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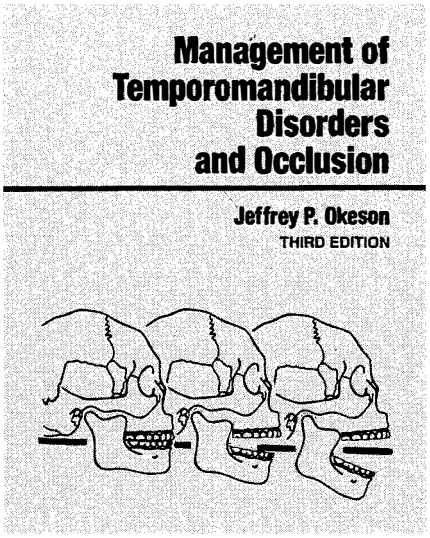
REVIEWS



MANAGEMENT OF TEMPOROMANDIBULAR DISORDERS AND OCCLUSION

Okeson J.P.

Published by: Mosby Year Book Inc. St Louis, 1993.

Available from: Mosby-Year Book
PO Box 431
Artarmon NSW 2060

Price: $A 125

Jeffrey Okeson is Professor and Director of the Orofacial Pain Centre and Director of the Division of Masticatory Function at the University of Kentucky.

This is the third edition of his text which has been updated with recent findings of significance and with more than 500 new references.

Okeson's stated aim is to present a logical and practical approach to the study of occlusion and masticatory function.

The text is divided into four parts. The first part presents the normal anatomic and physiologic features of the masticatory system. The second part considers the etiology and diagnosis of common functional disturbances of the masticatory system. The third part presents logical treatments of these disorders. The last part presents specific considerations of permanent occlusal therapy.

This is a comprehensive text. It works through the above mentioned topics in a consistent and coherent manner.

No stone is left unturned as the components of the masticatory system are described. Describing the basic parts of the tooth as the crown and the root, might be too elementary for some, but the reader is soon confronted with the intricate neuromuscular controlling systems which regulate and coordinate the stuctures of the masticatory system.

Part I goes on to describe in detail the alignment and occlusion of the teeth, the mechanics of mandibular movement, the criteria for optimum functional occlusion, and the determinants of occlusal morphology.

Part II consists of four chapters that discuss the etiology and identification of the major functional disturbances of the masticatory system.

Functional disturbances in the masticatory system develop after an event. This event may be local: such as the placement of an improperly occluding crown, trauma to local tissues, and orthopedic instability (that is when the stable intercuspal position of the teeth is not in harmony with the musculoskeletally stable position of the condyles); or systemic, such as an increase in the level of emotional stress. When an event exceeds an individual's physiological tolerance, symptoms develop. The type of symptoms which develop depend on the structural tolerance of the associated structures. The potential sites of breakdown are the muscles, the temporomandibular joints, the tooth supporting structures, and the teeth themselves. To quote the author, problems associated with bringing the teeth into the intercuspal position are answered in the muscles. Once the teeth are in occlusion, problems associated with loading the masticatory structures are answered in the joints. Cyclic changes in levels of emotional stress may intensify any symptoms.

To gain a better appreciation of the signs and symptoms of temporomandibular disorders, each of the major sites of potential breakdown is discussed. Included with the signs and symptoms are the etiological factors that cause or contribute to the disorder.

Over recent years, concern has arisen regarding the effect of orthodontic treatment on disc derangement disorders. However, long-term studies report that the incidence of temporo-

mandibular disorders in a population of orthodontically treated patients is no greater than that of the untreated general population. Although this is good news for the orthodontist, studies also reveal that the incidence of symptoms is no lower for patients after orthodontic treatment. Despite these findings, the orthodontist should not be complacent: Okeson warns that any procedure that produces an occlusion that is not in harmony with the musculoskeletally stable position of the joint can predispose the patient to problems.

History taking, examination, and diagnosis of temporomandibular disorders are presented in the remainder of this section.

Part III consists of six chapters that discuss treatment methods used for each temporomandibular disorder presented in Part II. Over the decades, a great variety of unsubstantiated treatments have been suggested for temporomandibular disorders. Often, treatment depended on what type of specialist the patient attended.

Okeson aims definitive treatment directly at eliminating or altering the cause. Because it is often difficult to ascertain the most important etiological factor at the first visit, Okeson advises that initial treatment should be conservative, reversible, and non-invasive.

General considerations in the treatment of temporomandibular disorders are presented. Subsequent chapters deal specifically with the major disorders which include masticatory muscle disorders, temporomandibular joint disorders, chronic mandibular hypomobility, and growth disorders.

Next, Okeson considers occlusal appliances (also known as splints) which are often used during intitial treatment. The selection, fabrication, and adjustment of different types of occlusal appliances is clearly described and well illustrated .

The final chapter in this part discusses treatment sequencing. Each of the treatment sequences is neatly summarized in a flow chart which would be a useful aid to the therapist in managing a disorder.

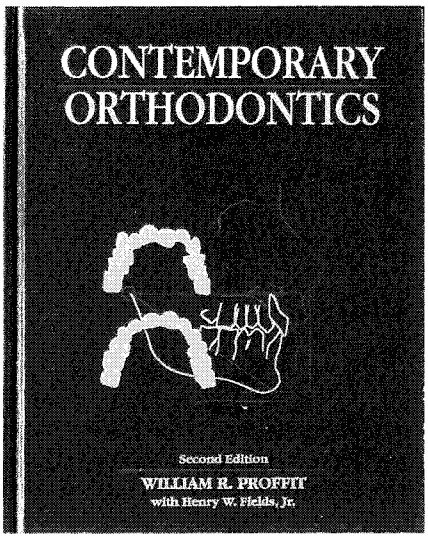
Part IV of this book consists of four chapters that discuss various aspects of permanent occlusal therapy. A permanent alteration of the occlusion is indicated when it is evident that the existing occlusion is the primary cause of a temporomandibular disorder. At one time the dental profession felt that most temporomandibular disorders were caused by malocclusion. Now it is appreciated that many disorders have little relation to occlusion. There are only two ways in which the occlusal condition becomes an etiological factor: when it is acutely changed and when there is a lack of orthopaedic stability.

Subsequent chapters describe the use of articulators, selective grinding, and restorative considerations in occlusal therapy.

This is a comprehensive, contemporary text of high quality. The accompanying diagrams are clear and relevant, although the use of colour for the clinical photographs and to make some of the more-complicated diagrams clearer would be beneficial. This book is good value in all respects and it is highly recommended.

David Fuller

Reviews Editor's note:
Jeffrey Okeson will be one of the keynote speakers at the 15th Australian Orthodontic Congress which will be held in Melbourne 16-19 March 1996. This book offers excellent preliminary reading for those who are committed to keeping abreast with the diversities of orthodontic knowledge and who plan to attend the Congress.



CONTEMPORARY ORTHODONTICS

Proffit W.R.

Published by: Mosby Year Book Inc. St Louis, 1993.

Available from: Mosby-Year Book
PO Box 431
Artarmon NSW 2060

Price: $A 139.95

This is the second edition of Proffit's popular text which is used by the majority of American and Canadian dental schools. This edition contains a large amount of new information which has evolved in the seven years since the first edition was published.

Proffit's objective is to provide an overview of orthodontics in a form that is comprehendable to students and valuable to practitioners. Supplementary instructive materials, such as computer laser discs and video cassettes, are obtainable separately.

The first section of the book, Malocclusion and Dentofacial Deformity in Contemporary Society, outlines the history of Orthodontics, presents the epidemiology of malocclusion, and discusses the need and demand for orthodontic treatment. Proffit struggles to explain why malocclusion is so prevalent nowadays. He fails to mention what many consider to be the obvious cause of crowding: our modern processed foods and a lack of natural interproximal attrition!

The second section of the book, The Development of Orthodontic Problems, begins with a discussion of basic concepts in growth and development.

A section on psychological development is included to help the practitioner communicate with children. Information on physical growth and dental development is presented sequentially beginning with prenatal growth and extending into adult life. The aetiologic processes of malocclusion and the special developmental problems of children with malocclusion and dentofacial deformity are explained in some detail.

In the third section, a *problem-oriented approach* is used to tackle the process of diagnosis and treatment planning. Proffit blends science and art in a series of logical steps to diagnose, and to plan treatment. Diagnosis is all about the search for scientific *truth*, whereas treatment planning is all about the use of *wisdom* to deal realistically with limitations and to maximise the benefit for the patient. No contemporary American text would be complete without a warning that the treatment plan must be presented in such a way that informed consent is obtained!

The fourth section presents the biomechanics and mechanics of orthodontic treatment. This section is comprehensive and generally up-to-date, although some would argue that the use of loops in steel wires for initial arch alignment has been rendered obsolete by nickel-titanium archwires.

The fifth section of the book goes into more detail on the use of removable and fixed appliances. The use of functional appliances, removable appliances, and the mechanics of fixed appliances is presented in detail.

The sixth section considers "preventive and interceptive orthodontics". Proffit feels that this description is a misnomer because such treatments rarely eliminate the need for a second stage of treatment. Nevertheless, early treatments are justified as they reduce the severity of problems and simplify the second stage of treatment. Profitt divides pre-adolescent orthodontic problems into non-skeletal (dental) problems and skeletal problems which are treated by tooth movement and by growth modification respectively.

The contentious issue of whether or not the complexity of certain treatments is within the scope of general practitioners is raised but in this review of early treatment of preadolescent children no specific recommendations are made with respect to who should do what.

The seventh section, "Comprehensive Orthodontic Treatment in the Early Permanent Dentition", describes the use of fixed appliances to idealise the occlusion. Chapters are devoted to alignment and levelling, correction of molar relation, space closure, finishing, and retention. This section does not favour a specific technique: Edgewise and Begg, sliding space closure and closing loops – just about every way of doing the job is presented. In this section, several of the photographs are unclear and some of the techniques seem to be unnecessarily complicated. For a text about *contemporary* orthodontics, there are far too many photographs of archaic hardware such as bands on anterior teeth, alignment loops, and extremely complicated retraction loops.

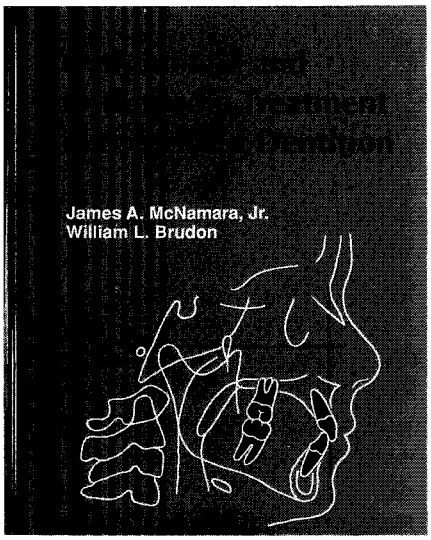
The eighth section discusses the fastest growing area in Orthodontics in recent years: Treatment for Adults. Firstly, Proffit discusses adjunctive orthodontic treatments, such as tooth movements to: facilitate restorative procedures; improve periodontal health by eliminating plaque-harbouring areas; establish favourable crown-root ratios; and to position teeth so that occlusal forces are transmitted along the long axes. Proffit supports the generally accepted misconception that these tooth movements are relatively easy and therefore suitable for the orthodontic novice. Many orthodontists find these cases more challenging than so-called comprehensive cases! Next, Proffit presents "Special Considerations in Comprehensive Treatment for Adults" and, lastly, he presents an outstanding account of "Combined Surgical and Orthodontic Treatment".

The layout of the book is clear, consistent, and easy to follow. Some of the photographs, such as the scanning electron micrographs of developing embryos, are excellent; other photographs are poor.

The book is generally well-produced, however, in this respect, a delicate issue cannot pass without comment. Some new books smell nice but, unfortunately, this one stinks. In all seriousness, the bookbinders should use a less-offensive glue. One must pity the poor students who have to spend long periods poring over these pages!

This text deserves its status as the most popular orthodontic text book in American dental schools. It offers a sound and comprehensive account of contemporary Orthodontics and it is excellent value for money. The book is highly recommended for dental students, orthodontic students, general practitioners with a special interest in orthodontics, and orthodontists.

David Fuller



ORTHODONTIC AND ORTHOPEDIC TREATMENT IN THE MIXED DENTITION

McNamara J.A. Jr. and Brudon W.L.

Published by: Needham Press

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Ann Arbor
MI 48113-0530
USA

Price: $US 135

For over 20 years, James McNamara Jr., Professor of Orthodontics, and William Brudon, Associate Professor of Art and a medical illustrator, have worked together on various projects associated with Orthodontics and craniofacial biology at the University of Michigan.

In this sparkling, new, but, in some ways, controversial publication, McNamara

presents a systematic approach to the diagnosis and treatment planning of the mixed dentition patient. McNamara is the name; early treatment is the game! McNamara's treatment approaches and protocols are based on experimental and clinical studies and on his 25 years experience in private practice: "they are not based on wishful thinking or unsubstantiated claims".

By commencing orthodontic treatment early, McNamara's goal is to correct existing or developing skeletal, dentoalveolar and muscular imbalances to improve the environment of the mouth before the eruption of the permanent teeth is complete. The need for complex orthodontic treatment involving extraction or orthognathic surgery is minimised.

McNamara speculates that, in America, the increased interest in early treatment is the result of increased demand from the population, increased dental community awareness of the benefits of early treatment, and increased competition for the orthodontic patient!

McNamara warns that not all orthodontic therapy delivered under the guise of "early treatment" is good treatment. He sees many cases of prolonged treatments with ill-defined goals and unpredictable outcomes and he appreciates that there are problems with patient compliance, with parent dissatisfaction, and with clinician and patient fatigue.

Having introduced his topic, aspects of diagnosis and treatment planning – including an updated account of McNamara's cephalometric analysis – are presented.

McNamara then discusses the development of the dental arches. As the most relevant factor related to crowding is the size of the bony base, McNamara concludes that it seems logical to increase the arch size at a young age.

And so McNamara considers the treatment of crowding. The three treatment strategies presented are: extraction, interproximal reduction, and expansion. Serial extraction and interproximal reduction are given due consideration but, it seems, expansion is the way to go. McNamara divides expansion into three categories: orthodontic expansion, passive expansion, and orthopaedic expansion.

Orthodontic expansion is produced by a variety of appliances which exert a buccally directed force on the upper posterior teeth. Passive expansion results when the forces of the buccal or labial musculature are shielded from the teeth. Orthopaedic expansion is seen when an appliance such as a Rapid Maxillary Expansion appliance causes the underlying skeletal structures to move apart.

McNamara rationalises the use of removable appliances to expand, or rather, in his terms, to *decompensate* the lower arch. It seems that in cases of mild crowding, he routinely expands the lower and upper arches. According to McNamara, a surprisingly common and fortuitous finding after arch expansion is the spontaneous correction of sagittal malocclusions. Paradoxically, and for different reasons, Class II and Class III malocclusions often self-correct! No doubt, this exciting but contentious concept will be welcomed by enthusiasts and, if or when the concept has been scientifically substantiated, by sceptics who might, at this stage, find this breach of one of the "cardinal rules" of orthodontics difficult to accept.

McNamara goes on to discuss the treatment of Class II malocclusions. After emphasising that a Class II malocclusion is not a single entity, McNamara presents the available treatment strategies for each of the combinations of jaw and tooth position which may result in a Class II malocclusion.

As well as the commonly-used conventional appliances, McNamara includes distalising magnets, distalising plates, the Function Regulator (FR-2) of Frankel and the Herbst appliance.

In the case of Class III malocclusions, the three treatment modalities presented are: the FR-3 of Frankel, the chin cup, and the orthopedic facial mask. McNamara prefers the facial mask which he uses in conjunction with a bonded maxillary splint. The reader is warned that 50% of patients who undergo early Class III treatment will need another early phase of treatment prior to the final phase of fixed appliance therapy. Patients and parents should be advised of the possibility of the need for surgical correction and the wise clinician should never make guarantees regarding the treatment of Class III malocclusions.

Having presented his treatment principles, McNamara proceeds to elaborate on specific treatment techniques.

First, Rapid Maxillary Expansion, using banded rapid maxillary expansion appliances and bonded acrylic splint expanders, is discussed. McNamara claims that there has been an escalation in the use of these appliances over the past fifteen years because they can be used not only for the correction of crossbite, but also to gain arch length, to: correct the axial inclinations of posterior teeth; spontaneously correct sagittal malocclusions; prepare the patient for functional jaw orthopaedics or orthognathic surgery; mobilise the maxillary suture system; reduce nasal resistance; and to broaden the smile!

Next, McNamara explains the use of the lower Schwarz appliance which he uses to upright posterior teeth and to create additional arch length anteriorly. He prefers to term these tooth movements "decompensation" rather than expansion. At length, he reviews studies on mandibular expansion and explains how and, less convincingly, when, expansion may be carried out. He warns that, for orthodontic expansion of the mandibular dentition to be stable, orthodontic expansion of the maxilla must also be carried out. His studies indicate that, on average, 3-4 mm of additional arch length can be gained.

Shifting to more traditional matters, the next few chapters describe the use of the transpalatal arch and utility arches.

The FR-2 is McNamara's favoured appliance for treating retrusive mandibles. He describes in detail the use of this appliance which, in clinical studies, he has found to produce a stable expansion of the lower arch and an increase in mandibular growth.

The bionator, which is the most popular functional appliance in America, is considered by many to be easier to use than the FR-2. McNamara does not agree. Nevertheless, he describes an approach for the design and clinical management of the bionator. McNamara explains the bionator in terms of its component parts so that the clinician can adapt the bionator to meet the specific needs of each patient.

McNamara then describes one variation of the Herbst appliance: the acrylic splint

Herbst. He has found that this device is capable of producing rapid skeletal and dental changes leading to the correction of a Class II malocclusion. Herbst appliances are recommended for use primarily in the permanent dentition. McNamara prefers the earlier use of the FR-2 in severe cases because of its orthopaedic training effect on the soft tissue environment.

Next, McNamara discusses orthopaedic facial mask therapy. He uses the face mask in almost every skeletal and dental configuration which results in a Class III malocclusion. He suggests that the face mask be attached to a bonded rapid maxillary expansion splint. He claims that results of this treatment can be dramatic. In severe cases, he maintains the correction with a maintenance plate, an FR-3 appliance, or a chin cup.

If the Class III is the result of a "mild basal bone problem", McNamara recommends the use of a FR-3 which he describes.

Subsequent chapters are devoted to the comprehensive fixed appliance phase of orthodontic treatment. Deliberately, this section is not far-reaching; rather it is an overview of the use of pre-adjusted fixed appliances. In addition to the basics, Wilson distalising mechanics and the Jasper Jumper are included.

Last, but not least, finishing and retention methods, including the use of "invisible" retainers, are described.

On a more sombre note, the final chapter describes a technique for fabricating study models which comply to the standards of the American Board of Orthodontics.

This clinically orientated book is an exciting arrival on the orthodontic scene. The book is beautifully produced and superbly illustrated. But what about some of the more-revolutionary concepts which are presented? McNamara's position and reputation within the orthodontic community, coupled with his no-nonsense, well-referenced writing style, impart a credibility to the contents of the book. However, he has broken a "cardinal rule" of Orthodontics and he has given a stamp of approval to many relatively new and unproven orthodontic appliances. In fairness to McNamara, he does stress that he has attempted to clarify those methods on which there is "adequate documentation" and those on which there is not.

McNamara states that the bulk of his book is written for orthodontists. One hopes that they can make rational and experienced judgments for themselves. In time, clinical studies will confirm whether or not some of the unsubstantiated and contentious treatments advocated by McNamara are worthy. Meanwhile, who knows whether McNamara is a hero and a pioneer or whether he has succumbed to the neon, "glow-in-the-dark" attractions of the new age?

This book opens a can of worms – it is a must!

David Fuller