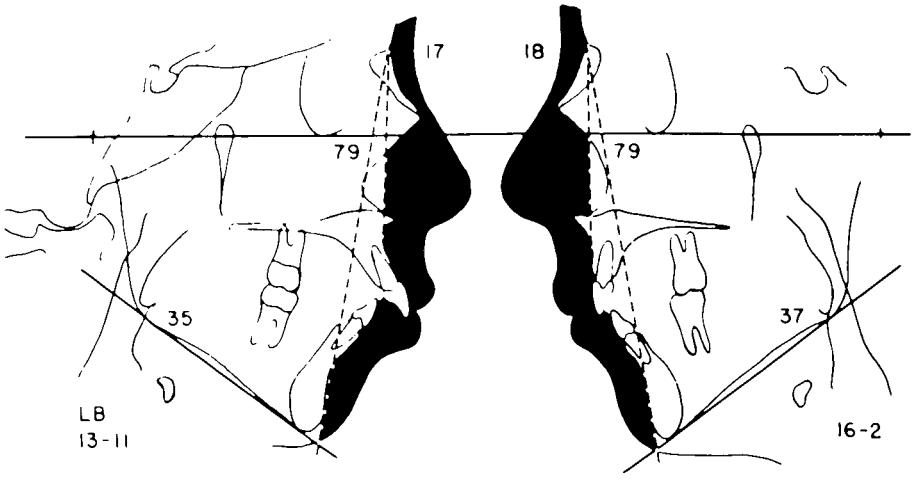

Fig. 2-C The left tracing was before treatment and the right after retention. Note that the mandibular plane angle became less favorable, increasing from 35 to 37 degrees. The angle of convexity increased from 17 to 18 degrees. The facial angle remained at 79 degrees. In slightly over a year of retention, the overjet had already relapsed three millimeters.

of this was to cause the mandible to tip downward. More than a little of this caused pogonion to move posteriorly. However, with active growth the unfavorable side effects of the appliance apparently did exactly what growth would have done and the mandible usually recovered its original position. If the mandible did tip and growth occurred following treatment, recovery also occurred.[7] When this phenomenon of downward tipping of the mandible occurred in the absence of growth, the subsequent recovery after treatment contributed to some of the unfavorable sequelae to treatment.

Neuromuscular coordination apparently can affect the function of the dentition in a malocclusion. Children who were poorly coordinated displayed this condition even in the occlusion of their teeth. They were the ones whose teeth tended not to interdigitate well in any position of the mandible. In fact, on asking this type of child to close his teeth together, he displayed no true centric as far as occlusion was concerned. He had a number of centric positions for the mandible, but the teeth did not occlude well in any of them. Often the cusps had abraded tips. Usually tongue control left something to be desired. The anterior teeth often showed an incomplete overbite or an open bite. On questioning this type of child, "Do you like sports?" or "Are you good at sports?", more often than not an answer of "no" confirmed the original suspicion. This was also the child who, if he was to wear a neckband as part of orthodontic treatment, had difficulty placing it and removing it. He was the one with whom we left the assistant to instruct him in placing the neckband and thirty minutes later she was still working with him.

At every stage of treatment he had dual or multiple bites, and on completion of treatment the occlusion never seemed to settle satisfactorily. One can only theorize that the proprioceptive impulses from the periodontium and muscles of mastication failed to deliver adequate information to the central nervous system for the musculature to

position the mandible accurately in function.

Tooth form had a significant role in the stability or lack of it in every treated malocclusion. Posterior cuspal interdigitation contributed both to anteroposterior and lateral stability. Lack of it seemed to complement any predisposition to relapse on the basis of other unfavorable factors. Anteriorly, satisfactory incisor and canine relationships contributed to stability of overbite, overjet, and rotations. Sixty years ago Angle[1] stressed the importance of cuspal interdigitation in the development and maintenance of occlusion. This was no less important in these recent observations. Unfortunately in some, tooth form precluded stability. Either through inherited tooth form or attrition, the cusps in some were low or almost flat. This type of tooth form severely limited cuspal interdigitation. Particularly did this adversely affect the moderate-to-severe Class II type skeletal patterns. These were the ones in which the maxillary arch tended to slide forward following treatment.

Inadequate arch length, i.e., a tooth size-jaw size discrepancy, was one of the principal entities observed in the malocclusions and in relapse also. It is not my purpose to enter into any discussion of when to and when not to extract teeth but rather to point out that dental size disharmonies are but one more of many negative factors with which a patient can present. Certain types of these stood out. For example, one of the most obvious was the child with lateral incisors or canines almost completely blocked out of the dental arches with no place to put them except for removal of four premolars.

However, a fallacy may have existed in our thinking. Frequently it is easy to see the lack of space as occurring at the site of the teeth most displaced. Obviously this is not necessarily so. Rather, it seemed that for each tooth a slight lack of space existed but this lack had expressed itself in a few very apparent malposed teeth. How much better for some it would have been to be able to remove a little of all teeth than one whole tooth in two or four quadrants of the mouth. Often what remains does not fit into that portion of the jaw in which we place it. For example, the sum total of the widths of the mandibular incisors and canines may be too great for the mandibular width in their location at the end of treatment.

A discussion of *tooth size* automatically implies, for orthodontic purposes, primarily mesiodistal widths. This was only a part of the pattern and affected mainly the problem of crowding or lack of it. Tooth length, not just crown height but total tooth length, may have also favorably or adversely affected what occurred in rearranging teeth. Sometimes extremely large teeth were in quite small mouths. In some of these the forward axial inclination of the teeth was greater than in most. Extractions solved the horizontal space problem and permitted retraction of severely protruded anterior segments into a better relationship with the bony profile of the face. It did not resolve the vertical problem. In retracting and uprighting the anterior teeth, more vertical space demanded either depression of these teeth or a downward tipping of the mandible. More and more it was my impression that nature will not accept teeth beyond certain ill-defined positional limits. Our technical abilities exceeded the ability of nature to accept some of the results we imposed upon her. It was no surprise then, that in some with long teeth the mandible tipped down and subsequently tipped

back up again with once more some forward tipping of the anterior teeth.

The relationships of the *mandibular canines* to the body of the mandible may hold the key to stability in the mandibular dental arch. Most orthodontic analyses include a measure of lower incisor position or angle relating to some plane of reference, but with no reference to canines or any other teeth in the mandibular arch as a factor in achieving stability after treatment. This approach handily omits two other dimensions of space, i.e., height and width that bear directly on stability within the mandibular arch. Yet no other dental relationship succumbs to relapse tendencies more readily than the mandibular incisors. Perhaps something is wrong with the type of measurements now in use. Each includes some formula or comparison with an ideal for locating the mandibular incisors in the treatment plan. Each may work out badly in other than a good or reasonably good facial and dental pattern.

No matter how the lower incisors related to the mandibular, occlusal, APo, Frankfort, AB, or SN planes, if the bicanine width measured much greater after treatment than before, relapse was sure to follow unless the canines were posteriorly positioned in a wider portion of the mandible. However, Walter[16] has shown that in some cases very moderate expansion of the canines did maintain their stability after treatment.

Several possibilities contributed to instability of the mandibular teeth and the least of them appeared to be any mandibular incisor angle to anything. If the mandibular canines were well forward relative to the mandibular symphysis and they were widened laterally to accommodate crowded incisors, they often relapsed. If labial muscle tone was hypertonic and mandibular incisor expansion occurred, collapse usually followed. This pointed to a need for a better understanding of mandibular incisor position or, better yet, of mandibular and maxillary canine positions relative to width, height, anteroposterior position and muscle. Howes[6] described a method for relating premolar width to that of their apical base and indicated that in some the only way to achieve stability was to move the canines into a wider portion of their apical bases. It is beyond the scope of this discussion to suggest a formula for expansion of mandibular canines relative to mandibular width and a required amount of posterior canine movement to achieve stability. The important factor is that more than a little expansion of the canines resulted in relapse except for a few as noted above.

Disharmonies in tooth sizes, both bilateral and maxillary tooth size relative to mandibular tooth size, created functional problems to which nature adjusted for physiologic balance but not necessarily for the orthodontist's peace of mind. In many mouths right and left pairs of teeth were of dissimilar sizes. Steadman[13] has shown, and as most of us are well aware from experience, a millimeter or two or more of size disparity is common between maxillary and mandibular anterior teeth. In a number of treated cases this produced a faulty buccal occlusion or an overbite or overjet discrepancy which may have been correctable mechanically but which nature failed to accept functionally.

The most common and obvious of mis-sized teeth were small lateral incisors. Our choices were usually one from among three compromises. First, to close the maxillary denture and sacrifice satisfactory interdigitation in the buccal segments with the maxillary

canines remaining forward relative to the mandibular canines. Second, to provide the patient with adequate buccal occlusion and leave some spacing in the maxillary anterior segment, which the patient and parents found objectionable. Third, to extract a mandibular incisor and settle for slightly more than a desirable amount of overbite and overjet. None were ideal. Occasionally we sacrificed good buccal interdigitation in order to close the maxillary dental arch. Where maxillary lateral incisors were quite small it seemed best to remove the smallest of the mandibular incisors. In some we continue to leave a space distal to the maxillary lateral incisors. This size problem indicated one more factor to consider along with the others in determining the potential for stability after treatment.

Open bite tendencies often represented a combination of two previously mentioned entities, namely, skeleton and muscle. Subtelny[14] reported that certain open bites may occur because of skeletal relationships. This seemed to be true in some. Others were apparently muscular in origin involving tongue position or tongue control. The problem of the open bite, nevertheless, was a discernible entity even though closely related to more basic problems. This rated high in evaluating some malocclusions as a factor that may alone contribute to relapse. If other unfavorable characteristics complemented an open bite, the possibility of achieving and maintaining even a moderate improvement was questionable.

Low alveolar height was a limiting factor that Brodie discussed long ago in his seminars. Experience has validated this observation. It seemed that in this type of pattern the teeth were more reluctant to have their positions disturbed. Tooth movement was slower. Even after apparently successful treatment, some of these displayed a strong tendency for the teeth to return to some approximation of the position of their original individual normal positions. This one entity was often peculiarly alone and not associated with many other difficulties. It is an anatomic antagonist of most other skeletal disharmonies that contribute to malocclusion and possible eventual relapse.

Last, the concept of the *normal occlusion* and face does not constitute part of the anatomy of failure. It is an anatomic ideal that exists in the minds of each of us. In any creative endeavor, orthodontics included, one must have an idea, a mental image of his objective. But under some circumstances, seeking to establish the ideal face and occlusion in a face that was not so constituted can lead only to frustration and disappointment.

The last case, Figure 3, illustrates a number of factors that led to the unsuccessful treatment of a Class I malocclusion. Clinical examination indicated poor muscle tone. The photographs confirmed this observation. Tongue position, a habit perhaps, apparently contributed to an incomplete overbite. Examination of the models indicated low cusp height which did not favor satisfactory cuspal interdigitation. A moderate lack of space was present and even more space was needed to accomplish reduction of the bimaxillary protrusion. Examination of the lateral headplate revealed a moderately unfavorable combination of facial characteristics. The facial angle was 85 degrees, the mandibular plane angle was 30; the angle of convexity tended toward the extreme at 14 degrees. It was not that any one of these was so very unfavorable; it was the combination of all three that tended toward a Class II type pattern that was not good. Subsequent serial cephalometric observations indicated that the

Fig. 3-A The facial photographs, from top to bottom, before treatment, after treatment, after relapse, after retreatment relapse. Note the facial improvement in spite of minimal dental improvement.

upper face was growing forward faster than the lower face. Here in the same face were at least eight unfavorable factors. Yet, no one alone would have produced the relapse. This quantity and combination of adverse facial characteristics is what apparently predisposed to the relapse; each one of them could have been identified prior to beginning treatment, even growth, had serial records been taken first. They should have indicated caution but at that time my approach to treatment was one of almost unqualified optimism. The one saving development esthetically was the growth of the nose and the thickening of the soft tissue over pogonion. The face probably would have improved noticeably even without treatment.

This was one of the cases that precipitated this study. In retrospect it does not seem that a similar case presenting today would lead me to anticipate such a relapse if treated that way. However, it would raise a question about the advisability of doing much more than reducing the maxillary overjet. No teeth would be removed. Certainly it seemed that, to a degree, our successes and our failures were partially predictable. With more looking back, not just at our successes but at our failures, our acuity in prognosticating results should improve.

To conclude, in all of nature no perfect specimen exists. Every creature and individual represents some form of compromise in his make-up. Any deviation from the ideal requires an adaptation by any biologic form. The very fact that a patient presents with a malocclusion is a basic indication that we have a deviation from the ideal norm in which some adaptation has already occurred. Probably in improving circumstances for that patient some additional compromises will develop. The concept of the norm can

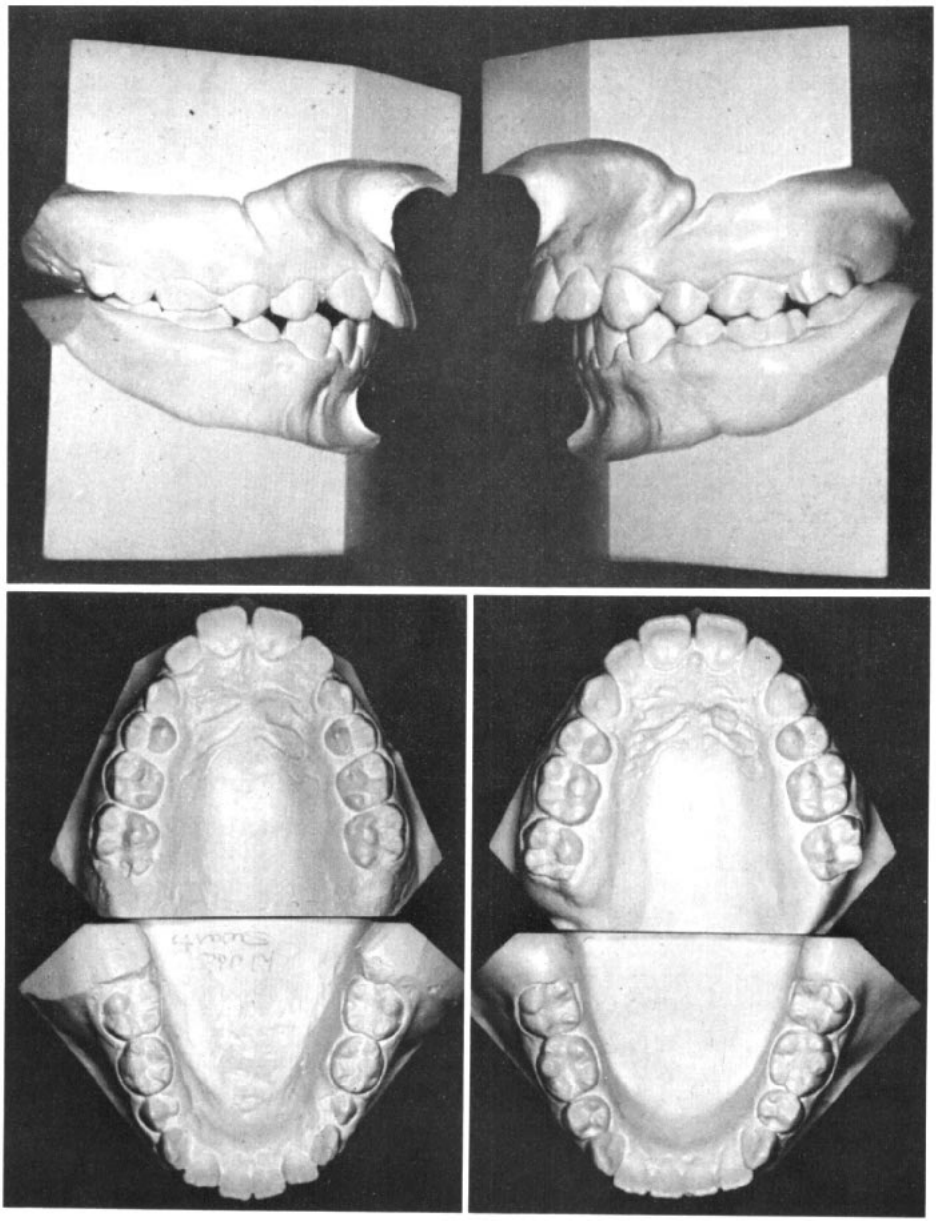

Fig. 3-B Left, the casts before treatment and, right, after first treatment period relapse. Below, occlusal views of the same.

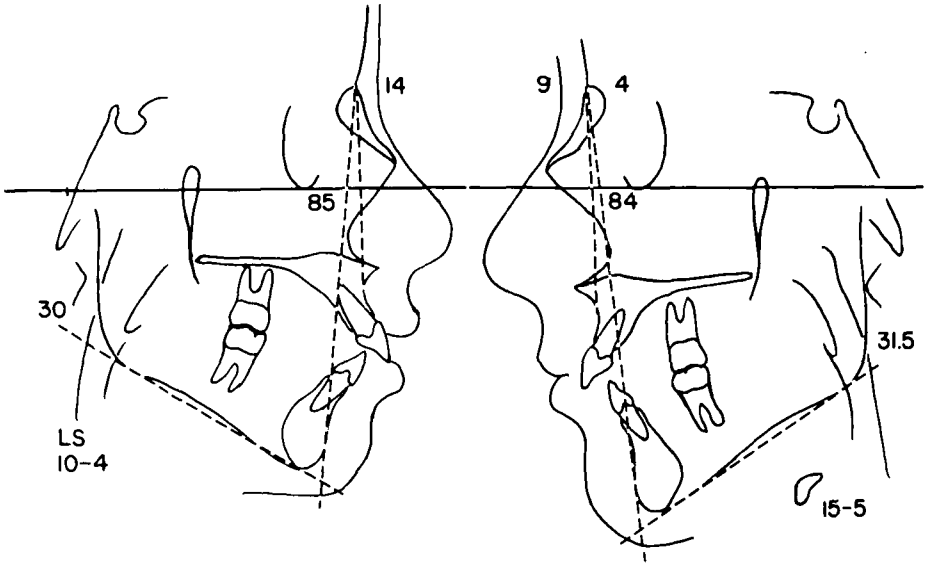

Fig. 3-C Left, the tracing before treatment. The Frankfort mandibular plane angle was 30 degrees, the facial angle 85, and the angle of convexity 14. Right, the headplate tracing after treatment. The mandibular plane angle was 31.5 degrees, the facial angle 84, and the angle of convexity 9. The face measured along the sella-nasion plane grew 4 millimeters.

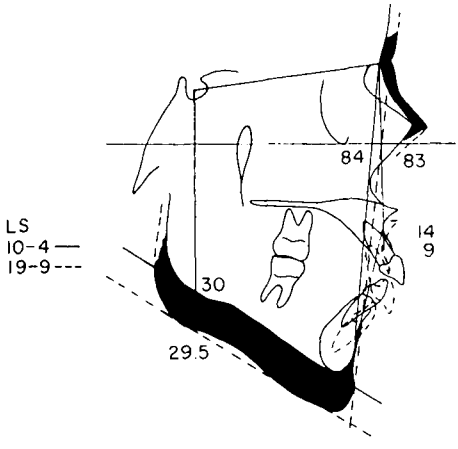

Fig. 3-D The superimposed cephalometric tracings before treatment at ten years four months and nineteen years nine months. The superimposition is on Frankfort plane registered on a perpendicular from sella turcica. Note that the upper face and middle face grew forward significantly, but that the lower face grew only downward.

provide us a point of departure, a concept of what is good and what is not, but we must know when to accept compromise and which of a possible number of compromises is the best, or perhaps the least of several evils. We must learn to think in terms of an achievable optimum rather than at times abusing the anatomy and physiology of the patient in pursuing our figmentary ideal normal which will never be. We cannot force the anatomy of the patient into a so-called ideal set of dental and skeletal relationships. As Salzmann[10] has said, ". . . The case of cephalometric standards drawn from individuals with excellent occlusion as a means of deciding treatment objectives has no scientific justification." We must remember that within reason the individual will adapt to a reasonable compromise. The adaptation may not always please us as orthodontists.[17] But let us not confuse our objective which is to help nature adapt and not one of

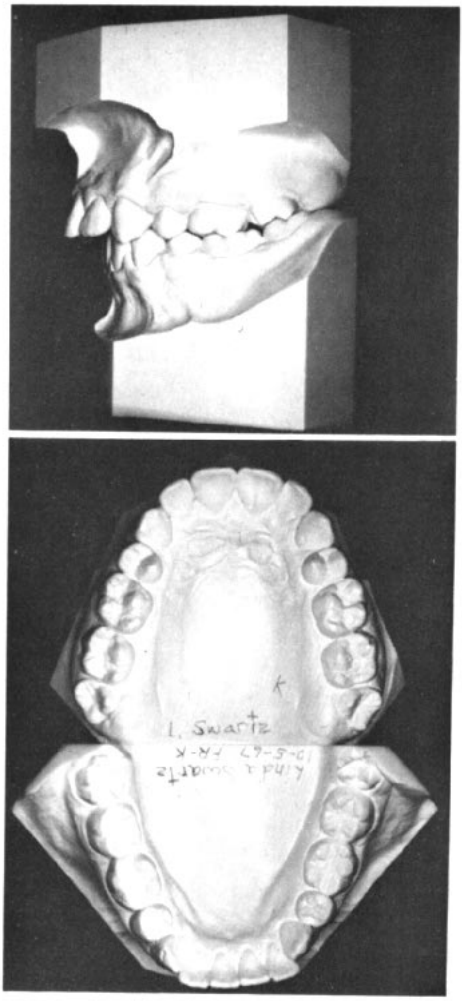

Fig. 3-E Above, the models after retreatment relapse and below, the occlusal view of the same.

imposing on the individual a set of circumstances that we consider ideal but which are unacceptable to the anatomy and physiology of the patient. We cannot cheat on nature.

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