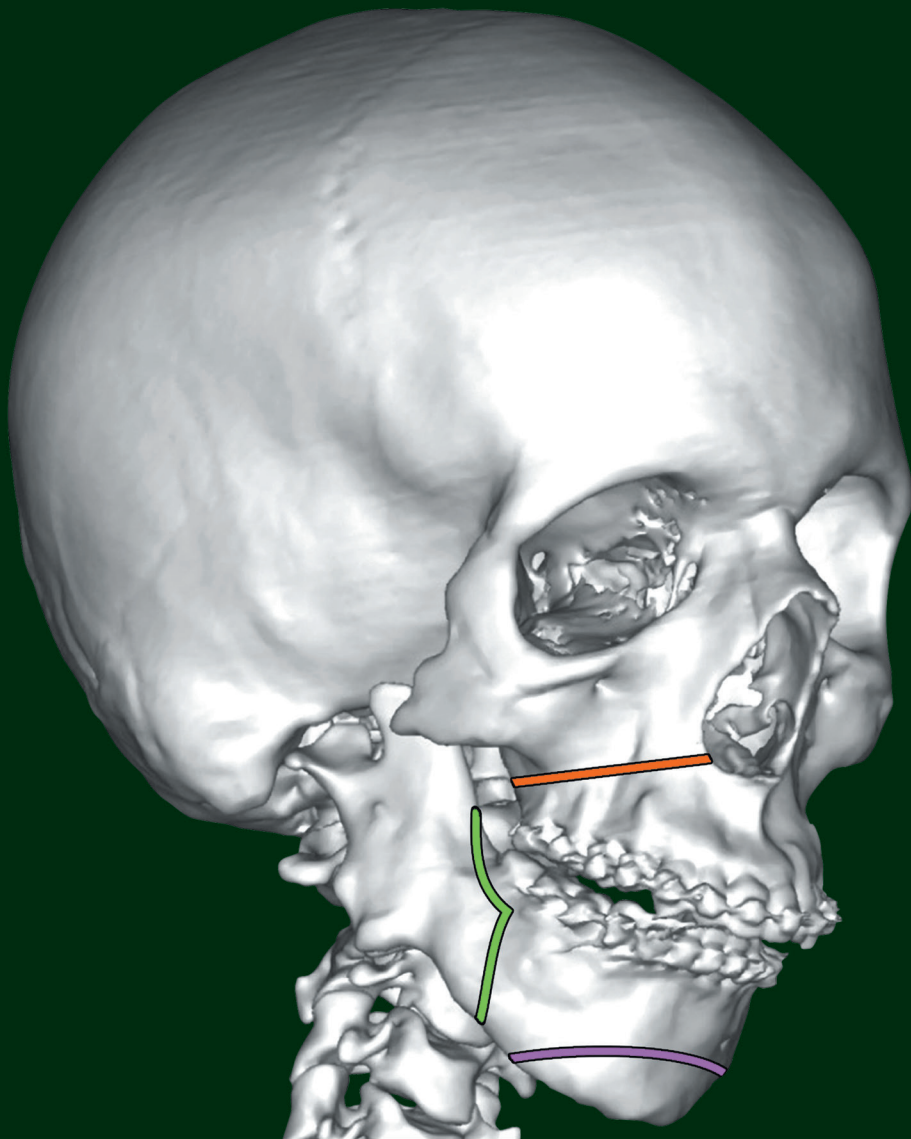


ORTHOGNATHIC SURGERY

PRINCIPLES, PLANNING AND PRACTICE



Edited by
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WILEY Blackwell

Orthognathic Surgery

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Principles, Planning and Practice

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Dedication



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father of modern Orthognathic Surgery

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Foreword



Auguste Comte (1798–1857) said: ‘One does not know a science completely without knowing its history.’ It is, therefore, appropriate that this book is dedicated to Professor Hugo Obwegeser and introduced by him in a most informative and delightful contribution – ‘A Life’s Work.’

History has provided us with several great clinicians, ‘giants’ in their own right, on whose shoulders we could stand. This comprehensive book on modern orthognathic surgery edited (and authored) by Farhad B. Naini and Daljit S. Gill, is proof of the sound foundation laid by ‘giants’ and the subsequent development of the science by succeeding generations of clinicians.

Several factors distinguish surgical orthodontic correction of dentofacial deformities from most clinical treatment approaches:

Firstly, the diagnosis, treatment planning and correction of dentofacial deformities requires the expertise of several specialized clinicians. In this respect, the key players are the Orthodontist and the Maxillofacial surgeon, while the expertise of the Periodontist, Prosthodontist, general dental practitioner, and medical practitioner may be required in some cases.

Secondly, the treatment goals in orthognathic surgery are multifactorial. The major factors that should be considered when planning treatment are: improving facial aesthetics, the establishment of a functional occlusion, maintaining or increasing the airway space, the establishment and/or maintenance of periodontal health, healthy temporomandibular joints and, certainly, resolving the patient’s main complaints.

Thirdly, there are very few treatments in the medical and dental fields that can provide such accuracy in planning and predictability of treatment outcomes before commencement of treatment.

Finally, according to a well-known proverb, ‘a sorrow shared is halved while a pleasure shared is doubled.’ Successful orthognathic treatment outcomes can be shared and enjoyed equally by the surgeon, the orthodontist and, most importantly, the patient. The fact that the functional and aesthetic changes that follow orthognathic surgery are in most cases life changing allows the patient to appreciate the aesthetic and functional changes and share the pleasure with their families and friends, which is unique in respect of the correction of dentofacial deformities.

In the text, the editors have assembled an extremely talented and knowledgeable group of authors from a variety of specialties and have addressed a wide range of topics from basic diagnosis and treatment planning to the treatment of complex cases. The book is clearly a culmination of passion and exceptional hard work and offers current and scientific orthognathic treatment approaches.

A sound scientific approach, experience, and effective and efficient technical craft will all come together to make the treatment of patients occur smoothly and successfully. Orthognathic surgery, however, also demands an artistic approach as well as an imagination. Armand Trousseau (1801–1867), a French surgeon, told his students:

‘Medicine consists of science and art in a certain relationship to each other, yet wholly distinct. Science can be learned by anyone, even the mediocre. Art, however, is a gift from heaven. So you cannot count yourselves amongst the great doctors by simply acquiring knowledge. Knowledge ... gives the artist fresh inspiration. Therefore, learn as much as you can ... but your learning must be the basis for your art, not an end to itself. A little less science and a little more art, Messieurs!’

Albert Einstein's (1879–1955) view of the importance of an imagination is equally interesting:

'Imagination is more important than knowledge. For knowledge is limited to all we know now and understand, while imagination embraces the entire world, and all there ever will be to know and understand.'

Orthognathic surgery is a science and an art. This landmark publication will not only serve as an important scientific reference and guide to many clinicians,

but also as an inspiration to develop the art and imagination required to treat patients with dentofacial deformities successfully. I believe that this reference text will find its way onto the bookshelf of every clinician interested in the management of patients with dentofacial deformities.

Johan P. Reyneke
BChD, MChD, FCOMFS(SA), PhD
July, 2016

Preface

'Aesthetics and Function in Harmony'

Orthognathic surgery holds a unique position within medicine and surgery. Firstly, it is a subspecialty of two distinct surgical specialties: Oral and Maxillofacial Surgery and Orthodontics. Secondly, orthognathic surgical treatment, from the intricate details of diagnosis and treatment planning through to the finesse of surgical technique, requires the perfect blend of art and science. Finally, unlike many other parts of medicine and surgery, patients do not just 'need' such treatment; they also 'desire' the treatment, and the combined functional and aesthetic improvements may be, quite literally, life-changing for the orthognathic patient.

'It is astonishing with how little reading a doctor can practice medicine, but it is not astonishing how badly he may do it.'

Sir William Osler (1849–1919)

The fundamental purpose of this book is to provide clinicians with comprehensive information regarding diagnosis and treatment planning, and detailed, up-to-date, step-by-step descriptions of the specific operative techniques in orthognathic surgery and relevant procedures from allied specialties.

There is some 'method' in the arrangement of the book. Considerable thought was given to the order of the chapters, which have been grouped into themed sections. This format should provide a logical sequence to the reader. Attempts have been made to reduce repetition, other than where a similar procedure has been described with certain nuances of technique, which readers may find useful. Any clinician faced with a difficult situation will always benefit from knowledge of several methods to deal with the problem at hand.

The first chapter is a special introduction by Professor Hugo Obwegeser, the leading pioneer of orthognathic surgery. It is a pleasure to dedicate this textbook to Professor Obwegeser. Countless patients owe him the possibility to lead a normal life, and many surgeons owe him success and satisfaction in their profession. The photograph of Professor Obwegeser at the beginning of the book was taken by Hengameh Naini, in the Obwegesers' garden in Schwerzenbach, Switzerland. Professor Obwegeser asked if we didn't mind if he didn't wear a suit and tie. He wanted to be shown as himself, 'not all dressed up.' 'I was raised

on a farm, and that is still where my heart lies.' Professor Obwegeser expressed his enthusiasm for this book, and his desire 'to hold the book in his hands.' The editors hope that he is pleased with the result.

The rest of the book is separated into two parts. A house cannot be built on sand – a firm foundation is required. Therefore the chapters in Part I (Principles and Planning) cover the fundamental principles, background considerations and essential information that should be firmly grasped by the orthognathic clinician. Part II (Clinical Practice and Techniques) is separated into four sections. Section 1 covers Orthognathic surgical planning and techniques; Section 2 covers Adjunctive surgery; Section 3 covers Orthognathic surgery in the cleft patient and orthognathic aspects of craniofacial surgery; and finally Section 4 has two chapters that will provide useful 'food for thought' for the orthognathic clinician.

Many of the authors invited to contribute chapters to this book are *the* internationally renowned leaders in their field, and all have established reputations in their respective sphere of interest. The list of contributing authors reads like a veritable *Who's Who* of the masters of Orthognathic Surgery and allied specialties. The contributing authors remit was to provide chapters that were comprehensive and practical, to analyse the scientific literature for their chosen subjects, and, more importantly, to augment their chapters with technical knowledge and wisdom gathered from long-term clinical experience and careful scrutiny of their techniques and clinical results, which legitimately deserves to be considered as a vital part of our 'evidence base'. Referencing has been thorough, but selective rather than exhaustive.

The most important part of learning orthognathic surgery remains the apprenticeship – when basic knowledge has been learned, and the higher trainee spends time with an experienced surgeon and orthodontist team. Observing an experienced clinical team with a patient and their family on the clinic or on the ward is invaluable, and teaching surgical technique in the operating theatre is almost invariably a one-to-one experience. To paraphrase a famous Oslerian maxim: *to study [orthognathic surgery] without books it to sail an uncharted sea, while to study books without patients is not to go to sea at all*. To compile and write a comprehensive book chapter on a specialist topic must be a labour of love because the intellectual and

emotional effort put into such an endeavour is incalculable. The editors' desire is that the chapters in this book will be used by higher trainees to enhance higher surgical training on diagnostic and treatment planning clinics, on the ward and in the operating theatre.

Throughout the book there is an emphasis on accurate diagnosis and logical treatment planning, as well as the step-by-step description of technical procedures, and the intricacies of surgical technique, detailed in such a way that both the experienced clinician and the higher surgical trainee may understand the technical subtleties.

It may be reasoned that undertaking research educates the researcher more thoroughly than anyone else; by the same token, having had the opportunity to edit manuscripts from the most accomplished individuals in the field of orthognathic surgery, has been of enormous value to us. We sincerely hope that our readers derive as much pleasure and benefit from reading this book as we have from compiling and editing it.

Farhad B. Naini and Daljit S. Gill
March 2016

Acknowledgements

No project of this magnitude is complete without acknowledgements. Individual credits to the museums, libraries, archives and medical journals for permission to reproduce and redraw some of the figures are provided in the respective figure legends throughout the book.

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My thanks to my friend Professor Aron D. Wahrman, Professor of Plastic and Reconstructive Surgery, Temple University, Pennsylvania, whose knowledge of the history of medicine and surgery appears inexhaustible, and to the Robert H. Ivy Society of Plastic Surgeons, for a number of the figures in Chapter 2.

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Though impossible to fully express in words, my enduring love and deepest appreciation goes to my parents and brother. I have had the honour to proof read a number of my father's books over the years, and his exploration of the greatest minds of past ages. However, one sentence always remains in my mind - the opening words of wisdom from his book *The Genuine Face of Omar Khayyam* - and that is 'You are what you read.' Finally, to my wife Hengameh - my heart and soul - whose kindness and wisdom are simply wonderful. Hengameh is an animal behaviourist, and her chosen profession is also her deep passion. Yet she made time in her already packed schedule to create the illustrations for my chapters. This book would simply not have been possible without her dedication.

Farhad B. Naini
March 2016

I would like to thank my grandparents and parents for their unfailing help, and thank my wife, Balpreet, and my children, Aran and Anika, for their love and patience.

Daljit S. Gill
March 2016

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We are donating part of the royalties for this book to *Changing Faces*, the leading UK charity that supports and represents people who have disfigurements to the face, hand or body from any cause, thereby complementing medical and surgical interventions by

addressing the psychological and social challenges posed by such disfigurements. We are donating the rest of the royalties to animal welfare charities chosen by Hengameh Naini, and support her hope that the human species will eventually look beyond considerations of narrow self-interest and learn to include animals within our sphere of morality.

Farhad B. Naini and Daljit S. Gill
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