

Operative Cranial Neurosurgical Anatomy

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*"Nothing behind of me, everything ahead of me, as is ever so on the road."
-Jack Kerouac*

To my parents Cesare and Dolly with infinite love and esteem.

-F.G.

*"Controllers, abusers, and manipulative people don't
question themselves. They don't ask themselves if the problem
is them. They always say the problem is someone else."
-Darlene Ouimet*

To Katie for her unconditional love and support through these times of change and growth.

-C.G.

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Foreword

“If you can visualize it, you can actualize it.”

-Dennis Conner, American Yachtsman

Progress in the field of neurosurgery over the last century has been astonishing. Much of that progress has been due to improvements in our ability to visualize that which could not previously be seen well or detected at all. Early neurosurgical procedures were performed without the assistance of any preoperative imaging studies, only a knowledge and firm conviction in the validity of cerebral localization. The progression from skull and spine x-rays to pneumoencephalography, radionuclide brain scans, CT, and MRI provided progressively improved ability to visualize the pathology neurosurgeons deal with. Likewise, advancement from the surgeon's naked eye and reflected light, to surgical loupes with a headlight, to modern operating microscopes with brilliant illumination, has steadily improved neurosurgeons' ability to visualize pathology intraoperatively, thus diversifying and expanding the breadth of our specialty.

Similarly, the improvement in surgical exposures has allowed neurosurgeons to visualize pathology that is concealed behind bone and normal anatomic structures. Early neurosurgeons utilized a relatively small number of standard surgical approaches that often required brain retraction or resection of normal tissue to provide adequate exposure of the pathology at hand. Through a better understanding of surgical anatomy and research in microsurgical anatomy,

there are now an expanded number of standard surgical approaches with numerous variations to address specific challenges. The evolution of skull base exposures augmented visualization by eliminating nonessential bony structures to minimize or eliminate the need to retract brain tissue and bring the surgeon closer to the pathology.

Operative Cranial Neurosurgical Anatomy is a tour de force that includes basic as well as detailed surgical anatomy, enhanced by cadaveric dissections, options for surgical training, and methods for assessment of the ideal surgical approach, all in a standardized format that provides an exhaustive description of every imaginable neurosurgical approach to intracranial pathology, including the standard exposures as well as bespoke techniques developed for highly unique situations. It is a handbook that will be useful to all neurosurgeons, from the uninitiated to the expert.

This volume is a testament to the fact that the field of microsurgery is not static, but continues to evolve and lead us to new opportunities that actualize the dreams of our predecessors, who first developed our unique specialty and could only imagine what we now consider state-of-the-art.

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Preface

Dissection activity in anatomical laboratories is a fundamental step in the training process of each neurosurgeon. In particular, the acquisition of specific technical skills is a long and demanding task, which requires a stepwise learning of surgical anatomy and basic steps of single surgical approaches. Residents are often alone in the laboratory during this critical learning phase. Anyone who has experienced a period of tutoring activity in a lab knows the importance of reference books to learn and consequently acquire basic surgical skills. The book becomes your best friend and only companion during these times.

Conventional texts are addressed to surgeons that have already completed their training, making them less user-friendly for residents or the practicing neurosurgeon approaching a surgical technique for the first time. For this reason, trainees often must divide themselves between the preliminary phase of study in the library and the subsequent phase of practical training in the lab; this separation inevitably leads to a waste of time and energy which contributes to less effective learning.

Starting from these basic as well as fundamental considerations, we developed the idea of an innovative handbook of surgical technique that mostly referred to neurosurgery residents and practicing neurosurgeons during their training phase in the anatomical laboratories. Through this book we aim to provide an effective educational support to trainees who are approaching fundamental surgical techniques.

Operative Cranial Neurosurgical Anatomy is a systematic collection of anatomic dissections organized to illustrate and present technical principles and fundamental steps of standard neurosurgical procedures as well as related surgical anatomy. Due to its extremely user-friendly layout, the book can be kept on the dissection desk and used any time it is needed.

Leading experts in the field from all over the world have contributed with their unique expertise to chapter writing, making this book an essential tool in neurosurgical training. Contents are homogeneously organized in a highly rational fashion so they are immediately available for consultation. Each approach is discussed step-by-step through a chain of serial images, which act as a “screenshot” of each single step. Figures highlight fundamental aspects of the surgical technique with their basic variants, the surgical anatomy and landmarks, and the critical aspects which have to be taken into consideration. Relevant pitfalls, suggestions, and pearls from the major experts in the field complete each chapter. A list of references and suggested readings are also provided.

This book includes seven major sections including pre-surgical training techniques, patient positioning and surgical planning, cranial approaches, trans-petrosal approaches, endonasal-transoral and transmaxillary procedures, vascular procedures, and ventricular shunts procedures.

The summaries and the graphic layout make contents readily accessible for consultation during the surgical dissection. This book offers trainees both the fundamental knowledge which is necessary for critical learning as well as a graphic pathway they can easily follow to better prepare themselves to perform the surgical approach.

Operative Cranial Neurosurgical Anatomy is a unique and essential tool in understanding and learning the fundamental surgical techniques in cranial neurosurgery, designed to optimize the time and quality of practical training in the lab.

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