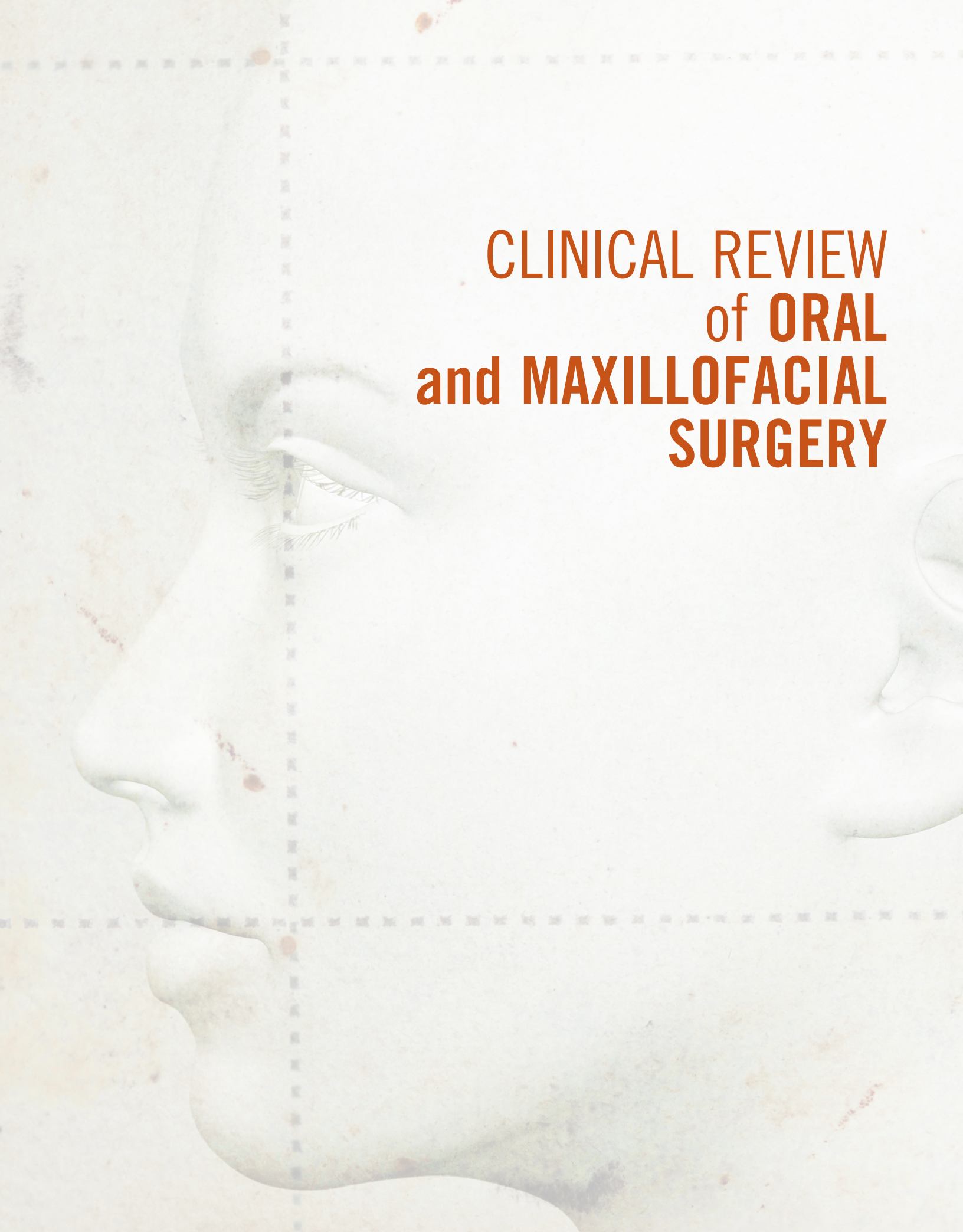

CLINICAL REVIEW of **ORAL and MAXILLOFACIAL SURGERY**

CLINICAL REVIEW of ORAL and MAXILLOFACIAL SURGERY

A CASE-BASED APPROACH

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This book is dedicated to…

….all students, residents, and fellows in oral and maxillofacial surgery in all corners of the world, and a tribute to their commitment to improve upon the lives of others despite the many challenges that lie ahead.

….my wife, Nooshin, and to my children, Shaheen and Bijan, whose future is the spark behind this work. My parents, Parviz and Ladan, and my brother, Homayoun, all of whom brighten and bring joy to my day. It is because of them that I was able to complete this project.

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A Purpose for our Knowledge

Clinical knowledge is like no other. The entire purpose of all the clinical knowledge we retain or access is to help in making a clinical decision. What should I do for this patient? How should I advocate for treatment, select treatment from a variety of options, provide informed consent, sequence patient care, prioritize care, perform it, and evaluate patient care outcomes? All those tasks begin with didactic knowledge. Not didactic knowledge in the abstract, but knowledge that is patient-based (e.g., clinical knowledge). Only knowledge that is applicable to the care of a patient can be deemed clinical knowledge. The traditional surgical textbooks present biomedical knowledge in the abstract. They are a collection of facts and concepts that are left to the reader to determine how to apply in the clinical setting. Although these texts can provide foundational knowledge, their study cannot directly improve patient care.

This text differs fundamentally from that common paradigm in that it strives to impart true clinical knowledge. It is the goal of *Clinical Review of Oral and Maxillofacial Surgery* to bring knowledge directly into the realm of patient care. In this text, Dr. Bagheri and his expert clinician contributors take 103 clinical situations in patient care and apply the appropriate didactic knowledge to making a clinical decision. This text simulates real practice by addressing common clinical situations that for the experienced clinicians will resonate in their daily practice, and for the residents will set the landscape for their eventual clinical decision needs.

Evidence-based medicine is the application of didactic knowledge combined with clinical experience personalized to the needs of an individual patient. Evidence-based medicine is thus the most straightforward, practical, and effective way to practice oral and maxillofacial surgery. Thus, the best evidence-based practice is delivered by experienced clinicians, with a wealth of didactic knowledge, who also access the latest information and who address the needs of their patients through careful listening and knowledge of each patient. How can the tenets of this method be taught to the surgeon who has not yet gained sufficient experience to allow didactics, skill, and patient/doctor communication to flow seamlessly into great care? *Clinical Review of Oral and Maxillofacial Surgery* seeks to do so by simulating the clinical environment by presenting common clinical problems addressed by true experts in each area. The resident in oral and maxillofacial surgery can particularly benefit from this text in that the key elements of the clinical care of each problem are presented. As actual care unfolds, the questions to be asked on rounds, the queries and concerns of the patient, the needs of the health care team, and the verification of one's own clinical thinking are confirmed in the text as each case setting is discussed.

Actual patient care is simulated in the *Clinical Review* by demonstrating common clinical presentation, anamnestic and physical findings, imaging, and laboratory values. These are collated into patient assessment, which is combined with biomedical knowledge to choose the best treatments. Even the best evidence is often controversial. Where the limits of contemporary knowledge and the parameters that define the decision-making environment are not clear, the remaining controversies over treatment are discussed. Finally, key to the success of such an effort, the clinical education presented in *Clinical Review of Oral and Maxillofacial Surgery* details the complications of treatment, such as infection and idiosyncratic drug reactions.

All this can and must be done in an efficient way that uses the precious time of the practicing surgeon wisely. As Shakespeare said, "Brevity is the soul of wit." Clinicians today must make dozens of daily decisions using the tenets of evidence-based medicine. To do so requires knowledge that, as in manufacturing, is accessed "just in time" to care for an individual patient. The large inventory of knowledge that has been traditionally used to make clinical decisions has been supplanted by the rapid increase of new information that must guide clinical decisions. To achieve that goal in a practical way, knowledge must be contemporary, easy to access, easy to read and understand, and of course it must be brief. *Clinical Review of Oral and Maxillofacial Surgery* seeks to allow the reader to find clinically relevant knowledge efficiently.

In the era of a society and specialty that measures the continued competence of surgeons, certification/licensure and credentialing are ongoing processes that must be concurrently achieved and regularly enforced. Although clinical measurements can be obtained by examining clinical outcomes, a continuous monitoring of contemporary knowledge to underlie effective practice is becoming the norm. *Clinical Review of Oral and Maxillofacial Surgery* is particularly suited to this emerging environment of being able to apply contemporary knowledge into clinical practice.

The only purpose of clinical knowledge, as can be read and enjoyed in *Clinical Review of Oral and Maxillofacial Surgery*, is to make a decision that has a positive effect on patient care. The cases presented here resemble an objective-simulated clinical encounter (OSCE). The case-based format allows readers to calibrate their own opinions about a clinical problem in a virtual, live patient setting and to customize it to the needs of their patients in real practice. Using these clinical presentations in real time to evaluate one's own thinking on a clinical problem can result in more effective care influenced by the wealth of clinical evidence underlying the decision as well as the opinion of experts supplied with the latest knowledge. Here in the pages of *Clinical Review of Oral and Maxillofacial Surgery* we can help the sick to be well and achieve our highest purpose.

Dr. Leon Assael, Dean, University of Minnesota

PREFACE

It is clear now, almost 10 decades after the formation of the specialty in 1918, that the demand for and subsequently the scope of oral and maxillofacial surgery have rapidly expanded far beyond what anyone could have envisioned in the beginning. As the world's population ages, and with development of new diagnostic modalities, treatment and surgical procedures to prolong a useful life span even further, there will be a sustained and consistent increase in the need for the services of the modern oral and maxillofacial surgeon.

The traditional array of oral and maxillofacial operations was mostly related to the surgical treatment of conditions such as infections, diseased teeth and associated pathology, or repair of traumatic injuries or developmental deformities limited to the oral region. However, as explained in this textbook, there has been considerable expansion of the recognized scope of the specialty to include the cranium and the neck, and not only to address the eradication of pathology. With the dawn of the twenty-first century, the long-anticipated goal of "expanded scope" of oral and maxillofacial surgery has ceased to be a "buzz word" and has become a reality. Fueled by the energy, imagination, and skill of many young surgeons with post-residency fellowship training, and a realization that mere ' "familiarity" about an area of surgical interest does not create true clinical competence that can be transferred to quality surgical care,[1,2] the specialty has moved forward with confidence based on training and documented clinical experience. It has become heavily committed to research, teaching, and patient care in the additional areas of pediatric craniomaxillofacial surgery, oncologic and reconstructive surgery, facial cosmetic surgery, care of nerve injuries, surgery for temporomandibular joint disorders (both open and arthroscopic), endoscopic minimally invasive operations, and dental and craniofacial implantology. None of this would have been possible without the opportunities given to those trainees who wished to expand their knowledge and skills beyond residency by completing fellowship training or seeking further education beyond formal training in one of the areas just mentioned. Not only has the scope of diseases and conditions expanded but also additional efforts have been designed to change the patients' quality of life by improving upon oral and facial anatomic defects that affect both function and aesthetics. In addition to surgical skills, supportive technology in the form of instrumentation, internal fixation and implant systems, and imaging modalities have allowed the evaluation and treatment planning for surgical corrections of complex head and neck pathology, congenital or development craniofacial deformities, loss of teeth and supporting bone, or maxillofacial injuries to be done with increased accuracy and predictability. As the repertoire of procedures increases, so does the risk of unwanted complications of treatment that may require further surgical interventions, and these areas are addressed as well.

Similar to the first edition, the purpose of this edition is to provide its readers with a systematic and comprehensive approach to the management of patients presenting with a wide array of surgical or pathological conditions seen in this specialty. Contrary to traditional textbooks of surgery (which present material in a fashion not directly related to a given patient, but rather list "classical" findings, pathophysiology, and stereotypical treatment modalities), in this publication we emphasize a case-based approach to learning that is suitable for readers of oral and maxillofacial surgery at all levels of training or practice. Case-based learning is a proven and effective method of teaching. Some of the most common (as well as complex) cases are selected to illustrate individual examples of the typical history, physical exam findings, laboratory and imaging studies, analysis of treatment options, complications, and discussion of other relevant information. Learning is enhanced by incorporating teaching around real-patient scenarios. However, each chapter is more than a patient scenario, but rather a carefully written teaching case that outlines essential information pertinent to fundamental aspects of the condition as they present in the practice of oral and maxillofacial surgery. In this manner, the reader is actively engaged in assessing the case, raising the interest, and therefore enhancing the understanding and retention of information.

In the past decades, the specialty of oral and maxillofacial surgery has seen numerous dramatic changes in training, scope, and style of practice. Additional changes in the near future are undoubtedly in the offing. For example, traditional ways of conducting single or small-group private practice in offices may be replaced by a new model,[3] in which groups of subspecialists practice together in a university or large hospital setting and are fully staffed to see patients around the clock. A single area of surgical expertise for a large metropolitan area of several million people may be provided by a group of surgeons practicing together in a large hospital or university medical center setting. These surgeons focus solely on their area of expertise (for example, pediatric craniofacial surgery, maxillofacial trauma, or head and neck oncologic surgery and reconstruction) to the exclusion of other aspects of their specialty. All major surgery with a high demand for technical expertise and experience in patient hospital management is handled in such a fashion. These surgeons may be the new oral and maxillofacial hospitalists of the twenty-first century! Only the more routine procedures or aspects of

practice, which comprise the majority of work in today's oral surgery private practices (tooth extractions, biopsies, routine infections, and perhaps dental implants) might continue to be managed by future oral surgeons who choose to practice in an office-based environment. What is contained in this new edition will give the reader a good overview of all areas of the specialty of oral and maxillofacial surgery as it faces the challenges of the twenty-first century.

It is with great excitement and anticipation of the future development of our specialty that we publish this second edition with new cases and updated information. It is hoped that all readers, in all corners of the world, will find within its contents the information and inspiration that helps them improve the care of their patients.

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[1]Hupp JR: Surgical training: Is dabbling enough? *J Oral Maxillofac Surg* 69:1535, 2011.
[2]Meyer RA, Bagheri SC: Familiarity does not breed competence, *J Oral Maxillofac Surg* 69:2483, 2011.
[3]Hupp JR: Integrated service-line care—lessons from China, *J Oral Maxillofac Surg* 71:653, 2013.

CHAPTER 1

Oral and Maxillofacial Radiology

This chapter addresses:

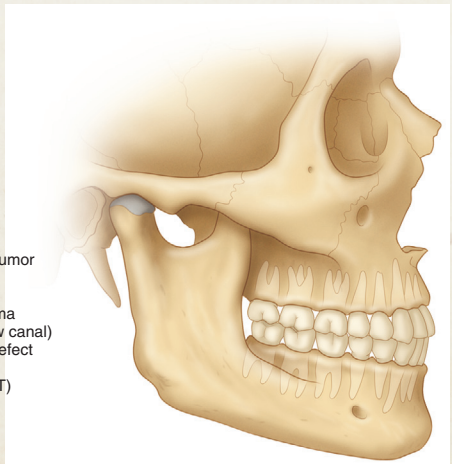
- Multilocular Radiolucent Lesion in the Pericoronal Region (Keratocystic Odontogenic Tumor [Odontogenic Keratocyst])
- Unilocular Radiolucent Lesion of the Mandible
- Multilocular Radiolucent Lesion in the Periapical Region (Ameloblastoma)
- Unilocular Radiolucent Lesion in a Periapical Region (Periapical Cyst)
- Mixed Radiolucent-Radiopaque Lesion (Ossifying Fibroma)
- Cone-Beam Computed Tomography (CBCT)

Interpretation of radiographs is a routine part of the daily practice of oral and maxillofacial surgery. Commonly obtained radiographs at the office include the periapical, occlusal, panoramic, and lateral cephalometric radiographs. Cone beam computed tomography (CBCT) scans are becoming more readily available in many offices. Although this technology is extremely useful, its indications, liabilities, and advantages have to be clearly recognized. As the future unfolds, the advancing technology will improve upon office imaging modalities that will facilitate diagnosis and treatment. Therefore, a knowledge of normal radiographic anatomy and clinical skill in recognizing pathologic conditions become even more essential.

Despite clinicians' ability to read and interpret many different imaging studies, the oral and maxillofacial radiologist will play an increasingly greater role in the practice of oral and maxillofacial surgeons.

This section includes the radiographic presentation of five important and representative pathologic processes, in addition to a new case demonstrating the use of CBCT. Included in each case is the differential diagnosis of associated conditions, to guide further study.

Figure 1-1 shows the most common location of several radiographically detectable maxillofacial pathologic processes.



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