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Clinical Orthodontics

A GUIDE TO THE SECTIONAL METHOD

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BERCU FISCHER, D.D.S.



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AFFECTIONATELY DEDICATED

TO MY WIFE

SHEINA M. FISCHER

whose patience and active participation have made this book possible

PREFACE

This book is submitted to the profession as a complete account of experience in the several phases of clinical orthodontics and is based largely on personal observations from my own practice.

The desire for a book that would bring most of my operational orthodontic concepts within the covers of one volume and show them in action as they are used in the management of my orthodontic patients required a title that would make known this objective. The title, "*Clinical Orthodontics: A Guide to the Sectional Method*," is intended to convey the idea that the procedures described in the book are those used in my own clinical practice. It is also intended to imply that some well established orthodontic practices will not be included. Since the book is intended as a practical guide, I felt that its continuity and practical value would be enhanced if the reader were not distracted by practices that have been repeatedly described and published in the literature or by quotations and annotations from other authors. If the omission of references and material seems unfair to all those who have contributed to clinical knowledge, it deprives me at the same time of the common refuge of sharing responsibility with quoted writers or an annotated bibliography.

There is another reason for not including in this book any techniques or case reports which were not actually a part of my clinical practice. While completeness is desirable, in itself it is not justified unless the validity of the material presented has been verified operationally. The scientific approach makes this demand. Positive gains cannot be made by simply presenting a collection of concepts and techniques from various sources; rather, they result from trying to get at the core of clinical problems and from determining in what respect and to what extent various practices contribute to the store of clinical knowledge and truth. This book is my contribution to this store, and as such it is not a compilation of orthodontic knowledge but the system of my orthodontic practice.

Because this book is so largely based on personal experience, it must of necessity have its limitations. While it has been my earnest endeavor to present material that will cover all of the important problems of clinical practice, yet I must state that there is no claim to completeness. This shortcoming is unavoidable because a private practice does not embrace all possible conditions which may be met with. The various *units of malocclusion* which can be found in different individuals are innumerable and the possible occlusal patterns which their combinations can present are inconceivable.

The most that can be done under the circumstances in a treatise such as this is to describe in detail the basic principles of the system employed in the management of those *patterns of malocclusion* which repeatedly recur and form the bulk of my orthodontic practice. This I have done. Once these basic principles are understood, orthodontic sectional management of most cases consists of applying and varying the operational concepts based upon these principles which are described and shown in action in the case reports.

It is my pleasant duty to thank Mr. Stanley Wachtell for the photographs and compilation of the illustrations in the book as well as for his valuable technical advice. I am also greatly indebted to my associate, Dr. Harold Fischer, for his reading and changes in the manuscript and for his valuable suggestions in its correction.

My heartfelt thanks go also to my colleagues far and near who through their correspondence have encouraged me in my task.

I wish to thank the W. B. Saunders Company for the painstaking labors involved in the publication of the book.

BERCU FISCHER, D.D.S.

New York City
August, 1957

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PART I

The Foundation of the Sectional Method

CHAPTER 1

Orthodontic Autobiography

“My business is to teach my aspirations to conform themselves to fact, not to try to make facts harmonize with my aspirations. Sit down before fact as a little child, be prepared to give up every preconceived notion, follow humbly wherever nature leads or you will learn nothing.”—
THOMAS HUXLEY

This first chapter is in place of an introduction. It is more than that. It is a *transition* which takes the reader over a bridge that connects my past ideas with my present ones, showing him the changes that took place in my orthodontic reasoning, techniques and concepts during my orthodontic career, leading up to the development of the system of clinical practice described in this book.

The chapter is divided into three related parts. The first part deals with the impact of Angle's concept upon the orthodontic scene and with the important landmarks in the parallel history of orthodontic concepts and clinical reality during his period and after. Up to a point, many of the events related are part of practically every orthodontist's experience since the turn of the century; they are autobiographical only because they are told in the first person singular. From that point on, this review tells of the changes that took place in my own practice and which led to the adoption of the present system.

The second part of this chapter tells of the need for scientific method in clinical orthodontics. It gives the reason for this need and finishes by giving the reader a yardstick which he may use in the evaluation of all operations and statements pertaining to clinical practice.

The rest of the chapter shows the effect of the application of this method upon some important orthodontic clinical problems.

SOME IMPORTANT LANDMARKS IN THE PARALLELISM BETWEEN CONCEPTS AND CLINICAL REALITY

Angle's Concept

I inherited from my orthodontic mentors two important aspects of Angle's teachings. One was *classification as diagnosis*, and the other was *en masse tooth movement* in treatment.

Classification as Diagnosis

Angle's classification is the most outstanding example of generalization of that period. Fascinated by its simplicity but overlooking its limitations, orthodontists accepted it as a basis for diagnosis and treatment. Thus, a classification useful for assorting certain observations has been extended as a schema for general clinical practice.

Classification as diagnosis consisted of classifying orthodontic cases according to Angle and formulating objectives of treatment upon this classification with "normal occlusion" as the standard. Conflicting with this method of diagnosis was the fact that in my practice I was confronted by an endless variety of malocclusions which defied classification and that each patient presented a new situation. Some of the mental acrobatics employed to perpetuate classification as diagnosis may seem ridiculous now in retrospect. However, at the time, they were part of my postgraduate orthodontic training and of courses given at the universities or recognized orthodontic schools. Orthodontic literature of that era reflected the hold of this classification upon orthodontic thought and practice.

En Masse Movement of Teeth

In treatment, this was a logical result of oversimplified diagnosis. Basically it consisted of two operations intended to produce a "normal" occlusion between the maxillary and mandibular teeth. Both operations were carried out by means of intraoral reciprocal forces. One operation was the regulating of the teeth in each dental arch by means of intramaxillary force to produce a correct tooth alignment; the other was the use of intermaxillary force to bring the two regulated dental arches as units into a correct closure.

After my first ten years of specialization with this accepted method—*classification as diagnosis* and *en masse* orthodontic tooth movement—I was confronted by certain conditions in my practice which disturbed me deeply and I was determined to do something about them. The first step in my effort to eliminate some of these disturbing conditions was the development of instruments which gave me three-dimensional records of my patients. These records, oriented in three planes, served as a foundation for a new method of case analysis. As this new procedure increased my ability to discover some of the limitations at the beginning of treatment, it became progressively clear that I had been right in my early observation that malocclusion of the teeth differed from patient to patient and was an individual problem. The accumulation of these observations and records finally convinced me that classification as diagnosis hindered rather than helped the discovery of limitations presented by the individual patient. Classification as diagnosis seemed analogous to general building plans which could not possibly be used for the building of one particular house.

I realized right from the start that I would have to give up the idea that anything desirable in orthodontics is also attainable. This, in turn, of course demanded a toning down of my optimism. I started by taking inventory of my own stock of experiences and knowledge. I searched orthodontic literature for helpful material, setting my sights on writers who differed with Angle's concept. The search revealed a number of interesting

observations. One of the main activities in orthodontic methodology of the period during and after Angle centered around the formulation of a normal standard that would replace Angle's concept of "normal occlusion." Of the standards offered as substitutes, some were formulated on the basis of anatomic parts or landmarks of the dentofacial complex other than the teeth, such as the *key-ridge*. Others were derived statistically from data obtained from so called "normal" individuals. Some of these norms were averages based upon some anatomic landmarks, such as the "Canine Law" of Simon. The most important single observation, however, about these substitute methods of diagnosis is their relation to treatment. While they were developed because of dissatisfaction with Angle's diagnosis, they produced no appreciable change in his methods of treatment. The basic orthodontic tooth movement—*en masse* movement—remained unchanged.

One lone voice was raised in the literature in an attempt to break the grip of Angle's concept on orthodontic practice. The name of Calvin S. Case comes to mind as the outstanding opponent. I have often wondered why the work and concepts of Calvin S. Case have not had a greater influence upon the trend of orthodontic thought. Here was a man who produced orthodontic results which in many instances surpassed those attained by the Angle method. Why then did his teachings fail to take hold? It seems to me that there were two reasons. First, unlike Angle's appliances, his were not obtainable in prefabricated form from dental manufacturers or supply houses.

The second reason has to do with a moral issue involved in Angle's concept—the sanctity of the full complement of teeth. The history of human knowledge abounds in instances in which moral issues hinder progress. Angle had established the full complement of teeth as one of the basic principles of practice. This was inviolable and carried with it the injunction "Thou shalt not extract," forgetting that very often nature herself failed to give the individual a full complement of teeth. Case advocated extraction of teeth in the treatment of some patients. In this controversy the established practice carried moral weight and won. The organized profession and public opinion then did the rest by compelling the ranks to fall in line. Thus it happened that Case's teachings were soon brushed aside, and the only important obstacle to the perpetuation of the Angle concept had been removed.

I recall a repetition of this controversy when Paul W. Simon of Germany advocated the extraction of maxillary first bicuspid in the treatment of Angle's class II, division 1. Since statistical norms are still with us today, it would seem in retrospect that the investigations which finally and for good reasons invalidated Simon's Canine Law were motivated more by a desire to counteract extraction than to assess his method of diagnosis.

I continued practicing without extraction of teeth, but only for a short time. With the full complement of teeth dominating clinical practice, orthodontic failures led to two important consequences. The first was the increasing interest that the orthodontist showed in the disturbing effect of orthodontic *en masse* tooth movement upon contiguous facial structures. The second was his concern over the instability of the teeth after treatment due to the action of these same contiguous parts. As the attention of the orthodontist was thus extended, first to the dental arches, then to the tissues immediately surrounding them, and finally to more remote structures, the problem of equating

orthodontic reality with Angle's orthodontic concept became progressively more difficult.

My attention turned to every new appliance developed by Angle for the purpose of correcting this discrepancy between his theory and practice, and in 1936 I received instruction in the use of the "edgewise," which he considered his latest and best orthodontic appliance. One of the important aspects of this instruction was the use of the "ideal arch" in treatment. To me, this represented the ultimate of *en masse* movement of teeth, which was so inconsistent with my conviction of the individuality of malocclusion and with my desire to build my orthodontic houses, so to speak, on an individual basis, that I began to consider seriously returning to general practice.

While I was continuing in the specialty in this state of mind, Charles H. Tweed revived the issue of extraction. In 1936 he published some creditable results obtained in cases in which he extracted teeth. I realized instantly that his ideas might lead me out of my confusion. I was strengthened in this when in 1938 Tweed exhibited in New York a large number of cases successfully treated by extraction. I gradually changed over to his method of treatment.

As is well known, the human mind, which is given naturally to rationalization, does not permit work to continue for any length of time before concepts begin to make their way into this rationalization. It was the concepts formulated by Tweed and by some of his followers that I soon began to question. My system of recording and the graphs obtained by it which helped me discover that my orthodontic appliances had not produced the changes in the dentofacial complex for which they were designed, also showed that the tooth movement claimed for Tweed's method was not being accomplished. With its refutation, such concepts as facial esthetics and the position of the mandibular incisors as standards of normality, intraoral stationary anchorage and its influence on growth and development, which were formulated upon the claimed tooth movement, became questionable.

To bring this parallel review of orthodontic concepts and clinical reality up to date, we may note the following: (1) While extraction of teeth in orthodontic treatment is generally accepted, it is still under the effect of Angle's injunction in some quarters of the profession. It is difficult to understand why resection of the mandible for the benefit of the patient is considered good orthodontic practice, while extraction of teeth for the same purpose is not. (2) Orthodontic literature is replete with concepts, theories, hypotheses, philosophies, etc., which are still waiting to be equated with clinical reality. To this must be added (3) the influx into the language of the orthodontist of terms and statements from collateral disciplines such as anthropology, genetics, endocrinology, etc. These collateral disciplines have not yet equated these terms with their own reality. (4) Orthodontic diagnosis has drifted further and further away from treatment and has continued its own development without the benefit of clinical verification. Having been brought up on an unjustified optimism that anything desirable in clinical orthodontics is also attainable, we have allowed the simplicity of techniques employed in formulating standards of "norms" to transcend the complexities involved in their application to the individual patient.

Surrounded by such a mass of conjectural and unsettled opinions, the clinician is

bewildered as he tries to apply some of these in his daily practice. They often lead to the formulation of indiscreet objectives of treatment which are unattainable with available orthodontic means.

At the same time, disturbing elements of clinical practice are still with us. We still have: (a) root resorption; (b) instability of orthodontic results, with relapses or endless visits of patients with retainers in or out of their mouths; (c) factors interfering with the attainment of objectives of treatment; (d) disturbing functional and esthetic effects of orthodontic treatment upon the teeth and contiguous hard and soft tissues, very often affecting the facial outline.

In presenting this sketchy outline of the orthodontic scene, it is not my intention to belittle valuable contributions to our knowledge. Without these, progress could not have been possible. On the contrary, it is concern for the loss of valuable clinical experience in what might be called the "battle of the concepts" which prompted this short review. The most disturbing result of periods in which concepts get out of hand is the division of professional ranks into groups siding with and defending the totality of pet concepts. It is not the defense of valuable clinical reality contained in a new concept that is objectionable, but the defense of its totality and its panacean claims which crowd out some well established and experimentally verified practices. Such a situation not only hinders progress, but shakes the confidence of the clinician in his own work by placing him in a defensive position and very often causing him to discard valuable knowledge. The only reason for bringing these observations to the attention of the reader is the desire to share with him my conviction that a good deal of the misunderstanding and confusion today, as in the past, has been due to the disparity between what we do and what we say in orthodontics.

Orthodontic Practice, Its Limitations and Possibilities

In seeking a concept of clinical practice that would give me the greatest satisfaction and peace of mind, I revised the management of my practice with four immediate objectives: (1) to equate my objectives of treatment with achievable reality, (2) to discover the limitations to be encountered in the treatment of each patient, (3) to produce the "*achievable optimum*" within these limitations, and (4) to eliminate or reduce hazards of treatment. The various phases of this attempt were published in my text *Orthodontics*.

The present book is a sequel to my published text. As will be shown, this follow-up material does not represent a departure from the original plan. On the contrary, refinement of techniques already described and additional observation records further illustrate and support previously formulated hypotheses. This is not to be construed to mean that my concept is unchangeable. The clinical world of the orthodontist is never final and fixed, but is in a process of continual change and improvement. As we progress in acquiring additional experiences, our concepts must grow and change accordingly. These two branches of orthodontic knowledge—clinical experience and concepts—must go hand in hand. In this book I hope to show the reasons why I am no longer puzzled by some of the seeming contradictions and inconsistencies which have been part of the orthodontist's daily practice. This does not mean that I have solved all my problems, but rather that I have grown to know some of the laws that govern

orthodontic operations. It is not my intention to venture out on an abstract dissertation of biologic laws. Rather is it my purpose to discuss and illustrate some of the concrete manifestations of these laws and to show how their expressions affect clinical practice.

The last few sentences were meant to convey the frame of mind with which I approached the question of method involved in the application of the laws of nature to orthodontic problems. What these laws are and how they affect orthodontic operations is the basic theme of this book, and the means used to develop this basic theme is the *scientific method* as it is applied to clinical practice.

SCIENTIFIC METHOD IN CLINICAL PRACTICE

Function of Scientific Method

Generally speaking, scientific method performs three functions: (1) It explains facts and phenomena. (2) It predicts future events. (3) It leads to statements or concepts which can be verified by experiment.

The basic principle of scientific methodology is the formulation of concepts based upon experiment or verified through experiment. It may begin by assuming certain hypotheses which explain a set of events. Such assumptions are prompted and encouraged by repetition of the events when the same conditions are present. A grouping of the states or processes which behave according to these assumptions follows, leading to the formulation of a system in which the concepts are arrived at operationally. Finally, the concepts are confirmed or disproved by observing the degree of usefulness of the operational system built up in this manner.

Probability, Not Certainty

The evaluation of such usefulness can be made by applying the following criteria: (1) To what extent does the new system explain more facts or explain existing facts better than other available systems? (2) To what extent is the system more reliable than other available systems in making predictions? (3) To what greater extent have the concepts of the system been verified operationally than the concepts of other systems? Such criteria will establish the validity of the system as a whole.

It is clear that there is involved here the thesis that human knowledge can only aim toward and approach greater probability but never certainty. But that is all that even science can do and can do it less in certain fields than in others. It is for this reason that scientific method cannot be a one path process. Different paths eventually lead to an understanding and adaptation of this method in different fields. Turning to our own specialty, we find that while the important tools used generally in the application of the scientific method can also be used in orthodontic clinical practice, in applying them we must bear in mind that we are dealing with biologic phenomena of a special sort and that certain conditions are specific for this field. Consequently, the tools used and the method of their application must be modified to suit the conditions of the material to which they are applied in order to produce the results expected. Thus, concepts, experiment and prediction, the three most important ingredients of the scientific method, must necessarily take on meanings dictated by the medium in which they operate and the purpose for which they are used.