

## Journal Of Endodontics

This book covers the latest research in biofilm, infection, and antimicrobial strategies in reducing and treating musculoskeletal, skin, transfusion, implant-related infections, etc. Topics covered include biofilms, small colony variants, antimicrobial biomaterials (antibiotics, antimicrobial peptides, hydrogels, bioinspired interfaces, immunotherapeutic approaches, and more), antimicrobial coatings, engine delivery vehicles, and perspectives on clinical impacts. Antibiotic resistance, which shifts the race toward bacteria, and strategies to reduce antibiotic resistance, are also briefly touched on. Combined with its companion volume, *Racing for the Surface: Pathogenesis of Implant Infection and Advanced Antimicrobial Strategies*, this book bridges the gaps between infection and tissue engineering, and clinicians, industrial engineers and scientists, governmental representatives in national laboratories, and advanced undergraduate students and post-doctoral fellows who are interested in infection, microbiology, and biomaterials and devices.

In recent years, cone beam computed tomography (CBCT) has become much more widely available and utilised in all aspects of dentistry, including endodontics. Cone Beam Computed Tomography in Endodontics is designed to inform readers about the appropriate use of CBCT in endodontics, and enhance their clinical practice with this exciting imaging modality.

A problem-based text that presents a wide range of real cases in endodontics Clinical Cases in Endodontics presents actual clinical cases, accompanied by academic commentary, that question and educate the reader about essential topics in endodontic therapy. It begins with sets of cases illustrating the most common diagnoses and the steps involved in preparing a treatment plan. Subsequent cases as the basis of discussing various treatment options, including nonsurgical root canal treatment, re-treatment, periapical surgery, internal and external resorption, emergencies and trauma, and treating incompletely developed apices. The progression from common to increasingly challenging clinical cases enables readers to build their skills, aiding the ability to think critically and independently recognize the centrality of clinical cases to the profession by providing actual cases with an academic backbone. Clinical Cases in Endodontics applies both theory and practice to real-life cases in a clinically relevant format. This unique approach supports the trend in case-based and problem-based learning, thoroughly covering the full range of endodontic treatment. Unique case-based format su independent learning through self-assessment and critical thinking Covers all essential topics within endodontics Presents numerous illustrations and photographs throughout to depict the concepts described Clinical Cases in Endodontics is an ideal resource for students mastering endodontic treatment, residents preparing for board examinations, and clinicians wanting to learn the most recent This superbly illustrated book provides detailed information on the causes of instrument failure during endodontic treatment, the factors influencing the management of such cases, and the diverse management options that may be employed to resolve the problem. Readers will find clear descriptions and comparative evaluation of the available methods, techniques, and devices. Complications tha instruments are described, and the impact of retained file fragments on the prognosis of endodontic treatment is discussed. In addition, means of preventing iatrogenic errors from occurring in the first place (the best form of management) are explained, emphasizing that the risk of instrument failure is reduced if proper guidelines are carefully considered and followed. The book will assist both achieving an optimal outcome when confronted with the time-consuming and challenging task of dealing with a fractured instrument within the root canal – a still frequent circumstance despite the plethora of improvements in instrument design, alloy composition, and manufacturing processes.

Regenerative Dentistry  
 Pitt Ford's Problem-Based Learning in Endodontology  
 Prevention and Management  
 Prevention and Treatment of Apical Periodontitis  
 Current and Potential Clinical Applications  
 The Treatment of Apical Periodontitis

**This book is designed to provide the reader with a full understanding of the role of cone beam computed tomography (CBCT) in helping to solve many of the most challenging problems in endodontics. It will shorten the learning curve in application of this exciting imaging technique in a variety of contexts: difficult diagnostic cases, treatment planning, evaluation of internal tooth anatomy prior to root canal therapy, nonsurgical and surgical treatments, early detection and treatment of resorptive defects, and outcomes assessment. The ability to obtain an accurate 3D representation of a tooth and the surrounding structures by means of noninvasive CBCT imaging is changing the approach to clinical decision making in endodontics. Clinicians long accustomed to working in very small, three-dimensional spaces are no longer constrained by the limitations of two-dimensional imaging. The challenges of mastering the new technology can, however, be daunting. The detailed guidance contained in this book will help endodontists to take full advantage of the important benefits offered by CBCT.**

**Complex endodontic problems that require further work on the part of the clinician can be time-consuming and problematic. This highly illustrated text, from one of the authors of the very successful Endodontics: Problem-Solving in Clinical Practice, tackles these difficult aspects and guides the practitioner through the problems and procedures involved. The only monograph on this specific problem area, Advanced Endodontics will be of interest to endodontists, general dental practitioners with a special interest in endodontics, and postgraduates in restorative and endodontic specialties.**

**The authoritative reference that continues to present a systematic analysis of the scientific basis of endodontology The third edition of Essential Endodontology: Prevention and Treatment of Apical Periodontitis has been revised and updated to include the most recent developments in the field, maintaining its position as the major scientific treatise of apical periodontitis. Making an often-complex subject more digestible, the book explores the scientific basis of endodontology, adopting a systematic analysis of the available clinical and laboratory evidence. Promoting apical periodontitis as a disease entity, the comprehensive third edition focuses on its biology and clinical features, enabling the reader to have a better understanding of its diagnosis, prevention and treatment. In addition to thorough updates and full colour illustrations throughout, a new chapter on regenerative endodontics has been added to this edition. Written with a focus on the scientific basis of endodontology Includes a new chapter on regenerative endodontics Presents the most current information and major developments in this fast-moving field Provides helpful learning outcomes in each chapter Contains full colour illustrations, enriching the text Features contributions from a noted panel of international experts, including new contributors from across the globe Regarded as a vital companion to the pursuit of excellence in postgraduate and specialist education, Essential Endodontology is an indispensable and accessible resource for practicing endodontists, postgraduate students of endodontology and those seeking professional certification in endodontology.**

**Includes information about the British Endodontic Society.**

**Microsurgery in Endodontics  
 Advanced Endodontics  
 Endodontics E-Book  
 Properties and Clinical Applications  
 Minimally Invasive Approaches in Endodontic Practice  
 Clinical Cases in Endodontics**

D-Day and operation OVERLORD are often regarded as one of the most important operation of all time. The stretch of beach along the Calvados coast is world famous for the part it played in turning around World War II on the 6th of June 1944, when British, Canadian and American troops broke through Nazi defenses. Normandy is indelibly marked by the .....

This book provides detailed information on the emerging applications of nanomaterials and nanoparticles within endodontics, highlighting the exciting potential clinical impact of nanotechnology in the field. The range of applications covered is diverse, encompassing drug and gene delivery, tissue engineering, antibacterial strategies, dentin tissue stabilization, dentin pulp regeneration and use in restorative and endodontic materials. Important scientific background information relating to each application is provided, with clear coverage of basic principles. In addition, potential pitfalls are identified and explained. The cytotoxicity of nanomaterials and nanoparticles is also addressed in a separate chapter. The book will be of value both for endodontic practitioners and for all scientists and graduate students who are interested in the application of nanotechnology in endodontics.

Endodontic pain is a complex symptom that poses unique challenges for the dentist. This book is a concise, well-structured guide to the assessment and treatment of patients who present with endodontic pain, in which step-by-step descriptions are complemented by informative images and flow charts. The advantages, disadvantages, and significance of specific diagnostic and treatment procedures are clearly described, as is a pharmacotherapeutic approach to the prevention and treatment of pain. In addition, the causes and biological basis of endodontic pain are explained and guidance is provided on further strategies for pain prevention. The crisp narrative, efficient design and visual detail are notable features of this book that will make it an ideal chairside resource for the clinician and a dependable reference for the student. This book serves as a clinical guide to help the practitioner improve endodontic treatment outcomes. It focuses on the various factors affecting the prognosis of endodontic treatments and on their impact on short-term and long-term results. The text incorporates up-to-date knowledge, techniques and treatment protocols. Each chapter has been carefully chosen to address either foundational knowledge or a select aspect of endodontic treatment. The authors analyze the knowledge accumulated from a large number of outcome studies and provide the reader with a critical appraisal indicating the strengths and weaknesses of those studies. This information is then used to make recommendations on how to predict the outcome of the intended treatment. The authors emphasize that the endodontic prognosis is a multifactorial phenomenon, underscoring how various factors, singularly and in combination, influence the treatment outcome. Readers are provided with tools to successfully assess the prognosis of the proposed treatment at the outset and to execute the planned treatment focused on optimal outcome.

An Integrated Biological and Clinical View  
 Clinical Guide for Optimal Treatment Outcome  
 Disinfection of Root Canal Systems  
 Harty's Endodontics in Clinical Practice  
 A Textbook

**Endodontic Prognosis**  
 Endodontic Radiology, 2nd edition, is a unique reference that examines all aspects of radiographic imaging related to endodontics. Dr. Bettina Basrani and a team of prestigious international contributors build upon traditional radiographic techniques and include the latest information available on digital radiographs and cone beam computed tomography. More than an overview of equipment, the book delves into radiographic interpretation, differential diagnosis, technical difficulties and special circumstances when taking radiographs during the endodontic treatment, and how to choose the correct radiographic technique to obtain the desired images. Chapters explain general radiographic techniques; intraoral techniques; standard radiographs and interpretation; digital radiographs and their manipulation, storage, and interpretation; and CBCT principles, techniques, and clinical considerations.

This book is a guide to proven, current clinical endodontic practice. It is designed, primarily, with the undergraduate readership in mind but is also suitable for anyone pursuing specialist training, including extended skills in endodontics, and general dental practitioners undertaking CPD, or wishing to keep up-to-date. The seventh edition is available with an online question bank containing MCQs and Clinical Cases. Practical approach to the subject, taking the reader through every step of endodontic practice from its scientific basis to patient assessment and through to clinical techniques Helpful pedagogic features – including Learning Outcomes and Summary Boxes – help reinforce learning International experts and contributors help ensure good coverage and currency of information Explores areas of debate when they exist to reflect differing approaches to treatment intervention Explains the potential impact of systemic conditions and disorders, as well as medications, on endodontic treatment planning and management Discusses the diagnosis of orofacial pain and the appropriate use of antibiotics and analgesics Explores the maintenance of pulp vitality and the prevention of apical periodontitis in the context of operative dentistry Provides an overview of instruments and devices used during endodontic treatment Describes the fundamental principles of canal filling using gutta-percha, as well as the use of alternative materials, and newer root filling techniques Discusses the management of dental trauma with emphasis on accurate diagnosis, timely and appropriate treatment, and follow-up Explores the interface between endodontic-periodontal disease in the context of diagnosis, treatment and prognostic assessment Discusses common challenges such as inadequate pain control and problems with preparation and filling of the root canal system Written at a level which is ideal for dental students, general dental practitioners and those pursuing specialist training or seeking to keep up-to-date Comes with access to an online question bank containing a wide range of MCQs and Clinical Cases to help reinforce learning! Richly illustrated with over 80 colour artworks – many created by the Gray's Anatomy illustration team – and 350 photographs, many of which are previously unpublished Explores advances in our understanding of the role of microorganisms in the pathogenesis of pulpal and periradicular diseases and the role of host defence response against root canal infection Explores the use of newer imaging techniques such as three-dimensional tomography in determining pulp space anatomy and in treatment planning Explains recent advances in material technology, molecular biology and regenerative medicine in the management of deep caries and maintenance of pulp vitality Explores the effective use of existing and newer chemomechanical preparation techniques and intracanal medication for thorough root canal system decontamination Explores advances in the techniques available for restoring endodontically treated teeth

This unique book is a serious study of clinical endodontics that underscores the biologic foundation of endodontic treatment and seeks to bridge the gap between basic endodontic knowledge and advanced endodontic biology. Written by a well-established clinician and a researcher with extensive background in endodontic microbiology, this book combines invaluable histologic illustrations of endodontic disease with a robust clinical text that (1) describes the pathologies affecting dental tissues as well as their reactions to the clinical procedures and (2) uses clinical microbiology to explain the observed phenomena. Treatments of complex endodontic infections are presented for both vital and nonvital pulp therapy, and the influence of periradicular pathology are addressed in detail. Moreover, the authors wade into controversial topics with detailed and comprehensive analysis, including the implications of lateral canals on treatment and the causes of treatment failures and how to avoid them. The purpose of this book is to improve endodontic treatment, and the authors demonstrate how an in-depth knowledge of endodontic infections can help clinicians to synthesize the data from patient examinations in order to visualize what has taken place, understand the processes at work, and predict what will occur with the patient. An essential clinical text for comprehensive endodontic study.

This is a new edition of the now classic book which has established itself as a standard text for dental students. Practical approach to the subject, taking the reader through every step of endodontic practice from scientific basis to patient assessment and through to clinical techniques Evidence-based approach to ensure safe clinical practice More than 250 illustrations, many in full colour, presenting clinical, diagnostic and practical information in an easy-to-follow manner A logical approach to the subject by building upon a clear explanation of the underlying scientific principles Prepared by international contributors to ensure a wider appeal Written at a level which is ideal for dental student, general and vocational dental practitioners Includes new imaging techniques such as Cone Beam Computed Tomography A new chapter on diagnosis, integral to treatment planning, patient management and care Recent research findings on the pathogenesis of endodontic disease and the management of persistent infection in previously treated teeth A completely rewritten chapter on the restoration of endodontically treated teeth Newer treatment modalities and materials such as regenerative techniques and Mineral Trioxide Aggregate in endodontics The use and development of NiTi instruments, both hand and rotary, which are increasingly popular for preparing root canals Published for the first time in full colour with over 185 new images!

Endodontic Microbiology  
 Endodontics  
 Harty's Endodontics in Clinical Practice E-Book  
 Best Practices in Dentistry  
 Principles and Practice  
 Cohen's Pathways of the Pulp Expert Consult - E-Book

**This book provides dental professionals with a clear understanding of current clinical and scientific knowledge on the various aspects of pulp treatment for both primary and young permanent teeth. Diagnostic parameters are clearly presented, along with step-by-step descriptions of clinical procedures, including indirect and direct pulp treatments, pulpotomy, and pulpectomy. The rationale for the materials used in each technique and their individual merits and disadvantages are examined in detail. In the case of pulpotomy, all the materials used since the introduction of this treatment modality are discussed (e.g., formocresol, glutaraldehyde, ferric sulfate, and MTA) and the roles of sodium hypochlorite, electrofulguration, and laser therapy are elucidated. Special attention is devoted to pulpectomy and root canal treatment, with consideration of debriding and obturation techniques, rinsing solutions, and root-filling pastes. A further individual chapter is dedicated to restorations of teeth treated with the different types of pulp therapy. The various conservative treatment modalities are also presented, including specific treatments for immature nonvital permanent teeth. The concluding chapter looks to the future and the potential value of stem cells in pulp therapy.**

**This book describes the latest minimally invasive approaches in endodontics and explains the principles that guide them. The advantages and limitations of these approaches are critically analyzed with the intention of defining new endodontic gold standards. The trend toward the use of more conservative procedures within endodontics reflects the wider adoption of minimally invasive dentistry in general and is being fostered by the introduction of new materials, devices, instruments, and techniques as well as the use of magnification and advanced three-dimensional diagnostic imaging technologies. In this book, readers will find clear explanation of these advances and their impacts. Minimally invasive access to the root canal system is described, and detailed attention is devoted to the application of novel strategies in root canal instrumentation and disinfection, root canal filling, coronal restoration, retreatment, and endodontic surgery. Minimally invasive alternatives to complete endodontic treatment, such as vital pulp therapies, and to dental extraction and implant placement, including surgical extrusion, intentional replantation, and tooth autotransplantation, are also discussed. Minimally Invasive Approaches in Endodontic Practice will be of value for endodontists at all levels of experience.**

A unique, multidisciplinary manual for the treatment of pediatric dental emergencies for general practitioners and non-pediatric specialists Management of Dental Emergencies in Children and Adolescents presents the diagnostic skills, treatment options, and management strategies necessary to provide effective and appropriate dental care for children and adolescents. This authoritative manual helps dental practitioners manage potentially stressful situations with children and adolescents while improving their competence in a wide range of urgent pediatric situations. An emphasis on managing the therapeutic demands of both younger patients and their parents enables readers to have greater confidence in handling demanding emergency situations in daily practice. An expert team of contributors explain how to manage tooth substance loss, endodontic problems in deciduous teeth, the long-term consequences of early tooth loss, the dental issues related to oral health, and more. Guiding practitioners through the unique challenges of pediatric dental emergencies, this book: Explains the differences in treating and managing dental emergencies in children compared to adults Covers all types of pediatric dental emergencies including open pulp in permanent and deciduous teeth, missing teeth, and non-infective dental conditions Offers clinical vignettes and photographs to highlight clinical relevance Includes chapters by experts in multiple disciplines such as endodontics, restorative dentistry, pediatric dentistry, prosthodontics, and orthodontics The first textbook to focus exclusively on young patients in need of acute dental care, Management of Dental Emergencies in Children and Adolescents is a much-needed resource for general and specialist dentists as well as trainee and specialist pediatric dentists.

This richly illustrated book combines explanation of the scientific base underpinning vital pulp treatment with description of current and emerging trends in clinical practice. It guides the reader through modern views on pulp diagnostics, deep caries, and pulp exposure management, leading to an analysis of the biological aspects of regenerative techniques such as angiogenesis, neurogenesis, inflammation, and epigenetics. In the later chapters, practical considerations relating to bioengineering, biomaterial choice, revitalization, and stem cell-based procedures are discussed and their likely therapeutic impact considered. Aimed at dental students, postgraduates, and research-minded dental practitioners, this translational book summarizes state-of-the-art scientific knowledge on dentin/pulp interactions and regenerative endodontics, while highlighting the opportunities to incorporate recent developments into everyday practice. Readers will also find extensive discussion of potential future developments and research avenues relating to each aspect of this exciting and rapidly developing field.

Guided Endodontics

Clinical Endodontics  
Management of Fractured Endodontic Instruments  
Nanotechnology in Endodontics  
Problem Solving in Endodontics  
Endodontology

**This latest edition continues to focus on those areas in endodontics that present the most difficulty in successful diagnosis and treatment. Key topics such as locating and negotiating fine and calcified canals, canal cleaning and shaping, root canal obturation, nonsurgical root canal retreatment, and management of endodontic emergencies are addressed in a systematic, problem-solving manner that stresses prevention of problems in treatment, identification of problems already present or occurring during the course of treatment, and management of such problems once they are recognized. Clean root canal systems are essential for successful endodontic treatment. With contributions from leading endodontists from around the world, Dr. Nestor Cohenca here presents the etiology of endodontic disease caused by the endodontic biofilm and all therapies available to predictably disinfect the root canal system, thus increasing successful endodontic outcomes. Disinfection of Root Canal Systems: The Treatment of Apical Periodontitis is an evidence-based manual that describes root canal anatomy, the endodontic biofilm, and the role of disinfection before presenting the most up-to-date methods of irrigation and disinfection. Individual chapters are devoted to each method, such as positive pressure irrigation, apical negative pressure irrigation, sonic activation, photodynamic therapy, laser technology, and ozonization and electrochemical activation. Clinical photographs throughout show proper irrigation and disinfection techniques. The definitive endodontics reference, Cohen's Pathways of the Pulp is known for its comprehensive coverage of leading-edge information, materials, and techniques. It examines all aspects of endodontic care, from preparing the clinician and patient for endodontic treatment to the role the endodontist can play in the treatment of traumatic injuries and to the procedures used in the treatment of pediatric and older patients. Not only does Hargreaves and Cohen's 10th edition add five chapters on hot new topics, it also includes online access! As an Expert Consult title, Cohen's Pathways of the Pulp lets you search the entire contents of the book on your computer, and includes five online chapters not available in the printed text, plus videos, a searchable image collection, and more. For evidence-based endodontics research and treatment, this is your one-stop resource! This title is directed primarily towards health care professionals outside of the United States. A practical, highly illustrated guide to endodontics for the primary care dentist. A practical and accessible guide to endodontics for the general dentist. Brings together new technologies available for treatment with the increasing biological understanding of endodontic disease processes. Comprehensively illustrated by the authors' own cases. Presents key aspects of primary treatment, root canal re-treatment and periradicular surgery.**

**Endodontic Radiology  
Current Concepts in Pulp Therapy for Primary and Young Permanent Teeth  
Racing for the Surface**

**Clinical Approaches in Endodontic Regeneration  
Eighth Edition**

**Pediatric Endodontics**

Pitt Ford's Problem-Based Learning in Endodontology combines the theory and practice of endodontics, providing the reader with information that is both clinically relevant to everyday practice and also evidence based. It includes a wealth of cases that span topics such as the maintenance of a vital pulp, root canal treatment, surgical endodontics and trauma. Each case is accompanied by full colour photographs and/or radiographs that illustrate the key stages in diagnosis, treatment planning, treatment and prognosis. In addition, the detailed commentary provides information on viable alternative treatment strategies, rationale (biologic considerations) for the treatment described, evaluation of the current evidence for/against the course of treatment and finally the prognosis. The book allows the reader to apply their existing knowledge to a range of clinical scenarios and to gain new knowledge and apply it to further clinical situations. In addition the reader will be encouraged to transfer knowledge and diagnostic skills from one problem to another and guided to improve their self-directed learning and reflective skills. Complications from dental procedures are inevitable and encountered by all dental professionals. Avoiding and Treating Dental Complications: Best Practices in Dentistry is designed to address proper management of these situations in everyday practice. Covers a range of dental issues and complications found in daily practice Written by experts in each speciality Features tables and charts for quick information Includes clinical photographs and radiographs Biomaterials in Endodontics offers an up-to-date overview of endodontic biomaterials and their applications in regenerative medicine and tissue engineering. This book details the key biomaterials used in clinical endodontics and the benefits and challenges of using these materials, from root canal obturation materials to alloys for endodontic files and hand instruments. Chapters also offer a unique insight into the regenerative applications of endodontic biomaterials, such as the use of stem cells and growth factors for bone regeneration. Biomaterials in Endodontics is a useful resource for researchers working in biomedical engineering, regenerative medicine, and materials science with an interest in dentistry and bone regeneration. This book is also a helpful guide for endodontists, dentists, dental scientists, and clinicians with an interest in biomaterials for endodontics. Details the latest innovations in materials used for endodontic procedures Offers a unique insight into regenerative applications of endodontic biomaterials Appeals to an interdisciplinary readership, combining materials science, regenerative medicine, and biomedical engineering approaches This lavishly illustrated, practical guide to endodontic treatment covers the latest developments in instrumentation and filling techniques. Ideal for all dental practitioners involved in endodontic therapy [root canal treatment], this new edition has been fully updated throughout and now includes a new author team from the Eastman Dental Institute. Practical approach to the subject takes the reader through every step of the clinical procedures from patient assessment to specific problem solving More than 1500 superb illustrations, including colour coded algorithms, present clinical, diagnostic and practical information in an easy-to-follow manner Offers sensible 'best practice' routes through often conflicting approaches to treatment A full chapter on radiography emphasises its importance in both diagnosis and treatment Includes a chapter on the avoidance of litigation Written at a level which ensures a wide appeal to the general dental practitioner and those commencing specialist training Includes discussion of the 3D imaging of root canal systems using microCT Discusses the use of NiTi instruments, both hand and rotary, which are used by an increasing proportion of dentists Learning outcomes stated at the start of each chapter help the readers plan their study

Pathogenesis of Implant Infection and Advanced Antimicrobial Strategies  
Guide for the Care and Use of Laboratory Animals

Journal of Endodontia  
Avoiding and Treating Dental Complications  
3D Imaging in Endodontics  
Practical Clinical Endodontics

Endodontic Microbiology, Second Edition presents a comprehensive reference to the microbiology, pathogenesis, management, and healing of endodontic pathosis, emphasizing the importance of biological sciences in understanding and managing endodontic disease and its interaction with systemic health. Provides a major revision to the first book to focus on the problems related to microbes in the root canal and periapical tissues Updates current knowledge in endodontic pathosis, especially regarding next generation sequencing and microbial virulence Presents useful diagrams, images, radiographs, and annotated histological images to illustrate the concepts Emphasizes the importance of biological science in understanding and managing endodontic disease Includes contributions from the leading researchers and educators in the field This 4th edition is an essential scientific & clinical building block for understanding the etiology & treatment of teeth with pulpal & periapical diseases. You'll easily understand & learn procedures through step-by-step explanations accompanied by illustrations, as well as video clips included on CD.

A respected resource for decades, the Guide for the Care and Use of Laboratory Animals has been updated by a committee of experts, taking into consideration input from the scientific and laboratory animal communities and the public at large. The Guide incorporates new scientific information on common laboratory animals, including aquatic species, and includes extensive references. It is organized around major components of animal use: Key concepts of animal care and use. The Guide sets the framework for the humane care and use of laboratory animals. Animal care and use program. The Guide discusses the concept of a broad Program of Animal Care and Use, including roles and responsibilities of the Institutional Official, Attending Veterinarian and the Institutional Animal Care and Use Committee. Animal environment, husbandry, and management. A chapter on this topic is now divided into sections on terrestrial and aquatic animals and provides recommendations for housing and environment, husbandry, behavioral and population management, and more. Veterinary care. The Guide discusses veterinary care and the responsibilities of the Attending Veterinarian. It includes recommendations on animal procurement and transportation, preventive medicine (including animal biosecurity), and clinical care and management. The Guide addresses distress and pain recognition and relief, and issues surrounding euthanasia. Physical plant. The Guide identifies design issues, providing construction guidelines for functional areas; considerations such as drainage, vibration and noise control, and environmental monitoring; and specialized facilities for animal housing and research needs. The Guide for the Care and Use of Laboratory Animals provides a framework for the judgments required in the management of animal facilities. This updated and expanded resource of proven value will be important to scientists and researchers, veterinarians, animal care personnel, facilities managers, institutional administrators, policy makers involved in research issues, and animal welfare advocates.

This book is a comprehensive guide to Biodentine™, an innovative biocompatible and bioactive material based on pure tricalcium silicate that can permanently replace dentin and can also serve as a temporary enamel substitute. Although Biodentine™ has been widely used across the world for the past decade, this is the first book to be devoted to its properties, interactions with the soft and hard tissues, and its multiple clinical applications. The coverage encompasses applications in primary and permanent teeth, in specialties as diverse as restorative dentistry, endodontics, paediatric dentistry, dental traumatology, and prosthetic dentistry. Biodentine™ application both in vital pulp therapy and endodontic procedures is illustrated and clinical step by step protocols are provided. The book provides a detailed update on Biodentine™ use to preserve the pulp vitality in direct/indirect pulp capping, pulpotomy and irreversible pulpitis treatment. It also details Biodentine™ use for non-vital teeth treatment in indications such as root/furcation perforation repair, apexification as well as in regenerative endodontic procedures. Biodentine™: Properties and Clinical Applications will be a rich source of guidance and information for all dentists as well as dental students and academics.

Clinical Retreatment and Surgery  
Diagnosis, Causes, Prevention and Treatment  
Common Complications in Endodontics  
A New Era in Diagnosis and Treatment  
Essential Endodontology

**Prevention, Identification, and Management**

Atlas of Clinical Gross Anatomy uses over 500 incredibly well-executed and superb dissection photos and illustrations to guide you through all the key structures you'll need to learn in your gross anatomy course. This medical textbook helps you master essential surface, gross, and radiologic anatomy concepts through high-quality photos, digital enhancements, and concise text introductions throughout. Get a clear understanding of surface, gross, and radiologic anatomy with a resource that's great for use before, during, and after lab work, in preparation for examinations, and later on as a primer for clinical work. Learn as intuitively as possible with large, full-page photos for effortless comprehension. No more confusion and peering at small, closely cropped pictures! Easily distinguish highlighted structures from the background in each dissection with the aid of digitally color-enhanced images. See structures the way they present in the anatomy lab with specially commissioned dissections, all done using freshly dissected cadavers prepared using low-alcohol fixative. Bridge the gap between gross anatomy and clinical practice with clinical correlations throughout. Master anatomy efficiently with one text covering all you need to know, from surface to radiologic anatomy, that's ideal for shortened anatomy courses. Review key structures quickly thanks to detailed dissection headings and unique icon navigation. Access the full text and self assessment questions at studentconsult.com. Get a clear understanding of the human body through surface, gross and radiologic anatomy all in one place.

Microsurgery in Endodontics provides the definitive reference to endodontic microsurgery, with instructive photographs and illustrations. Provides a definitive reference work on endodontic microsurgery Includes contributions from pioneers and innovators in the field of microsurgical endodontics Describes techniques for a wide range of microsurgical procedures Includes more than 600 instructive illustrations and photographs

This book describes the most commonly encountered endodontic complications and provides up-to-date information on their prevention and management. The opening chapters explain the importance of accurate diagnosis and treatment planning, outline the role of digital radiography and CBCT in managing complications, and highlight the need for close attention to anatomic landmarks in order to avoid damage to neurovascular anatomy. Endodontic problems associated with different procedural errors are then discussed in detail, covering a wide variety of access- and instrumentation-related complications and the difficulties that may arise when using obturation techniques. Readers will also find information on the endodontic-periodontal relationship, special issues in geriatric patients, and the potential medical emergencies and precautions in specific patient subsets. The clear, easy-to-read text is complemented by numerous high-quality photographs and tables that assist understanding and ready identification of management solutions. This book will be of value for all dental practitioners with an interest in endodontics, endodontic specialists, and higher-level students.

Dental caries, periodontitis, tooth loss, and bone resorption are considered prevalent health problems that have direct affect on the quality of life. While, advances in stem cell biology and biotechnology have sparked hope for devastating maladies, such as diabetes, cardiovascular diseases, etc., it also provides a strategy of regenerative therapy for dental tissues. From the prospective of tissue engineering, it is of utmost importance to understand and emulate the complex cell interactions that make up a tissue or organ. Unlike other tissues in the body, dental tissues are unique in their development, function, and even in their maintenance throughout life. The harmonized stimulations of biology and mechanical regulators to promote cellular activities have matured our understanding of the value of regenerative therapy of dental tissue versus the reparative treatment. In this book, we review the current knowledge available to regenerate alveolar bone, periodontal structure, and pulp/dentin complex. The book provides researchers with detailed information about development and functional characteristics of the dental unit with detailed protocols covering a comprehensive range of various approaches to engineer dental tissues: to use isolated cells or cell substitutes as cellular replacement, to use acellular biomaterials capable of inducing tissue regeneration, and/or to use a combination of cells, biomaterial and growth factors. We are well aware, with the concept changes in the field toward in-vitro biomimetics of in-vivo tissue development. The theoretical frame work integrating these concepts of developmental biology and developmental engineering is yet to be emphasized and implemented. Until this happens, we consider this book of regenerative dentistry as a call for scientists to achieve, researchers to innovate, practitioners to apply, and students to learn the art and science of regenerative therapy in dentistry. Table of Contents: Introduction to Regenerative Dentistry / Tissue Engineering Alveolar Bone / Tissue Engineering of the Periodontal Tissues / Dynamics for Pulp-Dentin Tissue Engineering in Operative Dentistry

Endodontic Pain  
A Clinical Guide  
International Endodontic Journal  
Current and Emerging Therapeutic Perspectives  
Biodentine™  
Atlas of Clinical Gross Anatomy

**The Principles of Endodontics, Third Edition is a contemporary and easy-to-read guide on why and how to carry out safe and effective endodontic treatment. Fully revised and updated, the third edition applies endodontic theory to clinical practice in a pragmatic and user-friendly way. This comprehensive guide covers the core areas of endodontics, from embryology of the dentine-pulp complex to restoration of the endodontically treated tooth. The new edition includes advice on how to solve problems that can occur during treatment, and new self-assessment questions. Fully revised, the 'How to' sections provide current step-by-step guidance. With added colour photographs and line drawings, the book reflects the latest available material and equipment, and highlights interesting clinical cases. The Principles of Endodontics, Third Edition is the essential text for undergraduates and a useful reference for recent graduates as well as established clinicians who want to refresh their knowledge to continue their professional development.**

**This superbly illustrated book provides a comprehensive overview of guided endodontics, a technology-driven, contemporary treatment approach that represents a paradigm shift in endodontics. Guided endodontics is now the proven, safe, predictable and, clinically, the most effective method for management of calcified root canals and root-end resection surgeries. This book covers detailed step-by-step digital treatment planning and the clinical application of static guides and dynamic navigation systems for, both, surgical and non-surgical endodontic treatment. In essence, this novel technology utilizes preoperative CBCT scans and intra-oral 3D scans as well as uniquely developed special software, for virtual planning of the endodontic treatment. This book delineates 3D printing, CBCT, digital impression systems, static guide designing with different software and clinical application of static and dynamic navigation in endodontics and much more. The concluding chapter addresses the future trends in 3D guidance in endodontics, in particular, and dentistry in general.**

Management of Dental Emergencies in Children and Adolescents  
The Principles of Endodontics

