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Book Reviews

CD-ROM: Orthodontic Hyper Knowledge

Authors: C. D. Stephens, K. Takada and Y. Kakiuchi
Publisher: Medigit Corporation, 2-8-11-901 Ooyodo-minami, Kita-ku, Osaka, Japan 531-0075, e-mail: medigit@pearl.ocn.ne.jp
Price: $65

Recommended operating environment:

PC:		Macintosh:
System	Windows 95/98	MacOs.1 or more
CPU	Pentium 166MHz or more	68040 or more
Memory	16MB or more	16MB or more
www browse	Netscape	Netscape

In the experience of the authors, most conventional types of orthodontic textbooks do not provide basic information about clinical procedures which are essential for the members of an efficient orthodontic team. There is, therefore, a need for an additional learning tool, and the present interactive multimedia tutorial has been developed for dental hygienists, dental nurses, students, dentists in charge of the training or direction of paraclinicals, and for general practitioners wishing to increase their knowledge and understanding of clinical orthodontics.

The tutorial comprises seven chapters. The first chapter, 'Introduction to Orthodontics', describes, on a basic level, the biology of tooth movement, the sequence of orthodontic treatment, the auxiliaries' clinical and social role in the orthodontic practice, informed consent, etc. The following chapter, 'Clinical Orthodontic Procedures', covers the aims and the practical management of the clinical procedures, which are related to all the different stages of orthodontic treatment, starting with the patient's first visit for consultation and finishing with placement and adjustment of a retainer. Chapter 3 provides information about dietary control and how to promote and maintain good oral hygiene during orthodontic treatment. Common reasons for emergency calls from patients (pain, broken or lost appliances, etc.) and the best way to deal with these situations are also thoroughly discussed. This chapter also gives advice on practical measures which should be taken in order to reduce the risk of accidents occurring in the clinic or during work in the patient's mouth.

Chapters 4 and 5 contain a glossary and an orthodontic word list, respectively. Clicking on a word in the glossary, produces a picture of the relevant object and a short description of its usage. Chapter 6 consists of 86 multiple choice questions with answers which may be used to test the user's depth of understanding of orthodontic practice. Chapter 7, finally, is a list of 32 literature references covering different aspects of clinical orthodontics.

After having studied this tutorial, the general impression is that it fulfils the objectives which the authors have identified in the preface. The presentations of the different subjects are kept on a level which is suitable for those wishing to learn about clinical orthodontics, but who have limited previous knowledge of this field of dentistry. The quality of the text, illustrations, and graphics is high. The balance between the amount of text and the number of illustrations for each topic is also good, and this makes the reading and learning easy. For readers who want to know more about certain topics, the list of references provides suggestions for additional reading.

One matter which is not discussed at all is that the frequent exposure of orthodontic personnel and patients to bonding resins constitutes a risk which should not be overlooked. There is a relatively high prevalence of dermatological disorders among orthodontic staff, and in the section of the tutorial which deals with

the management of risks in the clinic, instructions concerning the proper handling of these materials should have been included. This is, however, only a minor imperfection in an otherwise very useful and stimulating tutorial.

Carl-Magnus Forsberg

On Growth and Form. Spatio-temporal Pattern Formation in Biology (1999)

Editors: M. A. J. Chaplain, G. D. Singh and J. C. McLachlan
Publisher: John Wiley & Sons Limited, Chichester, West Sussex
Price: £80.00
ISBN: 0-471-98451-5

This book stems from a conference held at the University of Dundee in September 1998 and honours the volume published with the same title in 1917 by D'Arcy Thompson, who can be considered a pioneer of modern morphometrics. The field of morphometrics is concerned with methods for the description and statistical analysis of shape variability within and among samples of organisms, and for the evaluation of shape change as a result of growth, experimental treatment, and evolution.

The aim of this book, as stated in the Foreword, is to demonstrate that even though molecular biology has clearly shown that genes and proteins are of fundamental importance, they alone cannot account completely for the pattern of growth of animals and plants. The substances which they create, and the environments in which they are created, are subject to physical laws and constraints that have a great influence on the final form that is produced and that have to be studied by appropriate morphometric tools. This book contains an overview of the state-of-the-art in mathematical and physical morphometric models that can be used for a deeper understanding of several biological phenomena: from models for growth and development of limbs in chick embryos and of wings in butterflies, to pattern formation in cancer, skin, hair, capillary networks, comprising also descriptors of cellular shape changes. Therefore, it may be considered a fundamental volume for those researchers (biologists, anthropologists, physicians, veterinarians) who are interested in a different approach to the problem of growth and form. When dealing with the many aspects of craniofacial development, orthodontists automatically become part of this group of investigators. As a matter of fact the last section of the book (chapters 17, 18, and 19) is dedicated to the description of the most recent morphometric analyses and statistical techniques for the evaluation of shape change using landmark data, cephalometric landmarks included.

The possibilities offered by powerful morphometric analyses when applied to the developmental patterns of the craniofacial region is very well illustrated in chapter 19 that deals with normal and abnormal growth of the cranial base.

The rising interest in morphometrics as a complement to cephalometrics with the aim of overcoming several of the most restrictive limitations of conventional measurements, is witnessed by the increasing number of publications that have appeared recently in the orthodontic literature. For this reason this volume is particularly recommended to those orthodontists involved in clinical research who would like to become familiar with the potential of morphometrics applied to cephalometrics in the appraisal of growth/treatment effects on craniofacial structures.

Lorenzo Franchi

Contemporary Orthodontics, 3rd edn (1999)

Author: William R. Proffit with Henry W. Fields, Jnr
Publisher: Mosby Inc, St Louis
Price: £45
ISBN: 1-55664-553-8

Contemporary Orthodontics has become one of the most popular orthodontic texts since its original publication in 1986 and its revision 7 years later. It successfully covers the curriculum for postgraduate orthodontic students, making it essential reading for those undertaking examinations, whilst also providing a valuable source of reference for established orthodontists. These remain the objectives for this latest edition. The content is organized in the same way as its predecessor, being divided into eight sections covering epidemiology, growth and development, diagnosis, and treatment planning, as well as the biomechanics of treatment and coverage of virtually every known appliance system. The text concludes with a final section on adult treatment, including orthognathic surgery. Additionally, the book is now supplemented by some extra teaching materials in the form of a CD-ROM and video cassettes, and information on these is available on the Internet, via the UNC Orthodontic Department's home page. The third edition is approximately 10 per cent bigger than its predecessor, each section having been expanded a little, with extra coverage on the sections devoted to treatment planning and its implementation. There are more illustrations and many of the clinical case presentations are now in colour.

Much of the content, especially the chapters on growth and development, as well as the biology of tooth movement, is unchanged, written in a very succinct yet highly readable style. The extra text on force systems in the chapter on biomechanics is particularly well described. Additional material in the early sections includes a discussion on the extraction/non-extraction controversy, with particular reference to facial appearance. Here, it is heartening to see some acknowledgement given to the all important handling of anchorage in treatment mechanics, so often neglected when the effects of extractions on facial profile are considered. Earlier on, IOTN makes its debut in the section on epidemiology, but clearly the Peer Assessment Rating (PAR) as a means of assessing treatment quality, is not yet as popular in the United States as it is in Europe, at least at the time of publication.

A stated objective of the book is to focus on data supporting clinical technique and it is interesting to note how for some techniques, little data have emerged of late so that consequently, the justification for some controversial techniques remains in limbo. A good example is that of pre-surgical, or infant orthopaedics for the early treatment of cleft lip and palate. Seven years ago, the second edition acknowledged that '*after 30 years experience, these procedures offer less long term benefit than was originally expected*'. Lack of any new evidence has necessitated the substitution of '30' years for 40! Similarly, on the efficacy of techniques for maxillary intrusion in cases of vertical excess, the last 7 years have produced no new long-term evidence whatsoever.

Perhaps the evidence for these as well as other controversial techniques will emerge as a result of the randomized clinical trials that are currently underway. Such trials are reviewed in the Treatment Planning section, with particular reference to growth modification. Whilst the information presented is perfectly valid, a rather fuller discussion, including the many practical, as well as ethical problems involved in running randomized orthodontic trials, would have been appreciated. The topic of growth modification recurs over many chapters and the early results from the authors' own clinical trials are incorporated. In interpreting these, many readers will have difficulty in coming to terms with the authors' reliance on the positions of points A and B as true indicators of skeletal, rather than merely dento-alveolar change. To be fair, the authors acknowledge this, but in any discussion on growth modification, there ought to be an

introductory definition of terms and, especially, a discussion of the validity of the points used in its assessment. In relation to this, there is perhaps too much emphasis on the exclusive need for the use of functional appliances in order to achieve facial profile improvement. The case report shown in Figures 8–27 is a good example, as many would consider that appropriately handled fixed appliance therapy could achieve an equally good improvement in facial appearance.

The section on the treatment of both skeletal and non-skeletal problems in pre-adolescent children has been considerably expanded and is particularly useful.

Throughout, the bibliography is extensive and the references at the end of each chapter have all been revised since the last edition. For an American publication, it is heartening and, indeed, unusual to see that reference is made to a wide selection of papers from outside the USA. The book's presentation is at least as impressive as its predecessors and, whilst most of the value of its content was already present in the second edition, this work will nevertheless continue to represent the gold standard of general orthodontic texts.

R. Edler

Nutrition, Diet, and Oral Health (1999)

Authors: Andrew J. Rugg-Gunn and June H. Nunn
Publisher: Oxford University Press, Oxford
Price: £29.95
ISBN: 0-19-262937-9

This book aims to provide the dental practitioner with evidence-based facts and advice on the intimate relationship between nutrition, diet, and oral health. In a world that is becoming increasingly aware of the link between diet and general health, the authors have tried to give a broad overview of this subject to benefit all health professionals.

This is a book of two distinct halves. The first half focuses on the ability of various components of the diet to promote or prevent dental disease ranging from dental caries and periodontal disease through to defects of tooth structure, dental erosion, and oral cancer. The scientific basis for advice is discussed in conjunction with the barriers and motivation needed to achieve a change in an individual's diet. This first half is extremely well illustrated with case reports and diagrams, and also makes good use of summary bullet points alongside the text to reinforce the essential points made in each section.

Unfortunately, the second half of this book is unnecessarily verbose. Chapters 6–8 aim to bring together information already discussed in the first five chapters in order to clarify advice for the child, adult, and elderly person. This advice is then repeated once again in the final chapter. Chapter 9 however, does provide an interesting summary of trends of food consumption in the UK over the last century and also gives an account of how government and community food policies have influenced the nation's diet. In addition, it describes how the media, professional and food organisations have taken steps to promote healthy eating.

Overall, this is an inexpensive book that would be a useful supplement to other dental undergraduate manuals, as well as being of benefit to dieticians and other supporting health professionals.

Karen Bloom

Applied Mixed Models in Medicine (1999)

Authors: Helen Brown and Robin Prescott
Publisher: John Wiley & Sons Limited, Chichester, West Sussex
Price: £55.00
ISBN: 0-471-96554-5

Recent trends in the development of evidence-based dentistry and medicine include the combined analysis of data from several intervention trials or epidemiological studies, and in both trials and cohort studies, the repeated collection of information or assessment of biomarkers. In consequence, the appropriate methods of data analysis are becoming more complex. Thus, in multicentre studies or in the combined analysis of single studies, the data may be clustered and it would be appropriate to take this into account in analysis. In investigations in which repeated measurements are made on individual study subjects, correlation between these measurements is to be expected and needs to be taken into account. The main analytical challenge posed by such data is that the observations are not independent. This challenge is addressed by using mixed models, more usually described as multi-level or hierarchical models in the social sciences. The aim of this book is to put all types of mixed model into a general framework and to consider the practical implications of their use.

The introductory chapter provides an introduction to the capabilities of mixed models, defines general concepts and the basic statistical properties of the models. The next three chapters define models and fitting methods for the analysis of data which are normally distributed (chapter 2), according to one of the exponential family of distributions, e.g. binomial or Poisson (chapter 3) and for categorical variables (chapter 4). The practical implications of using mixed models for particular study designs, e.g. multicentre trials and meta-analyses, repeated-measures designs, and crossover designs, are discussed (chapters 5–7). In chapter 8, studies combining elements of the main designs considered in chapters 5–7 or data sets that had arisen in a more unplanned fashion, are considered. These illustrate the broad scope of application of mixed models. In the final chapter, information on the software available for fitting mixed models is given. Inevitably, this is an aspect of the book that will date, but readers should be able to keep in touch with developments through the web addresses given.

Familiarity with basic statistical concepts is assumed. In the introductory chapter, the reader is taken through the steps from a basic statistical model to describe the effects of two treatments, through a model which takes patient effects into account and then one in which the patient effects, instead of being assumed to take constant values, arise from independent samples from a normal distribution. Next, consideration is given to missing values and how the mixed model is able to use information from subjects for whom some data are missing, which would have been lost in an analysis in which patient effects were assumed to take constant values (fixed effects models). Further concepts are introduced with reference to a multicentre hypertension trial. These ideas are then drawn together to define the main categories of mixed models and to discuss the potential advantages that can be gained by using mixed models, particularly in medicine. A brief historical perspective on the application of mixed models is given, including their application in other fields. There is also a brief section on communicating the results of an analysis using mixed models.

The authors provide quite substantial aid to the reader by outlining the content at the beginning of each chapter and indicate shortcuts for readers wishing to apply mixed models of particular types. There is a clear description of issues in model definition and model fitting, a guide to practical application and interpretation, including model checking. The authors note that model checking methods for mixed models have not as yet been developed in depth, and the consequences of violating model assumptions are not fully known. However, simple visual checks are proposed, and methods of dealing with data for which these checks indicate a

problem are described. Clear examples are given, including a description of the computer software code (in SAS) and the outputs which were produced. Also, the software code and data sets may be obtained electronically from a web page.

In the chapters on the practical application of mixed models for particular study designs, an explanation of the advantages of mixed models is given, specific subtypes of model are presented, with examples and information on sample size estimation. In the chapter on crossover trials, there is a particularly useful section on the use of results from random effects models in trial design, including the question as to whether a crossover design should be used at all, which is illustrated with reference to a trial of an oral mouthwash.

An example of combined analysis of case-control studies would have been useful for those involved in this type of research, but the example of analysis of multicentre trials is more appropriate to the general audience at which the book is aimed in these days of evidence-based medicine. Some readers might also have liked to see more consideration of data quality, but I think the book is dealing with concepts that are complex enough as it is.

Overall, this book represents a very useful grouping together and appraisal of statistical methods for analysing complex data sets from study designs which are increasingly being used in medicine and dentistry. Whilst a level of background knowledge of statistics is assumed, the book is sufficiently clearly written to enable the non-statistical reader to consider the application and interpretation of these models.

Peter Mossey and Julian Little

Oral Bioscience (1999)

Author: David B. Ferguson
Publisher: Harcourt Publishers Ltd, London
Price: £29.95
ISBN: 0-443-05373-1

The aim of this book is to relate the current information on histology and biochemistry to today's understanding of the physiology and function of the oral cavity. The author was strongly influenced by *The Physiology and Biochemistry of the Mouth* by G. N. Jenkins when he prepared the book. For that reason, the outline is very similar to the now classic Jenkins text, only reflecting the increase in knowledge since its last printing some 20 year ago.

The 323 pages are divided into three sections and an Index. The first section covers the structure of the hard and soft oral tissues, in addition to giving an overview of the process of calcification. The second section focuses on the function of the salivary glands, the composition of the oral fluids and dental plaque, and the significance of nutrition and fluoride for dental health. The third section emphasizes functional aspects such as sensation, mastication, deglutition, and speech, and concludes with a chapter on ageing of the mouth. The majority of the 115 illustrations are line drawings. No original work is referenced, which limits the significance of the book to researchers and academics. Some chapters are also rather limited in scope. The section on tooth movement is for instance of less than four pages, omitting or only briefly touching on several issues of interest. However, the book is well written and easy to comprehend, and it gives the reader a good overview of the biological basis for clinical dentistry. Most dental students and general practitioners may therefore find it very helpful.

Jon Årtun

Pharmacology and Dental Therapeutics, 3rd edn (1999)

Authors: Robin A. Seymour, John G. Meechan and Michael S. Yates
Publisher: Oxford University Press, Oxford
Price: £32.30
ISBN: 0-19-262952-2

In concurrence with the rapid development of the subject of pharmacology, an increased number of new drugs play an important role in dental treatment. Access to the book *Pharmacology and Dental Therapeutics* is of great value.

First, the dentist needs to know how different drugs used in dental treatment affect the whole body of the patient and, second, to be aware of the consequences of the fact that many patients undergoing dental treatment are also treated with drugs for a variety of other medical conditions. It is therefore important that the dentist is familiar with the pharmacology and rationale behind the use of these drugs. Thirdly, to know about possible interactions that might occur in the event of drugs prescribed for dental treatment that have the potential to interact with those the patient already has taken for other medical reasons.

This book covers the above-mentioned three purposes very well. The pharmacology of pain and anaesthesia are of interest in a dental practice, and these topics are very well described. Knowledge of drugs used in the treatment of cardiovascular disease and of how drugs act on the respiratory system, as well as of medical emergencies, are also of central interest and therefore of great importance. The third edition of this book covers an extensive area of the subject to such a depth that it may be highly recommended to teachers of pharmacology as well as to dental students and practitioners.

Agneta Karsten

The Mouth, the Face and the Mind (1999)

Editor: C. Feinmann
Publisher: Oxford University Press, Oxford
Price: £55.00 (hardback)
ISBN: 0-19-263076-8

The editor is well known as a psychiatrist for her research on chronic facial pain. This book devotes three of its seven chapters to that and related topics. Three appendices and parts of another chapter also deal with chronic facial pain. The lesser coverage of other matters, such as the fear of dental treatment, in which the editor is a prominent contributor to the book, is in proportion to the quality of the writing. The section on the fear of dental treatment is out-of-date and the authors are out of their depth in writing about the topic. For example, they pay little attention to cognitive influences on this problem. Yet these are given prominent coverage in a chapter on the psychological treatment of facial pain. The authors quote as a reference and for further reading, the first edition of Kent's *The Psychology of Dental Care*, published in 1984, which is now in its third edition. They also recommend the use of the Corah's Dental Anxiety Scale (they mis-name it) in spite of many critical studies and reviews which have recommended other more suitable scales. There is a chapter on the cognitive behavioural psychological treatment of chronic pain, which is the only chapter to which the author does not contribute. This probably does not give a convincing idea of the beliefs which patients entertain about their pain although the authors have been pioneers in the cognitive behavioural treatment of facial pain. Elsewhere, the authors draw attention to the difficulty of establishing causal relationships between pain and psychological distress, which bedevils research of this kind. In conclusion, this book is worth reading for its coverage of facial pain, but most definitely, not for its coverage of other topics.

Stan Lindsay

Oral Diseases (1999)

Authors: Crispian Scully and Roderick A. Cawson
Publisher: Churchill Livingstone, London
Price: £12.95
ISBN: 0-443-06170-X

Oral Diseases, originally published as Colour Aids in Dentistry in 1988, is a beautifully illustrated and extremely useful little book.

Colour pictures of most common, and some less common, oral and perioral conditions are clearly presented, two to three to a page, opposite a page of text stating the name of the condition, its incidence and aetiology, the disease's clinical features, suitable investigations needed to aid in diagnosis and, finally, the appropriate treatment of the condition.

The diseases covered in this book are divided initially by site, for example lip or tongue lesions, and also by characteristic, such as intra-oral white lesions or salivary gland diseases. This format makes the book very easy to use. HIV-related conditions have been given a separate section of their own.

The information given on each condition is concise, clear, and clinically practical and informative. The colour pictures are of high quality and clearly visually interpreted. Cross-references are made throughout the book guiding the user to related diseases, and advising on differential diagnoses. The appendix; common treatment measures, covers the doses and contra-indications of the drugs mentioned in the treatment section of each disease.

This book is not only indispensable to the study of oral medicine for examination purposes, but also an asset for anyone working in the health care profession.

Anna Gibilaro

Studies in Stomatology and Craniofacial Biology (1997)

Editors: M. Michael Cohen Jr and Bruce J. Baum
Publisher: IOS Press, Amsterdam, The Netherlands
Price: NIG 200; £80; DM 180; US$125
ISBN: 90-5199-283-1

This publication serves as a tribute to M. Michael Cohen Sr and the many significant contributions he has made to craniofacial biology. It contains a total of 33 papers by numerous well-published and respected authors.

The material is highly contemporary and will act as a road map for developmental biologists for the future. There are numerous, current, provocative papers introducing many new concepts and techniques in craniofacial biology, and the text clearly succeeds as a state of the art review of the field. The first section focuses on developmental biology, in particular, salivary gland function and tooth morphogenesis reviewing numerous regulatory mechanisms, pathways and interactions that help explain these two processes.

The second section focusing on developmental pathology provides a series of molecularly driven concepts that relate to the development of osteogenesis imperfecta. Several genetically-related syndromes, as well as observations of the aetiology of cleft lip palate and anodontia are also reviewed The subsequent section on an acquired pathology, focuses on the role of cytokines and chemokines in stomatological disorders, as well as discussing some interactions and new factors involved in dental plaque and cariology.

The final section provides an interesting insight into the future of craniofacial biology in discussing the role of gene therapy, in particular, viral and other vectors as potential therapeutic agents.

In summary this state-of-the-art review is as good as it gets in providing the reader with an up-to-date, comprehensive, in-depth analysis of the current state of craniofacial biology and stomatology. As such, it should be required reading for all researchers and clinicians in the field.

Peter Sinclair