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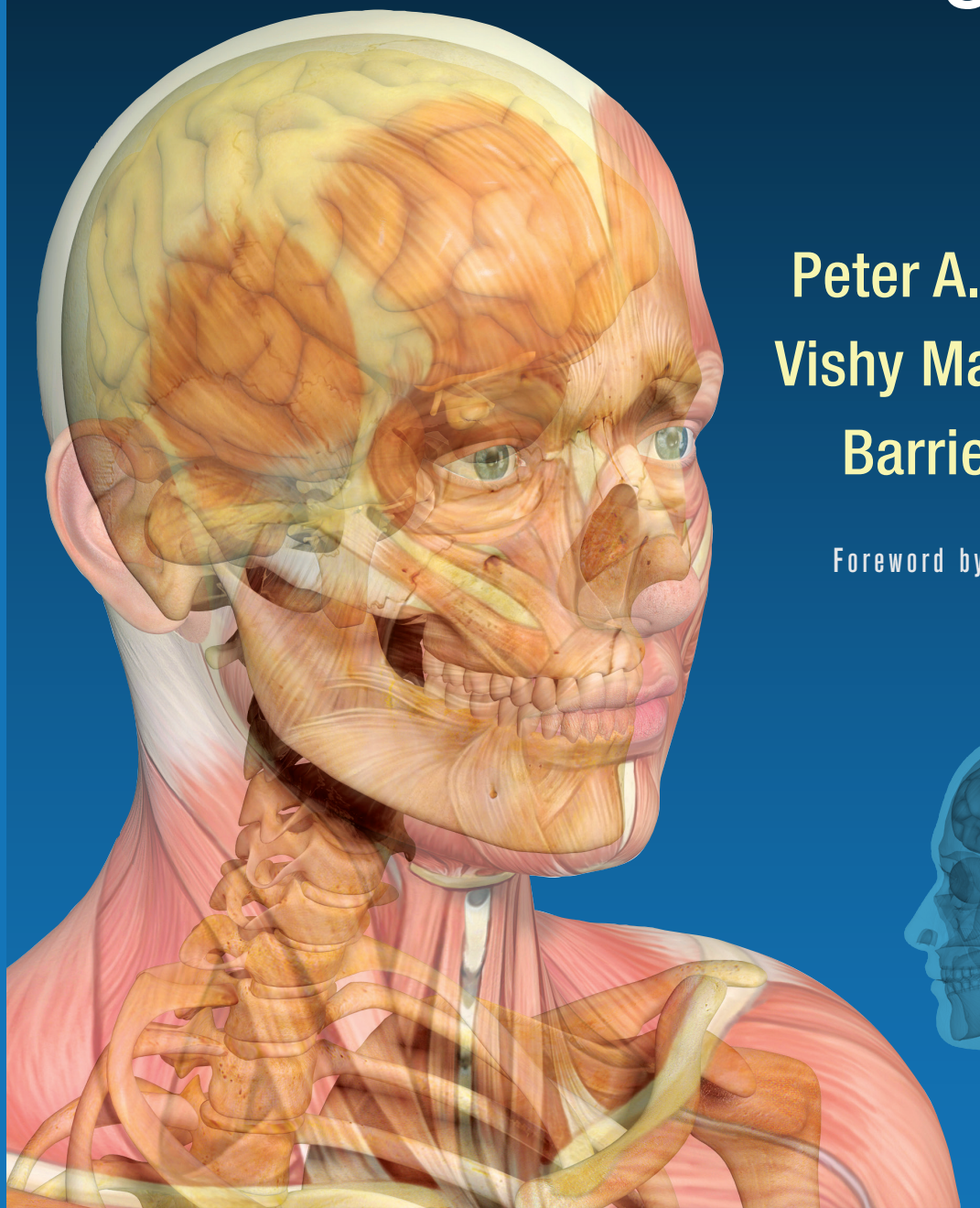
Clinical Head and Neck Anatomy for Surgeons



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For Rachel, Ellie, Katie and Rosalind.

(PAB)

For Neila, Janaki, Tom, Arjun and Olivia.

(VM)

Contents

Foreword

Mastery of the complex anatomy of the head and neck region is an essential requirement for all surgeons involved in surgical procedures in this area, regardless of their specialty. Navigating with ease through this complex maze of vital structures requires familiarity with anatomic relationships, to anticipate the presence and proximity of vital structures for smooth and safe conduct of surgical procedures. Lack of the knowledge of relevant surgical anatomy can lead to inadvertent injuries during operations, and disastrous functional and esthetic sequelae. Professor Peter Brennan, Professor Vishy Mahadevan, and Mr Barrie Evans are to be complimented for taking the challenge of compiling an authentic text book of surgical anatomy of the head and neck to aid students, trainees and practitioners of surgery in the head and neck region. This book is a much needed resource in this specialty.

The Editors have done an outstanding job in attracting leading surgeons and teachers of anatomy to contribute to this book and share their knowledge, expertise, experience and wisdom in making this a user-friendly and valuable reference volume. Accurate details of clinically relevant anatomic features and relationships at each site with emphasis on surgical anatomy, complemented by line drawings and actual intraoperative photographs, make this a unique compilation of topics regularly encountered in day-to-day practice of head and neck surgery. Tips recommended by experienced surgeons to avoid injury to vital structures are valuable features. The surgeon's perspective of operative regional anatomy is evident throughout, which is the very focus of this book.

In summary, the publishers and editors have produced a unique text book, which would be of tremendous value to students, trainees and practitioners in the fields of head and neck surgery, maxillofacial surgery, otolaryngology, facial plastic and reconstructive surgery, oral surgery, dentistry and allied surgical specialties. This would be a ready reference for surgeons not familiar with the field to brush up on anatomy, prior to embarking upon a surgical procedure. To that end, this book will have a definite place, in the libraries, of medical schools, training programs, and operating rooms, as well as the book shelves of students, trainees and practicing surgeons.

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Introduction

PETER A. BRENNAN

The head and neck is one of the most complex parts of the body, with so many structures found in a relatively small area. It contains specialized sensory organs that allow us to see, hear, smell and taste, and is the start of both the respiratory and alimentary tracts. The thyroid and parathyroid glands are also located in the neck and form part of the endocrine system. Approximately 300 of the 800 or so lymph nodes that form part of the lymphoreticular system are found in the head and neck region, together with extra-nodal lymphoid tissue such as the palatine tonsils and adenoids. It is therefore not surprising that many lymphoid-related diseases present to head and neck specialists.

The face itself – with its large number of muscles of expression arising from the many bones that form the facial skeleton – conveys emotion, and in most societies is not hidden by clothing (and therefore always in view), so problems whether caused by disease, trauma or surgery are difficult to conceal.

The embryology of the head and neck is fascinating and explains many of the particularly interesting anatomical findings. An appreciation of the embryology is also important for understanding disease processes such as branchial cleft and thyroglossal cysts, and cleft lip and palate.

The diverse group of structures that make up the head and neck region are intimately related. Many nerves and blood vessels pass through other anatomical structures and have complicated relations. The area is richly innervated with sensory and motor nerves. All of the 12 cranial nerves have at least one or more functions in the head and neck, with two of them (vagus and accessory) passing through the neck to additionally innervate remote structures. Other important nerves arising from the cervical part of the spinal cord, including the phrenic nerve and brachial plexus, pass through the neck.

With all these structures found in such a small area, a detailed knowledge of the relevant surgical anatomy is essential for surgeons operating in this region. Unlike body cavity surgery where most of the important anatomy is located much deeper to the skin and protected by, for example, the ribs or anterior abdominal wall musculature, in the head and neck many structures are superficial. For example, it is relatively easy to permanently damage one or more branches of the facial nerve or the parotid duct with a knife or even a broken glass assault to the face, with potentially serious consequences for the patient's future quality of life (Figures 1 and 2). Major blood vessels are also quite superficial when compared to other anatomical areas. Sensory nerves pass through the facial bones en route to supplying the facial skin – in most other regions of the human body, sensory nerves do not enter bony canals. Finally, the teeth are attached to the mandible and maxilla in a unique way.

Head and neck anatomy is a difficult subject to learn, and just when junior doctors think that they may have mastered it, they often become confused and frustrated when trying to apply the knowledge gained from a textbook and cadaveric dissections to the operating room. Given the complexity of the head and neck, this is not surprising. Furthermore, some parts of the head and neck (such as the complex infratemporal fossa area) are not readily familiar to even the most experienced of surgeons, who may have to refer to anatomy texts and a dried skull before operating in this region.