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Neurosurgical Procedures

Innovative Approaches

Edited by Alba Scerrati and Pasquale De Bonis



Neurosurgical Procedures - Innovative Approaches

*Edited by Alba Scerrati
and Pasquale De Bonis*

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Meet the editors



Dr. Alba Scerrati was born in Rome, where she lived until 2017. She then moved to Ferrara. She graduated from medical school in 2010 and completed her neurosurgical residency (in 2017) in the Catholic University of Rome, Policlinico Gemelli. She is Assistant Professor of Neurosurgery at the University of Ferrara where she also works as a neurosurgeon. Dr. Scerrati's main scientific interests are in skull base surgery and neurovascular surgery. She is currently working on the development of 3D printing techniques for neurovascular surgery training and simulation. She is the author and co-author of more than 30 indexed publications (<https://www.ncbi.nlm.nih.gov/pubmed/?term=scerrati+a>).



Prof. Pasquale De Bonis has been Associate Professor of Neurosurgery at the University of Ferrara and Head of the Neurosurgery Residency Program since 2017. He graduated cum laude in 2004 from the Medical School at the Catholic University of Rome, Policlinico Gemelli. He completed his residency in neurosurgery in 2009 and his PhD in Neurosciences in 2012 at the Catholic University of Rome. Prof. De Bonis's main scientific interests are in neuroncology, CSF dynamics, and spinal diseases. He is the author and co-author of more than 150 indexed publications (<https://www.ncbi.nlm.nih.gov/pubmed/?term=de+bonis+p>).

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Preface

“There are no constraints on the human mind, no walls around the human spirit, no barriers to our progress except those we ourselves erect.” (Ronald Reagan)

The history of neurosurgery is characterized by a strong relationship with technology. From the introduction of the operating microscope to the development of endoscopes or exoscopes; from the CT scan to the new 3T MRI; from standard ultrasounds to modern high-definition navigated ultrasounds; from intraoperative DSA to new indocyanine video-angiography; and from custom bone reconstruction to 3D printed skull prostheses.

Surgery needs technologies to improve its results and the clinical outcome of patients. New generations of surgeons should be trained in the use of new technologies and be open minded towards what tools biomedical engineering or basic science could offer to improve surgical practice.

This book is designed to be a comprehensive introduction to new developments and techniques in neurosurgery and to their application in clinical practice.

Appreciation is due to Prof. Pasquale De Bonis for helping me in this enjoyable task, to Dr. Flavia Dones for her unfailing support and wise counsel, and to Prof. Michele A. Cavallo for his tireless commitment to making me a better surgeon.

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In the last few years, the development of new technologies in the medical field has allowed procedures and improved surgical techniques to be performed, which until recently would have been unthinkable. Modern neurosurgery is forever tied to technological progress: the development of robotics and robotic-assisted surgery; enhanced visualization, perfusion, and function monitoring in vascular surgery; new techniques of bone reconstruction; new cerebral imaging tools; and alternative treatments such as laser interstitial thermal therapy or immunotherapy for tumors. This book is designed to be a comprehensive introduction to these new developments and to their application in clinical practice. We have tried to provide a unique background and insights to coherently present these new technologies.

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