Book Reviews



Adhesive Technology for Restorative Dentistry

Editors: Jean-Francois Roulet and Guido Vanherle. Quintessence Publishing Co., Ltd., London, Surrey, UK, 2005: ISBN 1-85097-107-2 (20 contributing authors; 208 pages; 208 illustrations (181 color); price \$120)

While there have been many advances in adhesive dentistry over the last decade, the accurate distribution of this information from academia to private practice is a challenge at times. The contributing authors and editors of this book felt that by compiling the proceedings from the 3rd European Symposium on Adhesive Dentistry, held in Berlin in September 2001, the information gap between the practice arena and the academia/ research arena could be bridged. The primary goal of this text seems to be providing the private practitioner with more information, arguments, and data to allow the formulation of a decisionmaking tree in the adhesive arena than what is evident with traditional G.V. Black concepts.

The book is broken into four sections. Chapters 1 to 3 focus on the rationale for adhesive techniques in esthetic restorative dentistry. Chapters 4 to 7 look primarily at advances in minimally invasive dentistry. Chapters 8 to 10 key in on specific issues a clinician may face when using adhesive techniques with resin and ceramic restorations. Finally, Chapters 11 and 12 touch on the fact that adhesive dentistry needs to continue to improve and that, ultimately, caries is a disease process in which we must use technology to help combat disease. From an information standpoint, the text is put together well and the corresponding photos are of high quality and have proper annotation. As the reader progresses through the first five chapters, there is a definite flow between chapters even though nine different authors contribute to writing these five chapters. Without a doubt, these chapters tie back to the title of the book and discuss preparation design, restorative layering techniques, and new advances in caries classification and diagnosis. In this part of the text, we see a blend of both research and clinical application as it relates to adhesive technology.

In Chapter 6, the focus turns to a more theoretical stance. In this chapter, Young's Modulus and Flexural fatigue limit are looked at for microfilled composites, hybrid composites, packable composites, indirect composites, glass ionomers, resinmodified glass ionomers, and polyacid-modified composites. While this information is valid, one must question whether this information from 2001 is accurate with the current products on the market in 2006. Chapter 7 seems to stray further from the title as it focuses on the use of ozone in dentistry, specifically as it relates to root caries. While promising results are evident in this paper, the authors do surmise that more research is needed in the area of ozone treatment and that ozone treatment may also be better from a socioeconomic standpoint.

Chapters 8 to 10 return the text to a more clinical basis. The paper presented in Chapter 8 essentially concludes that ceramics should be bonded with a resin luting agent and that dentin bonding should be used. Chapter 9 looks specifically at fired, pressed, and milled ceramic inlays cemented with phosphate cements, glass ionomer cements, and resin composite luting agents. The paper presented in this chapter concluded that dual cured and chemically cured resins along with resin-modified glass ionomers showed the best durability. Furthermore, the author concludes that pressed and milled inlays were far superior in terms of longevity to fired ceramic inlays. Chapter 10 finishes this component of the book by looking at an overview of the clinical use of resin to metal bonding.

The last two chapters focus on the adhesive technologies available in our armamentarium and the use of technology as it relates to disease. The text finishes by asserting that technology will continue to improve, but the solution for caries should be to find methods to inhibit the disease and reconstruct teeth through biotechnology.

With an ever-changing and advancing world of adhesive dentistry, the editors and contributing authors had a large task to create a text that is currently relevant. While much of the information presented in the first half of the text can be applied to everyday practice, the middle part of the text focuses on somewhat more theoretical topics, and the topics of resin luting in conjunction with dentin bonding for ceramic restorations are already used by many practioners and are by no means cuttingedge concepts.

Without a doubt, the first half of the text offers valid arguments for the change in diagnosis and treatment as it relates to restorative dentistry. In many ways, the book is a nice introduction for the clinician who has pondered over taking a larger step into adhesive dentistry, but has been hesitant to do so.

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New Magnetic Applications in Clinical Dentistry

Editors: Minoru Ai and Yuh-Yuan Shiau. Quintessence Publishing Co., Inc., Carol Stream, IL, 2004: ISBN 4-87417-826-6 (17 total contributing authors; 182 pages; 556 mostly color illustrations; price \$85)

The editors of this text, Minoru Ai and Yuh-Yuan Shiau, have provided the reader with a new edition of the well-known book, *Construction* of *Removable Partial Dentures by Using Magnetic Attachments*. These texts were originally published in Japanese and translated for Quintessence Publishing Co.

The text is intended for those with experience in removable prosthodontics; familiarity with the use of magnetism in the field is not required to follow the context.

In fact, it can be considered a viable training syllabus for those interested in incorporating magnetic principles and techniques in their removable prosthodontic treatments. The book is organized into three parts, each consuming approximately one-third of the text. There are numerous illustrations (the majority of which are in color) as well as a wealth of clinical photographs.

Part I, "Fundamentals of Magnets and Magnetic Attachment," introduces the reader to magnets. An overview of magnetic attachments, their significance in clinical dentistry, and terminology are presented. Basic clinical techniques are also introduced, and advantages of magnetic retention in prosthetics are noted. In Chapter 3, a thorough history of the development and evolution of magnetic attachments is reviewed. This includes a review of the physics and material science of magnets. Magnetic force and circuit are defined, and computer-aided optimization of the magnetic circuit design is introduced. The progress of magnet design, attraction force, and corrosion resistance are discussed, from the early 1980s attachments, with their shortcomings and limited applications, to the latest clinically reliable models. Further, current issues or concerns with magnetism in dentistry are discussed. These include: (1) biocompatibility, (2) oxidation and corrosion, (3) magnetic leakage flux, and (4) magnetic resonance imaging or MRI in medical testing. Part I ends with Chapter 6, where the new generation of dental magnets, the MAGFIT and MAGFIT-IP (for implants) line of products, are detailed. It is contended that over the last 10 years, 1.2 million units of these products have been used widely, and their performance and characteristics continue to improve. The horizon holds the promise of development of a super-thin magnetic attachment that would increase clinical applications significantly.

Part II, "Clinical Application of Magnetic Attachments" begins with a review of removable prosthesis design. The fundamentals of (1) support, (2) bracing, and (3) retention are reviewed, and the technical requirements of supportive abutments and tissues for traditional RPDs and complete dentures are listed. Precautions against caries, periodontal disease, and prosthesis breakage are also discussed. Within these parameters, the advantages and disadvantages of substituting magnetic over traditional attachments are listed. Major advantages listed are: (1) precision and consistency of force over time, (2) protection of abutment teeth as well as usability of more terminal abutment teeth, (3) path of insertion flexibility, (4) suitability for the aged or handicapped, and (5) ease of convertibility of existing prosthesis to incorporating a magnetic retainer. These outweigh a short list of disadvantages, like minimal bracing effect and the inability to use with fully intact teeth.

Periodontal, endodontic, hygiene, and vertical space considerations are reviewed in Chapter 8. Techniques on abutment tooth preparation as well as keeper root preparation are reviewed. The two techniques for attachment of the keeper to the root cap are also clearly outlined. These critical concepts of laboratory casting incorporation of the keeper versus bonded-in keepers are described. In Chapter 11, clinical reliability data for magnetic attachments over an 8-year period are presented. Maintenance, troubleshooting, and repair of magnetically retained prostheses are discussed in Chapter 12.

Part III of the text is comprised of 27 clinical cases where patients' pre-existing conditions as well as their age and chief complaints are presented. Each case is ultimately restored with magnetic attachment incorporation into the patient's existing or new removable prosthesis. The cases range in complexity and encompass just about every clinical presentation one may imagine where magnetic attachments may play a role in retention of an appliance. Two prevailing themes are noteworthy when reviewing the clinical cases. First is the excellent photography of all the clinical conditions, laboratory and intra-oral fabrication steps, and final clinical deliveries. Second is the predominance of teeth retained as "valuable" magnetic attachment abutments. By traditional prosthodontic criterion, these teeth would often be categorized as hopeless and would be extracted. These include damaged roots, cariescompromised traditional abutments, periodontally compromised teeth, short crown-to-root ratios, fractured roots, long-axis compromises, and divergent multiple abutments. Two implant magnetic cases are also presented and all of the cases have some follow-up data and photography ranging from a few years to over 10 years of recall evaluations.

Ultimately, it is the editors' contention that magnetism in prosthodontic restoration is an evolving and already well-established field. With the continual improvements in the profile, strength, anti-corrosiveness, components, and biocompatibility of magnets, it is expected that they will play an ever-growing role in removable prosthodontic restorations. The editors do an excellent job of presenting the subject in a concise manner. The illustrations are some of the best available. The only criticism would be with the flow of the language in translation. At times, it is only a bit awkward, but in some passages it makes it difficult to follow a key concept. It is reasonable to expect that the advantages of magnetic retainers should be considered as a viable treatment option in the ever-increasing removable prosthodontic population.

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Advanced Removable Partial Dentures

Edited by James S. Brudvik. Quintessence Publishing Co., Inc., Carol Stream, IL, 1999: ISBN 0-86715-351-2 (168 pages; 132 illustrations; price \$54; hardcover)

As Dr. Brudvik states in the preface, this book is not a classic text, but rather a monograph that

summarizes his 35-year interest in removable partial denture (RPD) prosthodontics. It is intended for prosthodontic residents and specialists, and for general dentists and laboratory technicians who are interested in acquiring or refining skills in providing the highest quality of removable prosthodontic services. The author is to be commended for taking an approach different from other experts who publish photo albums of cases. Dr. Brudvik's vast experience is the sole authority in this text (there are no scientific citations), and he gives his opinion frequently and freely. Most pages have one or two line drawings that support major points in the text, and red highlight is used in the drawings for emphasis. The publisher is to be commended as well. The simple and clear layout with pink title highlights complements the author's straightforward treatment of the subjects.

The book follows a traditional subject grouping in 11 chapters, including diagnosis and treatment planning, RPD design, and all clinical and laboratory aspects of RPD fabrication and maintenance. Several chapters at the end are devoted to swinglock, rotational path, attachment partials, and implants.

Dr. Brudvik is candid about the deplorable state of "standard" partial denture services offered to most patients. Early in his introduction, he asserts the dramatic improvement in comfort and longevity possible with a high quality RPD. Throughout the book, he emphasizes this difference to justify the additional education, skills, teamwork, and time spent on the exacting details necessary for a state-of-the-art partial denture. The objectives of providing esthetic, retentive, strong, and problem-free RPD service are clearly stated and reinforced by the techniques that provide these results. Emphasizing the maintenance aspects of long-term care, Dr. Brudvik's treatment philosophy is based on clinical realities, not "suppositions derived from bench studies,""theoretical points of view," or "pet techniques."

An example is his point that rest placement and clasp design (as well as many other design considerations), are secondary to mouth preparation and maintenance in determining success for an RPD. On the other hand, the importance of allowing rotational movement in the prosthesis is given a lengthy discussion in a section of Chapter 6 devoted to establishing functional fit of distal extension partial denture frameworks. While scientific information is not available about the amount of stress relief desirable for Kennedy class I cases, the author offers a "general rule" of 2 mm free movement of the retentive mesh. Dr. Brudvik's readiness to state a preference in clinical or laboratory technique based on his long experience in the field is a major strength of the book.

Throughout the work, there is an emphasis on high technical quality. Communication and interconnection between lab technician and dentist is repeatedly mentioned and encouraged. The dentist is advised to monitor technical work directly by inspecting the frame wax-up on the refractory cast for each complex and attachment case. A more subtle effort to obtain laboratory excellence is seen in the author's suggestion that the dentist only send high quality diagnostic casts and well-drawn RPD designs to the lab: "one good turn deserves another."

Dr. Brudvik has a clear and economical style of expression. Each page contains many pearls of wisdom, a few of which are listed here:

- All cases can be managed with 3 clasp types: the circumferential, I-bar, and L-bar, whether cast or wrought.
- He disputes the effectiveness of RPI and RPC (mesial rest, distal guide plane, buccal I-bar or circumferential clasp) designs.
- He prefers a bar major connector for the mandibular arch, and a midpalatal strap for the maxillary arch.
- There is much discussion about abutment tooth modification, both subtractive and additive. He recommends adding rest and guide plane features with bonded composite, bonded cast metal, or full coverage crowns.
- In fabricating abutment crowns to receive conventional RPD clasps, he describes the importance of the crown contour apical to the height of contour. An abrupt contour makes for strong retention in a tooth-borne case, while a gradual transition creates less retention and permits more movement without binding in distal extension cases.
- He summarizes a long discussion of final impression and altered cast impression technique: "...only perfection is acceptable" (p. 61).
- There is a description of the wax cone technique for determining occlusal vertical

dimension in cases with an edentulous arch. He does not feel that facebow or protrusive records are useful.

• Chapter 7 has a long and useful discussion about artificial tooth arrangement, emphasizing tooth selection, esthetic placement of the first artificial premolar, the importance of preserving natural tooth centric and eccentric contacts, ending the posterior replacement at the mandibular first molar, and the use of lingualized occlusion to provide balanced function in CD/RPD combinations.

The final chapters deal briefly with potentially complex subjects: swing-lock and rotational path designs, precision attachments, and implantsupported RPDs. The treatment of these topics is basic but thoughtful. In the area of attachments, the main categories of over-crowns, bar-clip, and intracoronal and extracoronal attachments are covered without bias or preference. The implant chapter is necessarily brief, the author citing a lack of scientific documentation for implant-RPD combinations; however, he strongly believes that implants have the potential to vastly improve partial denture service and that this is a fertile area of clinical investigation. While the book is admirably comprehensive, there are a few important topics that are only briefly mentioned:

- The use of transitional partial dentures is an important treatment in preparing the mouth for definitive rehabilitation, and the profession could use direction in appropriate use and techniques in this area.
- Many partially edentulous patients have manifestations of occlusal collapse (tipping, extrusion, severe wear, etc.), and this complex problem requires a deliberate and informed ap-

proach. Particularly, there is confusion about how to handle vertical dimension in cases of extreme collapse, which the book does not cover.

- Dr. Brudvik does not mention alternative materials that are available for RPD fabrication, including titanium frameworks and resilient plastic for bases and clasps.
- Lastly, it would be extremely valuable to have the author's opinion on how his masterful approach to partial denture treatment can be applied in community clinic settings, where a large number of patients must be seen in a limited time, where laboratory support suffers similar time pressure, and where the reimbursement for removable prosthodontic services are low. Dr. Brudvik is a respected authority to speak of excellence in basic care, and his voice would be welcome in the public health arena.

Dr. Brudvik is to be commended, both for his unique contribution to prosthodontic literature, and for his tireless study and search for clinical excellence. Through his book, the profession gains valuable perspective in an important aspect of adult oral health.

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