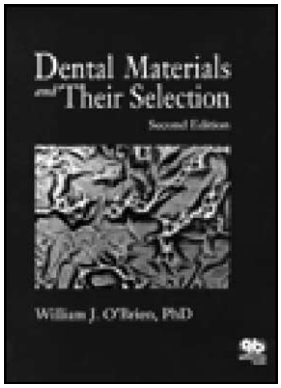
Book Reviews



Dental Materials and Their Selection

Edited by William J. O'Brien, 3rd edition. Quintessence Publishing Co. Inc., Chicago, IL, 2002: ISBN 0-86715-406-3. (17 contributing authors, 418 pages with index; 268 illustrations including diagrams, photographs, and tables; price $62.00)

This book is a comprehensive source of materials science concepts and an overview of current clinical materials. As stated in the book's introduction, a long-standing problem with the approach to dental materials courses has been the memorization of facts rather than an understanding of the clinical application of materials. Therefore, this book has used a format that integrates references to evidence-based dental literature and problem-based learning scenarios to provide the link between basic science and clinical practice. With this approach, this text provides the basic knowledge for understanding dental materials properties and behavior, which can then be applied to the selection of appropriate clinical materials.

The editor, William O'Brien and 17 contributing authors have presented 23 chapters that each conclude with a glossary, study questions, and a recommended reading list for those wishing additional information.

The three basic dental materials, ceramics, metals, and polymers, along with fundamental physical properties and biocompatibility are reviewed in Chapters 1 and 2. Because stress and strain often remain elusive terms to both students and clinicians, the inclusion of excellent diagrams depicting different types of functional stress related to dental restorations is very effective. Throughout the text, tree diagrams and tables are efficiently used to classify and clarify materials, their properties, and clinical applications.

Given today's emphasis on dental esthetics, the chapter on color and appearance and the chapter covering abrasion, polishing, and bleaching should be of interest to all practitioners. Included in the color chapter is an in-depth discussion of shade matching and how to communicate the shade-matching information to the laboratory, with an illustration of a detailed ceramic map. A concise table of patient selection factors and tooth-whitening technique options is also included in the bleaching chapter.

The chapter on surface phenomena and adhesion to tooth structure is a very good source of basic information on adhesive dentistry, which has become an integral aspect of many restorative procedures. The concepts of surface energy, wetting, adsorption, and adhesion are clearly described and augmented with diagrams and photographs.

The text also includes an excellent explanation of polymers, polymerization, and the many factors affecting the polymer properties (i.e. cross-linking, degree polymerization, and branching). Different types of denture base polymers and denture soft-liners are compared as to advantages, disadvantages and ideal properties.

A complete chapter is also devoted to polymer-based resin composite restorative materials. Diagrams and tables again contribute to a clear understanding of composite classi-

fication, clinical characteristics, and appropriate material selection. The potentially confusing continuum of glass ionomer, resin-modified glass ionomers, compomers, and composite restorative materials is also clarified.

The material covering impression materials, one of the most comprehensive chapters, includes information related to the chemistry, mechanical properties, manipulation, advantages, disadvantages, troubleshooting, and disinfection techniques for nonelastic and elastic impression materials. At the end of the chapter, some practical clinical decision scenarios are also presented.

The dental cements chapter is also well-done and provides a comprehensive overview of chemistry, manipulation, properties, and selection. In contrast, the chapter on dental porcelain provides only a basic review of porcelains used with metal substructures and all-ceramic porcelains. Although the clinical design scenario at the end of the chapter addresses all-ceramic restorations, a more comprehensive comparison of products would have been welcome considering the increased use of all-ceramic restorations.

Also included are chapters that deal with structure and properties of metals and alloys, dental amalgam alloys, and casting alloys. Again, information is presented in a format that addresses the advantages, disadvantages, and clinical applications.

Somewhat unique to this text is the inclusion of separate chapters on both orthodontic wires and endodontic materials. The orthodontic wire chapter provides some clarification to the bewildering array of wires available. Classification of the alloy systems, important mechanical properties, and advantages and disadvantages for wire selection are also included. The endodontic materials chapter reviews types of biomechanical instrumentation and canal obturation materials and instrumentation.

The final chapter is a review of implant and bone augmentation materials. Although this information is not a replacement for implant textbooks, this discussion provides a straightforward summary of dental implant types, implant materials, and indications for use. Surface chemistry, biological response, important mechanical parameters, and implant design are also considered.

Readers should not overlook the appendices, which include the essentials of biocompatibility testing and the answers to the study questions. Appendix A is a comprehensive list of physical and mechanical properties values of tooth structure and identified restorative and impression materials. Also included with the tabulated list are the 258 references that were sources of the information.

In summary, a tremendous amount of information has been presented in a style that is clear, concise, and scientific. Relevant tables and diagrams simplify the classification of materials, their properties, and applications. This text would be a valuable resource for clinicians, educators, and students.

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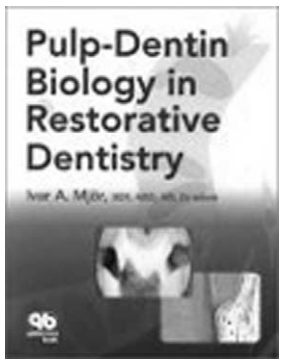

Pulp-Dentin Biology in Restorative Dentistry

Ivor A. Mjör. Quintessence Publishing Co., Chicago, IL, 2002: ISBN 0-86715-412-8 [softcover, 7 contributing authors, 168 pp, 283 illus (158 in color); price $59.00]

Dr. Mjör and his co-authors have provided the practicing dentist with a comprehensive in-depth review of the biologic principles and concepts that support restorative dental procedures and materials. The book begins with a contemporary review of the normal structure and function of the dental pulp. Specifically, the authors describe the various types of dentin, their distinctive features, the cellular elements of the pulp and the ground substance, the neural components, and the vascular structure. The physiologic relationships between the pulp and dentin as well as the pulpal cellular elements are explored, and the structural and physiologic changes that occur with aging are identified.

Subsequent chapters identify the pulpal reactions and subsequent sequelae that result from dental caries, varied restorative procedures and materials, wear, traumatic injury, and orthodontic tooth movement. Within each area the authors integrate the basic sciences with clinical techniques. The concept that each clinical situation is unique and requires treatment based on multiple factors is a common theme.

Throughout the text the authors explore the many variables involved in restoring teeth and the effect of these procedures and materials on the pulp. Topics include the interactions between the age of the patient, the etiology of pulp pathosis, the type of caries present (active versus arrested caries) and the role of pulpal defense mechanisms. Additional discussions address the methods of caries removal and tooth preparation, the role of the smear layer, restorative materials and resin bonding, previous endodontic treatment, and microleakage with the accompanying treatment implications being addressed. As an example, the authors note that the reaction to pulp capping is dependent on the etiology for the exposure. Carious exposures and traumatic exposures produce different pulpal responses and should be managed differently. It is presented that the un-inflamed pulp exposed in a traumatic injury exhibits potential for repair. With regards to pulp capping carious exposures, Mjör indicates that the prognosis is poor due to the pre-existing inflammatory response produced by bacteria and their by-products.

While the chapter covering the management of caries advocates a controversial two step procedure to convert an active carious lesion into a slowly progressing lesion, the authors offer scientific evidence to support their view. More evidence will be necessary before Bjørndal and Mjör's advocated one step procedure of restoring teeth and leaving carious dentin on the pulpal floor can be accepted and adopted as a valid clinical technique.

While many dental procedures are empirical, Mjör advocates an evidence-based approach to patient care. The narrative is based on classic and current scientific investigations, which are integrated with current methods of practice. Areas that are deficient in scientific data are identified and discussed. Each of the seven chapters is well written. The text is easy for clinicians to read, comprehend, and understand. The authors use superb photomicrographs, color photographs, and drawings to demonstrate specific points related to the text.

This book is an excellent resource for the clinician who wants to know the contemporary biologic basis for restorative procedures, develop treatment approaches based on the unique circumstances each patient presents, and understand the pulpal reaction to restorative treatment.

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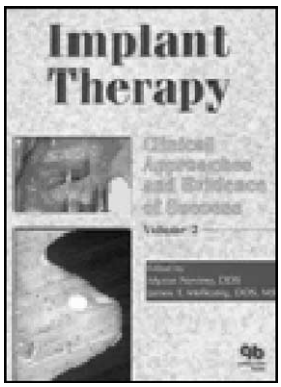

Implant Therapy: Clinical Approaches and Evidence of Success Vol.2, 1st edition

Myron Nevins and James T Mellonig. Quintessence Publishing Co., Inc., Chicago, IL, 1998: ISBN 0-86715-341-5 (18 contributing authors, 268 pp, 860 illus, all in color; price $128.00)

The stated purpose of this book is to explore "a changed paradigm of treatment: the natural tooth or a dental implant". Considering the authors' extensive clinical experiences in periodontal-prosthodontic reconstruction (i.e. saving compromised teeth) and, more recently, guided bone regeneration in conjunction with implant placement, the text offers numerous well-documented and well-referenced clinical scenarios dealing with the question of when to maintain a tooth, when to remove a tooth and how to restore the missing tooth. The book is replete with techniques for evaluation of what the authors refer to as "prosthetically driven" recipient sites and the hard and soft tissue augmentation procedures that may be required to attain predictable osseointegration and esthetics.

The first two chapters deal with this changing paradigm in prosthetic dentistry based on the efficiency and success of osseointregration for the partially edentulous patient. The remaining chapters deal with proper treatment planning by the implant team. Proper treatment planning includes: diagnostic wax-ups, fabrication of templates, which are used during radiographic and computerized tomographic surveys, interpreting the CT scans, and conversion of the radiographic templates into surgical templates. Also discussed is the use and limitations of guided bone regeneration to facilitate ideal implant placement, maxillary sinus floor augmentation and implant placement into specific sextants of the mouth. Information is also presented on implant use in the tuberosity, pterygoid and palatine regions, esthetic management of dental implants and the need for keratinized tissue for implants.

Dr. Rosenfeld & Mecall's chapter on using computerized tomography to develop realistic treatment objectives for the implant team illustrates the clinical value of multiplanar reformatted and computerized tomography to quantify the amount and type of tissue destruction caused by caries, periodontal disease, trauma and dentoalveolar atrophy. Results of this imagery allow the implant team to predict the implant placement, the type of definitive prosthesis and the need for hard or soft tissue augmentation. This chapter also includes the fabrication of templates utilized during the CT scan, discussion of the different SIM/PLANT CT scan views and their interpretation and how to use these views in determining the ideal implant placement.

The next chapter offers a brief overview on the controversial clinical situation of connecting implant restorations to natural teeth. Several distinct clinic examples, with solutions, are illustrated with definite conclusions drawn regarding each clinical situation. The next four chapters deal with guided bone regeneration (GBR) and its use to facilitate ideal prosthetic placement of implants. Chapter five deals with the animal studies, procedures, rationale, terminology and applications for GBR techniques. The following three chapters illustrate the factors critical to success of GBR, the use of reinforced barrier membranes and vertical ridge augmentation associated with osseintegrated implants.

The next several chapters deal with the placement of maxillary and mandibular anterior implants. Drs. Nevins and Stein illustrate ideal recipient sites in these areas. If the recipient sites are not ideal, procedures are described for the improvement of the site and suggestions are given for when implants are not the treatment of choice. Also illus-

trated, is the use of provisionals to develop a site and the vital need for the members of the implant team to all provide input to predictably produce ideal recipient sites.

Additional chapters deal with implant placement in the maxillary and mandibular posterior areas. These areas are associated with formidable anatomic obstacles including the inferior alveolar nerve and maxillary sinus and a variety of malformations of the ridges. The presence of softer bone and little or no possibility of reinforcement via bicortical stabilization are discussed and various clinical scenarios are additionally presented.

Dr. Reiser's chapter on implant use in the tuberosity, pterygoid and palatine region including the anatomic and surgical considerations, was very informative. He also gives a classification based on location of the recipient site. Illustrations utilizing dissected cadavers clarify the clinical techniques of proper placement and restoration of these maxillary posterior implants. Dr. Langer's chapter deals with the evaluation of a hopeless tooth in the esthetic zone and deciding if an immediate, delayed-immediate or even a staged approach would yield the best esthetic result. Another chapter deals with the author's stated desire for keratinized tissue adjacent to implants. They present the clinical significance of attached gingiva, accompanied by a classification system and illustrated surgical techniques to remedy such deficiencies. The final chapter (of 18 total) deals with the use of implants in patients with refractory periodontal disease. Drs. Mellonig and Nevins discuss the incidence, immunologic features, clinic characteristics, etiology and bacterial resistance in the treatment of the patient with refractory disease and their results with implant placement in patients with these presenting conditions.

The book is well written, very well supported with references, beautifully illustrated and very well organized. Even though there have been great strides made in regards to implant placement in the esthetic zone since the publication of this text in 1998, it is a valuable tool and would no doubt serve as a great reference in the dental professional's library.

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Clinical Decision Making and Treatment Planning in Osseointegration

Michael J. Engleman. Quintessence Publishing Co., Chicago, IL, 1996: ISBN 0-86715-318-0 (219 pp, 272 illus, 272 in color: price $88.00)

In reading *Clinical Decision Making and Treatment Planning in Osseointegration,* it is clear that the material was prepared by a clinician, for a clinician, and that the author's stated purpose "to aid thinking, decision making, and treatment planning in osseointegration" was achieved. The efficient transfer of information and time saving ease of use of this text is certainly attractive to the intended audience including general dentists, prosthodontists or oral surgeons. The color-coded chapters and corresponding color-coded contents listed on the outside of the back flap make for time respectful, rapid access to the information. In this reviewer's opinion, the useable value of a text is indirectly proportional to its length and directly proportional to the number of pictures; on this scale, this text ranks right at the top. Much of the written material in the text is in outline format positioned on the left half of the page with supporting diagrams and photographs conveniently placed adjacent to the text on the right side of the page. This presented outline format makes not only for easy initial reading and assimilation of information, but also for ease of use as a future

reference. The quality of the diagrams and photographs are superb and they consistently contain or convey the clinical information needed to adequately describe the the desired or provided patient treatment.

The first chapter, of sixteen total in the text, addresses patient identification and initiates the thought process of planning for and treating patients with implant therapy. Seven clinical categories are described that range from a patient with a single missing tooth to the completely edentulous patient. For each category described, a similar format is presented covering the clinical situation to include the chief complaint and various treatment options. Under a discussion of the choice of treatment possibilities, many of the potential therapy modalities, including conventional as well as implant techniques, are included and thoroughly illustrated. With each treatment option described, the various advantages, disadvantages and contraindications of each are outlined. For each of these seven patient categories introduced, a separate chapter later in the book is devoted to the clinical aspects specific to the implant prosthodontic treatment options for those situations. These chapters cover in detail the goals, presurgical needs, treatment considerations, patient examples, patient presentations (with superb photographs of actual cases) and references. One limitation is that the implant treatment options are limited to the external hex implant with no discussion of the advantages and disadvantages of alternate systems. For example, in the discussion of determining the number of implants that can be placed, the space requirements were presented only as fixed guidelines specific to the 3.75 mm or 4mm wide standard diameter implant, without offering the option of adjusting for variations in implant size. Still, many other clinically relevant considerations are included in the text that could easily translate to other available implant systems.

The second chapter, addressing patient education, lists several of the tools currently available to aid in the critical task of providing patients with the necessary information they need in order to make an informed choice on their treatment. The author provides an outline of the information that should ideally be presented to the patient at a consultation appointment. It provides a useful format for utilizing a checklist to aid in setting up a consultation schedule when initiating a practice. In addition, specific forms are provided as a suggested framework for the interested reader to use in a patient education program. These include the implant patient tracking form, the treatment planning letter to the patient, and information forms covering the single missing tooth, multiple missing teeth, the edentulous maxilla and the edentulous mandible. In the patient education process, the author suggests using photographic documentation of the practitioner's own patients. For those clinician's without a ready supply of photographs of completed treatment on patients with various treatment options or techniques, the beautifully done diagrams in the this chapter would serve as an ideal visual source for the consultation appointment.

Clinical photographs presented in later chapters under each of the seven clinical patient categories also provide a wealth of visual material that would be useful in educating the patient specifically on the implant treatment options available.

Clearly the mind of an organized individual is evident in the many forms and flow sheets that are provided. In the chapter on patient economy, blank forms for determining treatment time and fees are provided for the single tooth replacement, the partially edentulous fixed partial denture, the completely edentulous fixed detachable prosthesis and the implant retained overdenture. In addition, the work sheets for calculating the cost of the many implant components for the different treatment options provide the practitioner an additional means of determining the fees and costs involved in treatment. At least 10 flow sheets are provided throughout the book including diagnosis and treatment planning, sequencing of preliminary data, evaluation of diagnostic casts with decision criteria, radiographic analysis with illustrations, and multiple prosthodontic procedure

flowsheets for the various treatment categories. Extremely well organized, they offer the reader many visual aids to easily implement the complex organizing and scheduling required for successful implant therapy. To further aid in organizational efforts, there are many blank forms including a treatment-planning checklist, surgical referral form, laboratory consultation form, treatment-planning problem list and sequencing worksheets.

This book provides clinically useful material on many levels. It can be used as a beautifully illustrated picture book to present treatment options to patients. For the clinical practice, it offers a multiplicity of useful forms to use in every area from fee determinations to treatment planning. Efficient review and discussion of how to treat implant patients with various needs and extremely useable as a reference or easy reading, describes this text from start to finish. The well-developed and thorough discussions of potential problems and solutions are invaluable and the organizational aids for case development, communication between participating clinicians and patient progress are timesaving aids which are readily available and clearly presented.

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