Copyright
Not for publication

ANATOMY AND SURGERY OF THE MANDIBLE

Copyright
Not for publication
Quintessence

ANATOMY AND SURGERY OF THE MANDIBLE

Edited by

Roberto Pistilli, MD, DDS

Oral and Maxillofacial Unit
San Camillo Forlanini Hospital
Rome, Italy

Private Practice Limited to Oral and Maxillofacial Surgery
Ladispoli, Italy

Pietro Felice, MD, DDS, PhD

Department of Biomedical and Neuromotor Sciences
Unit of Oral Surgery
University of Bologna
Bologna, Italy

QUINTESSENCE PUBLISHING

Berlin | Chicago | Tokyo
Barcelona | London | Milan | Mexico City | Paris | Prague | Seoul | Warsaw
Beijing | Istanbul | Sao Paulo | Zagreb

Copyright
Not for publication
Quintessence

One book, one tree: In support of reforestation worldwide and to address the climate crisis, for every book sold Quintessence Publishing will plant a tree (https://onetreeplanted.org/).

First published as *Anatomia e Chirurugia del Cavo Orale: Mandibola e Paviemento Orale* in Italian in 2018 by EdItaliaMedica in Montesilvano, Italy.

Library of Congress Cataloging-in-Publication Data

Names: Pistilli, Roberto, editor. | Felice, Pietro, editor.
Title: Anatomy and surgery of the mandible / edited by Roberto Pistilli, Pietro Felice.
Other titles: Anatomia e chirurgia del cavo orale. English
Description: Batavia, IL : Quintessence Publishing Co, Inc, [2023] | Includes bibliographical references. | Summary: "A surgical anatomy resource focusing on the mandible, floor of the mouth, and tongue. The anatomy of the submandibular fossae, the lower lip, the mental foramen, symphysis and the body of the mandible, the retromolar region, and the ascending ramus are described and illustrated using cadaver dissections and clinical and radiographic images"-- Provided by publisher.
Identifiers: LCCN 2022060810 | ISBN 9780867159448 (hardcover)
Subjects: MESH: Mandible--anatomy & histology | Mandible--surgery | Case Reports
Classification: LCC QM535 | NLM WU 101 | DDC 611/.91--dc23/eng/20230201
LC record available at https://lccn.loc.gov/2022060810

A CIP record for this book is available from the British Library.
ISBN: 978-0-86715-944-8

QUINTESSENCE PUBLISHING
USA

© 2023 Quintessence Publishing Co, Inc

Quintessence Publishing Co, Inc
411 N Raddant Rd
Batavia, IL 60510
www.quintpub.com

5 4 3 2 1

All rights reserved. This book or any part thereof may not be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, or otherwise, without prior written permission of the publisher.

Editor: Bryn Grisham
Design: Sue Zubek
Production: Sue Robinson

Printed in Korea

Copyright
Not for publication
Quintessence

Contents

Copyright Not for publication Quintessence

Copyright
Not for publication
Quintessence

Copyright Not for publication Quintessence

Copyright
Not for publication
Quintessence

Copyright
Not for publication
Quintessence

Foreword by Alessandro Nisii

I am delighted to introduce this book by Roberto Pistilli, who has always pursued his profession with dedication, sacrifice, and great passion. These qualities, plus his remarkable dexterity, have led him to achieve outstanding results. This book is the outcome of more than 30 years of clinical experience. He has worked on every type of condition affecting the head and neck, but thorough knowledge of anatomy is his crowning achievement. He owes his skill to the guidance and learning methods of the distinguished Prof Pierre Rabischong (Montpellier University), who introduced us to the anatomical and functional marvels of our profession. Prof Rabischong taught us everything about the geography of the human body with a 3D approach. This is crucial to understanding and solving the surgical difficulties and complications typical of our profession. I hope that this volume may encourage clinicians to study anatomical dissection, which is a very different discipline from surgical anatomy. I believe this work will help greatly in increasing our understanding of these concepts. Good luck with your work.

Alessandro Nisii, MD, DMD
Director of Maxillofacial Surgery Unit
San Camillo Forlanini Hospital
Rome, Italy

Foreword by Serge Dibart

Copyright Not for publication Quintessence

I am delighted to write the foreword for this new book on the surgical anatomy of the oral cavity. This book is greatly needed in dentistry and, quite frankly, is long overdue. I am especially glad that Roberto Pistilli and Pietro Felice decided to undertake this work and provide the dental profession with a much-needed resource on the surgical anatomy and management of the oral and perioral structures.

I always ask my residents, "How comfortable are you driving your car with a blindfold on?" For a surgeon, the only way to lift the blindfold and drive safely under any circumstances is to have a thorough knowledge of the anatomy of the regions on which you operate; this book is an exceptional guide to understanding the anatomy.

This is the first book in a two-volume series published in Italian that comprehensively addresses the challenges a surgeon faces when operating intraorally. This first book focuses on the mandible, floor of the mouth, and tongue. The anatomy of the submandibular fossae, the lower lip, the mental foramen, the symphysis and the body of the mandible, the retromolar region, and the ascending ramus are described and illustrated using cadaver dissections and clinical and radiographic images. The dissections are conducted by two extremely skilled anatomists and surgeons who understand the pitfalls of some common surgical procedures and who are able to not only provide the reader with much-needed knowledge of the surgical anatomy of the region but also correlate it to everyday clinical scenarios. The surgical approaches are clearly described and abundantly illustrated and include safely removing benign lesions from soft or hard oral structures, bone grafting procedures and the optimal release of surrounding flaps avoiding critical vascular structures, and mandibular implant placement while controlling and protecting neural and vascular entities, among others.

This book is unique among anatomy books, and one of its tremendous advantages is the addition of videos in each chapter showing anatomical dissections and describing the procedures as well as commenting on the various difficulties a surgeon can encounter while operating.

This is truly a must-have book for everyone who is involved with oral surgery (big or small) and dental implant procedures. We are lucky that Roberto Pistilli and Pietro Felice have provided us with a first-rate book and practical videos.

Serge Dibart, DMD
Chair of Periodontology
Professor and Director, Advanced Education Program in Periodontology
Boston University Henry M. Goldman School of Dental Medicine
Boston, Massachusetts

Copyright
Not for publication
Quintessence

Preface

This book was born out of a desire to share our many years of experience in oral and maxillofacial surgery. Over the years, we have become increasingly aware of just how essential knowledge of anatomy is to surgical practice. Surgical anatomy, and especially anatomical dissection, differs from didactic study alone; it allows us to touch these structures and gain real insight and understanding of the relationships between structures in the anatomical areas that we address daily in surgery. Coming from Italy, a country that gave birth and development to anatomical science but that also has made it increasingly difficult to practice anatomical dissection, we turned our attention to the USA for practical courses on cadavers. Indeed in North America, it is common practice to begin the study of anatomy on cadavers as early as the first year and then progressively devote oneself to deepening the understanding of surgical branches. However, anatomical knowledge is not only necessary for the student; it must be consolidated and developed in daily clinical practice, even and especially for the experienced surgeon, because no true surgical expertise can be prescinded from it.

This work was originally published in Italian in two volumes. This book is the first volume and is aimed at the anatomical and surgical study of the mandible. The second volume focuses on the maxilla. Both books are rich in clinical cases and accompanied by numerous videos with dissections and surgeries because we believe that our expertise cannot be conveyed by written words alone.

We hope that this book will give the reader something valuable, and we wish you an enjoyable reading.

ACKNOWLEDGMENTS

I would like to thank my teachers, Gianni Fortunato and Giuseppe Poladas, and give a huge thank you to my big brother in dentistry, Alessandro Nisii. I took my first steps with him and we shared everything that can be shared in our profession. He taught me everything I hold dear. This book would never have seen the light of day without him. His name does not appear among the authors, but he richly deserves a mention. He gave me knowledge, respect, and love for our profession, and all this is priceless.

I would like to thank all the medical colleagues in my department, Flavio Govoni, Fabrizio Bozza, Vincenzo Marcelli, Vito Del Deo, Alessandra Brunelli, and Daniele Panetta, and those of the dentistry department of Ospedale San Filippo Neri, particularly Francesco Nisii and Gianluca Mascolo. I also thank Paolo Piccolino, with whom I shared my childhood, my youth, my university days, and my first years of maxillofacial surgery. A lot of the clinical material you will see is the outcome of their distinguished contributions. Thank you to all the fantastic paramedical staff I have met in 30 years of hospital work.

Copyright
Not for publication
Quintessence

Big thanks also go to all my colleagues at the dental practice, from my wonderful secretaries Antonietta, Alessandra, Rita, and Caterina, to my irreplaceable dental nurse Roberta, to my hygienists Silvia and Francesca, to my colleagues Antonio Italiano, Lucilla Tombellini, Massimo Brilli, Fabrizio Lisotti, Massimo Roselli, Marco Boatta, Carlo Baldazzi, Paolo Sebastiani, Massimo Papale, Davide Fortellizze, Luigi Canullo, and Valeria Pistilli, and to my understanding and patient dental technicians Antonio Megna, Giuliano Piersanti, and Giulio de Cinti.

A big thank you also goes to my "other half" Pietro Felice, with whom I share this work. He has driven a steam train through my working life, encouraging me to give scientific value to our day-to-day work with the backing of his academic experience and ebullient energy. We work together and we will work together as long as we are physically capable.

Thank you to the Sirio-Arcoi Governing Council, of which I am the unworthy Chair. It supports every cultural initiative in our city of Rome.

Thank you to my Nicodemo Maggiulli for immediately believing in this project and for his love for the work.

A big thank you to all the dentistry colleagues who have attended our courses, trusted our teachings, and encouraged us to keep up the good work.

Finally, immense thanks go to my family and in particularly my wife, Claudia, magical as the city of Rome herself, who has patiently put up with all our Sundays and holidays being ruined by me working at the computer. I could not have done anything at all without her understanding and moral support. Thank you to my lovely mother and amazing daughters.

Copyright
Not for publication
Quintessence

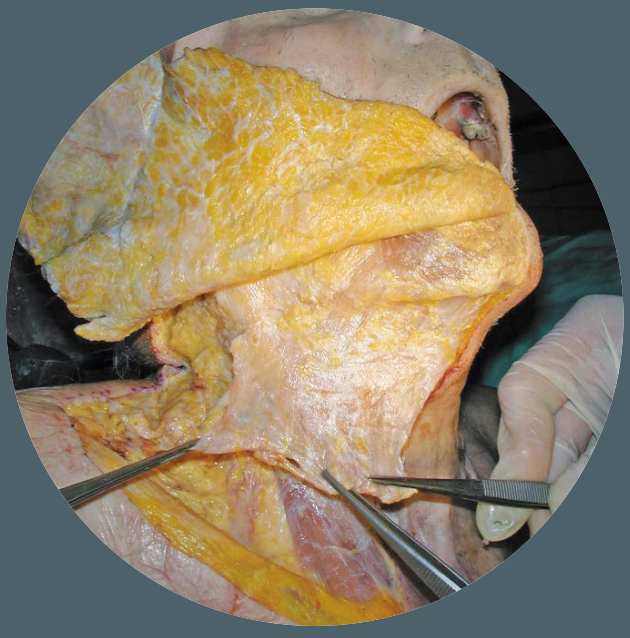
With Contributions from:

Carlo Baldazzi
Carlo Barausse
Fabrizio Bozza
Massimo Brilli
Luigi Canullo
Alessia De Felice
Ginluca Delli Ficorelli
Silvio Di Nezza
Davide Fortellizze
Gianmarco Garasto
Flavio Andrea Govoni
Luigi Givet
Antionio Italiano
Fabrizio Lisotti
Vincenzo Antonio Marcelli
Gianluca Mascolo
Daniele Panetta
Massimo Papale
Valerai Pistilli
Simone Serra
Paolo Sebastiani
Luca Signorini
Lucilla Tombellini

Copyright
Not for publication
Quintessence

1

PERIORAL ANATOMICAL SPACES



Copyright Not for publication Quintessence

Any oral surgeon who is about to perform surgery must have complete anatomical knowledge of the head and neck region. This region contains many important vascular, nerve, and muscle structures whose paths may traverse the surgical area (Fig 1-1).

> **Remember:** *A nerve trunk, artery, vein, salivary duct, or detachment of a muscle from its insertion can only be respected by a surgeon who has accurate knowledge of its pathways and the relationships of contiguity or proximity between anatomical structures.*

Fig 1-1 This region is particularly densely occupied by vascular, nerve, and muscle structures.

This chapter explores the anatomy of the submandibular space and then the parotideomasseteric region (Fig 1-2). The submandibular space is particularly important because *(1)* the anatomical structures that traverse it go on to establish a very close relationship with the mandible and the mandibular vestibular fornix, and *(2)* it is the area from which pus is drained from an abscess.

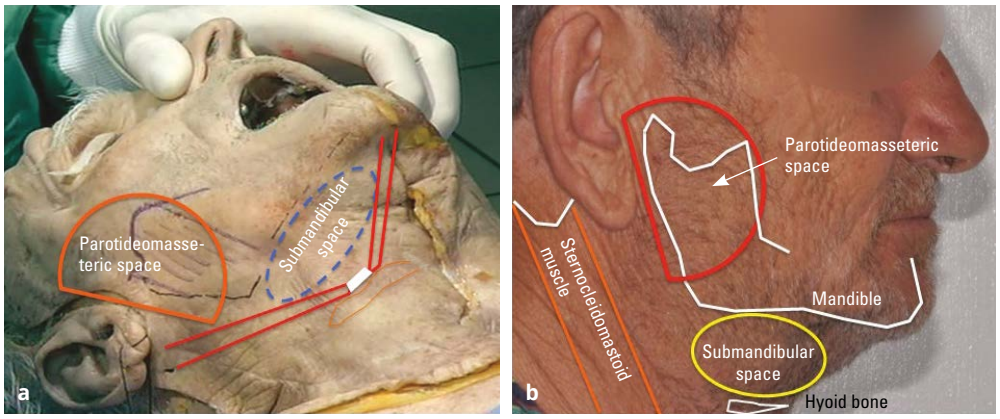


Fig 1-2 Parotideomasseteric and submandibular spaces shown on an anatomical cadaver preparation *(a)* and a patient *(b)*.

Copyright Not for publication Quintessence

SUBMANDIBULAR SPACE

Draining an abscess

This section examines various ways in which the infectious process may develop that, if neglected, can lead to the patient's death due to the onset of descending necrotizing mediastinitis (DNM).

Fig 1-3 *(a to d)* Clinical examples of abscess development.

When dealing with an abscess, if its effects are limited to the genian region (Fig 1-3a), the practitioner has some time to consider the situation and can establish a diagnosis and appropriate antibiotic therapy before subjecting the patient to endodontic or extraction treatment.

If the abscess starts more inferiorly, involving the inferior edge of the mandible (Fig 1-3b), the practitioner must be on higher alert, monitoring the patient to prevent the abscess from invading the submandibular and interdigastric space (Figs 1-3c and 1-3d).

Involvement of the submandibular area (see Fig 1-3d) forces immediate action: draining the abscess to stop it from penetrating more inferiorly to the mediastinal space through the middle cervical fascia. So the clinician must have the courage to drain the abscess by making an incision in its most prominent point with a no. 11 scalpel blade (Fig 1-4a), even if it is not yet fluctuant, creating a place of least resistance as an easy escape route for the abscess when the time is right. This will also allow the collection of material to be sent to

Copyright Not for publication Quintessence

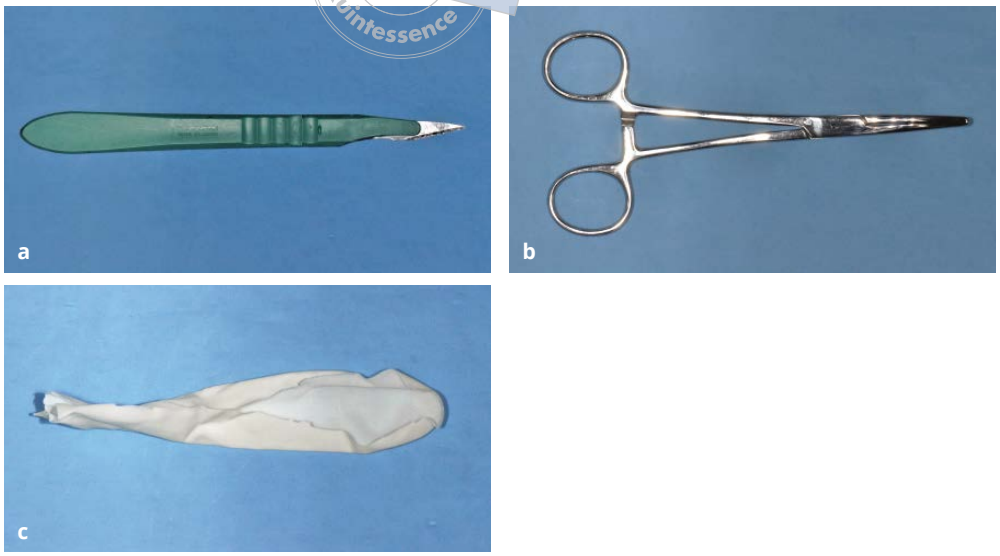


Fig 1-4 Instruments used in draining an abscess. *(a)* No. 11 scalpel blade. *(b)* Kelly clamp. *(c)* Glove finger.

a test laboratory to search for common germ cultures and draw up an antibiogram. Kelly forceps (Fig 1-4b) or other blunt forceps are introduced to aid drainage, and a sterile glove finger (Fig 1-4c) is inserted and secured with a suture to keep the escape route open and allow the patient to recover rapidly (Video 1-1 and Fig 1-5).

Video 1-1 *Abscess drainage*

Fig 1-5 Patient before *(a)* and 3 days after *(b)* drainage.

Copyright Not for publication Quintessence

Fig 1-6 *(far left)* The patient presented with phlegmon of the neck associated with trismus.

Fig 1-7 A panoramic radiograph taken 10 days earlier shows affected root tips of the mandibular left first and second molars and an extraction site at the mandibular second premolar site.

Case report 1-1: Phlegmon of the neck associated with difficulty in opening the mouth (trismus) and dyspnea

A young patient was referred to the authors' emergency room from a district hospital with clinical symptoms of phlegmon of the neck associated with difficulty in opening the mouth (trismus) and dyspnea (Fig 1-6). Twenty days earlier, the patient had undergone a dental examination with a panoramic dental radiograph taken (Fig 1-7) following the onset of infection in the left hemimandibular site. Radiographic examination revealed a periapical problem affecting the mandibular left first and second molars, and the dentist diagnosed moderate pericoronitis of the mandibular third molars. The dentist properly prescribed initial antibiotic treatment. The patient reported that this had improved the symptoms, and he neglected to attend the appointment scheduled for endodontic treatment.

Ten days after stopping antibiotic treatment, the patient reported that the symptoms had worsened. When he arrived in the emergency room, a quick diagnosis was necessary. An urgent computed tomography (CT) scan was taken (Fig 1-8), which revealed the severity of the case.

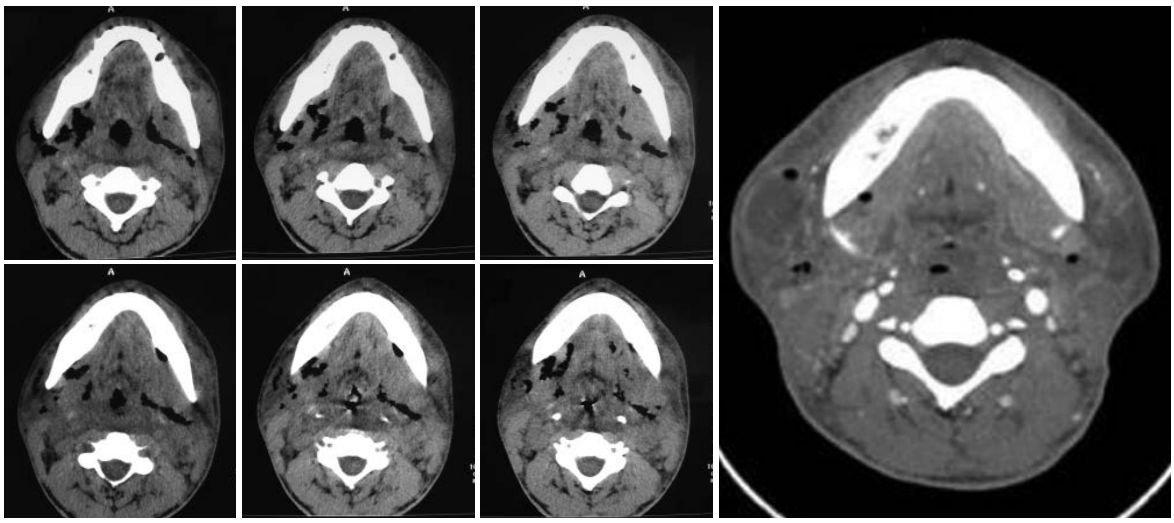


Fig 1-8 The CT examination showed progressive narrowing of the respiratory tract. The scan revealed a significant abscess, the presence of air bubbles from a polymicrobial infection, and severe narrowing of the respiratory spaces.