

New book edited by CU neurosurgeon takes a unifying approach to high-risk brain surgery

Deep in the brain at the base of the skull lies a labyrinth of bony compartments with tiny openings for passage of the spinal cord and many nerves and blood vessels to connect with the rest of the body. The various pathologies that occur in this complex area, behind the nose and eyes, such as skull base tumors, are treated by surgeons with specialized training. In this remote brain region, the stakes are high.

A new book edited by neurosurgeon A. Samy Youssef, MD, PhD, of University of Colorado Anschutz Medical Campus tackles this high-risk surgery. The multimedia textbook *Contemporary Skull Base Surgery, a Guide to Functional Preservation* was published in June 2022 by Springer <https://link.springer.com/book/10.1007/978-3-030-99321-4>.

Few understand the skull base anatomy better than Dr. Youssef and his invited expert neurosurgeons and otolaryngologists who contributed chapters to *Contemporary Skull Base Surgery*. Dr. Youssef says, "The stakes are high because injury to cranial nerves and vessels deep within this region can affect the patient's senses, speech, expressions, thinking or movement. Adding to the risks, the surgical path can become obstructed by tumor and its related problems like brain swelling." *Contemporary Skull Base Surgery* aims to be the surgeon's reference in building the best care for their patients—from diagnosis to planning treatment to the operating room and after the hospital.

Dr. Youssef directs the Skull Base Program and is director of education at the Department of Neurosurgery. He noted the 800-page text took 3 years to complete—from idea to writing to publication. Contributors included 96 authors from 10 countries, which included 15 authors from the Departments of Neurosurgery and Otolaryngology—Head & Neck Surgery at CU Anschutz. The CU authors are part of the Skull Base multidisciplinary team here that treats about 300 patients annually.

Many of the contributing authors, like Dr. Youssef, are training the next generation of skull base surgeons in courses not only at their institutions but at centers worldwide. In his cadaveric lab trainings, surgeons learn more about the intricate skull base anatomy and practice using sophisticated technologies guided by the experts. Bringing technical innovation along with experience is also one of the themes in *Contemporary Skull Base Surgery*, which includes surgical videos of specific cases and anatomy.

Pathologies in the skull base region are often rare or uniquely difficult because of how the normal anatomy has been disrupted by disease. Dr. Youssef explains, "We use a multidisciplinary team approach to customize a treatment plan for each patient. The wise choice of treatment must balance what is technically possible with ensuring the best outcome for the patient by preserving cranial nerve function." He says, "In each chapter, a senior neurosurgeon brings personal insight into their successes and failures. A failure can be hard to process but one that invites future advances in our field."

The field of skull base surgery evolved as operations moved from transcranial (opening in the skull) to the less invasive endoscopic (through the nose). *Contemporary Skull Base Surgery* brings a reasonable discussion to the tension that arose between those who advocated for one or the other. As editor Dr. Youssef was clear: the book would unify the strengths of both schools of thought with each chapter weighing the benefits and shortcomings of each approach or using a combined strategy for the pathology. The text supports his philosophy that skull base surgeons

should be adept at both weighing the risks of the two approaches and be skilled in performing both types of operations. He says, "It's the same strategy for training our Department residents and fellows."

Chair of the Department, Kevin Lillehei, M.D., says, "Since Dr. Youssef began our Skull Base program in 2014, 10 fellows have completed their advanced training here at CU Anschutz. Meanwhile our neurosurgery residents gain experience and mentoring while observing his surgeries for these complex lesions. It's an important part of attracting future residents and fellows to our CU Department of Neurosurgery."

Contemporary Skull Base Surgery, a Guide to Functional Preservation will be featured at the Springer booth at upcoming national and international meetings. Dr. Youssef says, "The aim to advance patient care in skull base surgery was the inspiration for undertaking this book project and an expression of gratitude to the patients who entrust us at their most vulnerable moments."