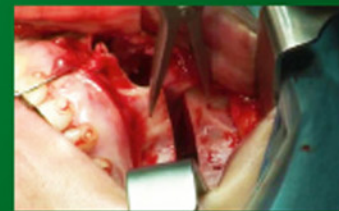


Atlas of Operative Craniofacial Surgery

John Mesa • Steven R. Buchman • Donald R. Mackay
Joseph E. Losee • Robert J. Havlik



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Library of Congress Cataloging-in-Publication Data

Names: Mesa, John, editor. | Buchman, Steven, editor. | Mackay, Donald R. (Professor of plastic surgery), editor. | Losee, Joseph E., editor. | Havlik, Robert J., editor.
Title: Atlas of operative craniofacial surgery / [edited by] John Mesa, Steven R. Buchman, Donald R. Mackay, Joseph E. Losee, Robert J. Havlik.
Description: New York : Thieme, [2019] | Includes bibliographical references and index. |
Identifiers: LCCN 2018047761 (print) | LCCN 2018048459 (ebook) | ISBN 9781626237650 (e-book) | ISBN 9781626236707 (hardcover : alk. paper) | ISBN 9781626237650 (eISBN)
Subjects: | MESH: Skull--surgery | Facial Injuries--surgery | Craniofacial Abnormalities--surgery | Reconstructive Surgical Procedures--methods | Atlases
Classification: LCC RD529 (ebook) | LCC RD529 (print) | NLM WE 17 | DDC 617.5/14--dc23
LC record available at <https://lcn.loc.gov/2018047761>

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Thieme Publishers New York
333 Seventh Avenue, New York, NY 10001 USA
+1 800 782 3488, customerservice@thieme.com

Thieme Publishers Stuttgart
Rüdigerstrasse 14, 70469 Stuttgart, Germany
+49 [0]711 8931 421, customerservice@thieme.de

Thieme Publishers Delhi
A-12, Second Floor, Sector-2, Noida-201301
Uttar Pradesh, India
+91 120 45 566 00, customerservice@thieme.in

Thieme Publishers Rio de Janeiro, Thieme Publicações Ltda.
Edifício Rodolpho de Paoli, 25ª andar
Av. Nilo Peçanha, 50 – Sala 2508
Rio de Janeiro 20020-906, Brasil
+55 21 3172-2297 / +55 21 3172-1896
www.thiemerevinter.com.br

Cover design: Thieme Publishing Group
Typesetting by Debra Clark

Printed in India by Replika Press Pvt. Ltd.

5 4 3 2 1

ISBN 978-1-62623-670-7

Also available as an e-book:
eISBN 978-1-62623-765-0

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Foreword



For several and personally important reasons, it is an honor to be asked, and a privilege to write, the Foreword for this most up-to-date, relevant, and comprehensive book on the remarkable subspecialty of craniofacial surgery. The five co-editors are internationally recognized authorities in the field. Especially meaningful to me is that I had important influence in the development and training of three of them, in addition to several authors of individual chapters.

My own experience in the evolution of craniofacial surgery started in the beginning phases of the field, with time spent in Paris in 1972 at a meeting hosted by Paul Tessier, the father and first-generation originator of craniofacial surgery. At that landmark event, several of the eight individuals who eventually achieved prominence as the second generation of craniofacial surgeons were brought together. These individuals subsequently became leaders in the field in one way or another, with four of us becoming co-authors of the first atlas related to craniofacial surgery published in 1982. A third generation was taught mostly by those of us in the second generation, and then in several instances, we also taught the fourth generation, represented by editors and authors of this atlas. Each generation has built on the advances and insights of the previous group, with continuing improvement and refinement, and that is certainly evident in this atlas.

Craniofacial surgery is now in the mainstream of plastic surgery but is still rapidly evolving. In contrast with the 1982 *Atlas of Craniomaxillofacial Surgery*, edited by the four of us second-generation individuals in the field, the current atlas is much more detailed and comprehen-

sive. Special features include a chapter dedicated to each bony anatomical area of the craniofacial structure, step-by-step clinical details of procedures, relevant anatomy and instruments for specific procedures, and important “pearls” related to each. Methods and details of planning with time-tested model surgery and newer computer-based methods are included, along with important annotated references in each chapter. While reconstruction of the entirety of the craniofacial skeletal structures is the heart of the book, treatment of related soft tissue problems including lip and palate, ears and nose, and the palpebral fissure by experienced and leading individuals add to the goal of achieving the most refined, and in some instances, functional results.

Although there have been many publications related to craniofacial surgery since that first atlas published in the field, the coordinated efforts by the five co-editors and the authors of each chapter have contributed significantly to the goal of achieving the ideal normal in form and function. My congratulations are extended to all involved in this superb effort and subsequent product, with hope that it will be the foundation and stimulus to build on continuing advancement of the field.

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Preface

The purpose of this atlas is to address a problem encountered when I was a craniofacial fellow. Oftentimes, when I wanted to learn steps of a certain surgical technique in an expeditious, concise, and detailed manner, I struggled to find a textbook that would address those needs. Most textbooks on craniofacial surgery focus mainly on the theoretical component and contain scant images of the surgical technique. Although I knew there were multiple published articles online with detailed descriptions of craniofacial surgical technique I was looking for, searching for them on the Internet (such as PubMed, OVID, Google, and other sources) was time consuming and often frustrating (especially when my choices were limited to a university library's subscriptions). As a general surgery and a plastic surgery resident at Harvard University and Penn State University, respectively, I always was able to have access to a textbook "bible" that contained detailed explanations about the most common surgical techniques. For example, in general surgery, *Schwartz's Principles of Surgery* and in plastic surgery, Guyuron's *Plastic Surgery: Indications and Practice*. These books both had detailed explanation of the most common surgical procedures as well as many relevant illustrations and photographs. However, there is no such up-to-date alternative in the field of craniofacial surgery. Even though there has been one similar treatise in the past (*Atlas of Craniomaxillofacial Surgery* by Ian R. Munro, Linton A. Whitaker, and Kenneth E. Salyer, 1992), it is quite outdated and not currently available for purchase.

The idea of writing a book first came to me when I was a postdoctoral research fellow in plastic surgery at Harvard's Massachusetts General Hospital. During my training, I had the honor and privilege to assist my mentor fellowship director, Dr. Michael Yaremchuk, in the writing of his *Atlas of Facial Implants*. I had to assist him in making videos of his surgeries and extract stills of the critical steps to add to his book. Once Dr. Yaremchuk's atlas was published, he gifted me a copy. The first page of the book had a handwritten note that said: "John, thank you for helping make this possible. Perhaps you will let me help you with one of your books in the future." That message made me feel thunderstruck and inspired me to publish a book.

The subject of the book to write came to me when I was attending a craniofacial surgery fellows cadaver-training course in Northern Florida, just at the beginning of my craniofacial surgery fellowship. Before the cadaver laboratory, we fellows had a series of lectures to refresh our knowledge about the craniofacial surgical techniques we were about to practice. It was Dr. Jack Yu's lecture about the LeFort III osteotomy that led me to decide the subject of the book. His talk about the surgical technique was so visually rich and detailed that I thought to myself, "My God! I could do this surgery myself after this talk!" (even though I had never seen or done a LeFort III at that time). This sparked an idea in my mind; I told myself: "That's it! I need to write a book about craniofacial surgery that explains the surgical techniques as well as Dr. Yu's presentation."

Right before starting the cadaver session of the course, I approached Dr. Donald Mackay (my former plastic surgery residency program director and mentor) about my book concept, and he liked it. He told me in his South African accent: "John, that's a great idea. I will support you." Since that time I have thought about the structure of the atlas's chapters, specifically containing sections of step-by-step details. When back at my fellowship training program at the University of Michigan, I told Dr. Steven Buchman, my craniofacial fellowship director, about the atlas idea. He said, "John, it is a great idea, but it's a difficult one. It is very difficult nowadays to find a publisher who would be willing to publish your book. That is the hardest part." I told him, "No worries, I will surely find one."

I did an Internet search of all the major publishers in books in the field of medicine. I made a list with their contact information and started to contact the publishers one by one over the phone. As I continued down the list, I came to realize that, indeed, no publisher was receptive to my concept for the book. The common excuses were "There are many craniofacial textbooks out there," "The market doesn't need another one," and so on. However, when I spoke with Karen Berger, the owner/CEO of Quality Medical Publishing (QMP), she loved the idea. She suggested meeting in person to discuss the proposal in depth. She wanted me to bring a mockup of a pilot chapter so she could visualize what I explained to her over the phone. We met in person a few months later at the annual American Society of Plastic Surgeons (ASPS) meeting in Denver, Colorado. Once Karen saw the pilot chapter mockup, she told me, "This is amazing, there is no book like this in the market. This is going to be a hit! I want to sign a publishing contract with you." She also suggested that instead of formulating this work as a traditional textbook, it should be an atlas, based predominantly on photographs and illustrations rather than text. Before I knew it, we were working on the *Atlas of Operative Craniofacial Surgery*.

While at that ASPS meeting in Denver, I was scheduled to attend the ASMS (American Society of Maxillofacial Surgeons) Board meeting (I was the Resident and Fellow's representative at that time). I presented my idea of writing the atlas to the board members, and I expressed my desire for the book to be sponsored by the ASMS. Everybody was excited about the concept. Like Dr. Buchman, the board members expressed their concern about the difficulty of finding a publisher willing to take on the project. I told them that I already had signed with QMP and that the publisher was waiting to hear whether the ASMS would be included in the publishing contract. The board members suggested including the American Society of Craniofacial Surgeons (ASCFS) as a co-sponsoring society, since several members also served on their board. Luckily, the ASCFS board was meeting a few days after the ASPS meeting, so I had the opportunity of presenting my atlas proposal to yet another board. They unanimously agreed to join the project. A few weeks later, the publishing contract was signed with QMP. Then began the process of solidifying the scope of state-of-the-

art content coverage and securing the efforts of contributors from among the many acknowledged experts in specific aspects of craniofacial surgery. During the extended writing process, when Karen Berger retired, QMP's contracted book projects were acquired by Taylor & Francis/CRC Press and were subsequently acquired by Thieme, the publisher of the current atlas.

This atlas is meant for craniofacial and maxillofacial surgery fellows as well as craniofacial surgeons who would like to learn or review the surgical technique of a specific craniofacial case to perform it the next or even on the same day. Plastic surgery residents and medical students rotating through a craniofacial surgery service could also benefit from this compendium. As you will find in the following pages, the atlas focuses on the surgical techniques of the most common craniofacial surgical procedures rather than on basic theoretical knowledge. In contrast to the scheme of traditional textbooks, this atlas's step-by-step surgical techniques are heavily supported with clinical example photos. This atlas also includes videos of most of the procedures. Those can be accessed on Thieme's online portal.

In addition to offering visual step-by-step guides to surgical techniques based on multiple pictures taken from real-life surgeries, the chapters in this atlas follow a consistent format, covering relevant surgical anatomy, patient selection, instrumentation, featured boxes of surgical tips and surgical pearls, as well as vivid preoperative/postoperative case examples.

I would like to thank the American Society of Maxillofacial Surgeons (ASMS) and the American Society of Craniofacial Surgeons (ASCFS) Boards for their support and sponsorship. I would also like to acknowledge that this *Atlas of Operative Craniofacial Surgery* has been made possible with the tremendous help from the following four co-authors: Dr. Steve Buchman, my former craniofacial surgery fellowship director and mentor; Dr. Donald Mackay, my former plastic surgery residency director and mentor; and Dr. Joseph Losee and Dr. Robert Havlik, both craniofacial surgeons and colleagues. I also would like to recognize the herculean efforts of my current publisher's Editorial Director, Sue Hodgson, to make this long, complex journey possible. I don't think this atlas could have reached the goal of being sent to print without her help. The Thieme editorial and production team have been astounding in their attention to detail. I would like to express special thanks to Dr. Yaremchuk, who was my first plastic surgery and craniofacial surgery mentor upon my arrival to the United States. He inspired me to write a book, and without his mentorship and his being my role model, I wouldn't have become a plastic surgeon or an author of this atlas. Last but not least, I would like to thank my family, especially my mother, for supporting me in my dream to come to the United States and become a plastic surgeon.

I hope the effort and time invested in making this *Atlas of Operative Craniofacial Surgery* will help to advance the means and quality of teaching and learning about craniofacial surgical techniques.

John Mesa, MD

Acknowledgments

I would like to express my gratitude to Dr. Michael J. Yaremchuk for inspiring me to write this book, as well as to Dr. Donald R. Mackay and Dr. Luis O. Vasconez for allowing me to become the best plastic surgeon I can be, and Dr. Steven J. Buchman for training me as a great craniofacial surgeon.

And of course, I would like to thank my family, especially my mother, for their unwavering support in my efforts to achieve the American dream.

John Mesa, MD

I would like to thank Henry Kawamoto, MD, DDS, Linton Whitaker, MD, and Scott Bartlett, MD, for their generous mentoring, training, and instruction in Craniofacial Surgery. I would also like to thank Paul Manson, MD, and Joseph Gruss, MD, for their guidance, friendship, and support as I came of age as a young attending in craniofacial surgery.

I want to acknowledge the love and joy my children, Lauren, Brevin, Ally, and Bradyn, bring to me each day, and finally, to my beautiful and warm-hearted wife, Cindy, whose love and patience and independence allow me to devote the time and energy to the wonderful career I have chosen. I will forever be grateful and adore you.

Steven R. Buchman, MD

I would like to thank Drs. Wolfgang Losken and Warwick Morris, my mentors in South Africa, who were the first to encourage me to pursue the craft of craniofacial surgery. I also want to thank Ernie Manders, who took a chance on hiring a young South African surgeon and gave me the opportunity of a lifetime. I am immensely grateful to Warren Schubert and Andy Wexler, whose leadership and example involved me in the ASMS, and to Joe Serletti and Joe Losee for years of friendship and support. To my colleagues and the residents at Penn State, thank you for your commitment, inspiration, and unwavering support.

To Susan, my wife, my rock and my best friend; to our sons and their families, Duncan, Jennifer, and Leland; Andrew, Hanna, Delaney, and Finn; and Calum and Amanda, you are the best of me. I love you all dearly.

Donald R. Mackay, BDS, MBBCh

I would like to acknowledge my gratitude for the fate of being born into a humble and sacrificing family, whose love and guidance provided me with an unfair advantage to succeed in life.

I am grateful for my mentors Joseph M. Serletti, MD, and W. P. Andrew Lee, MD, who sparked in me the love of, and passion for, academic plastic surgery. For Linton A. Whitaker, MD, who taught me craniofacial surgery, and whose mentorship evolved into an endearing lifelong friendship. Thank you for being, for me, far more than a surgical educator.

Most importantly, to my husband, Franklyn, and our son, Hudson Cladis Losee, who provide enduring meaning and purpose in life.

Joseph E. Losee, MD, FACS, FAAP

I would like to thank my mentors, Drs. Steve Ariyan, Richard Stahl, Joe Upton, Scott Bartlett, Linton Whitaker, and Jack Coleman, all of whom have helped illuminate my path.

Most of all, to my wife, Nancy, my son, John, and my daughter, Anne, who have always been there for me and whom I love dearly.

Robert J. Havlik, MD

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Fundamental Principles

Kristen A. Klement, Robert J. Havlik

The field of craniofacial surgery has a definite start date—Paul Tessier's presentations of his seminal work at the Fourth International Society of Plastic and Reconstructive Surgery in Rome in 1967. Although Tessier had been developing and refining his approach and techniques for nearly a decade before this, he shared his work with the world during his presentations at Rome. Certainly, his effort was built on the work of many outstanding efforts that preceded it—Gillies, Blair, Brown, Kazanjian, Ivy, Converse, Millard, Obwegeser, Skoog, and many others—but Tessier's presentations created a radical paradigm shift, presenting new techniques and sweeping new concepts. During this meeting, Tessier gave presentations on the LeFort III osteotomy (with a 9-year follow-up), the correction of orbital hypertelorism, and the correction of oro-ocular clefts.¹ Although Gilles had previously described a LeFort III osteotomy, Tessier's description of the LeFort III osteotomy used a significantly different technique and showed dramatic results, all fully documented with high-quality clinical photographs and detailed illustrations. This work on midface advancement, hypertelorism, and facial clefts set the cornerstone for the establishment of the new subspecialty of craniofacial surgery (**Fig. 1.1**).



Fig. 1.1 Paul Tessier, MD, the father of craniofacial surgery. (Photo courtesy of Tony Wolfe, MD.)

Following Tessier's presentation, there were many visits by surgeons from around the world to visit Tessier in France, and many visits by Tessier to the United States and other countries, that fostered the development of the field of craniofacial surgery and the acceptance of its principles. Fifteen years later, the International Society of Craniofacial Surgery was established in 1983 for the purpose of furthering the field of craniofacial surgery. Tessier elucidated five primary principles through his work that serve as the foundation for modern craniofacial surgery.² These five principles include the following:

1. Subperiosteal transcranial exposure
2. The "effective orbit" translocation
3. Osteotomy, monobloc repositioning
4. Maximum correction of the deformity
5. Autologous bone grafting