



# Neuroanesthesiology—Case Companion

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## Book Review

### Title: Neuroanesthesiology – Case Companion

**Author: Shailendra Joshi**

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Neurosciences have made a great progress over the past 20 years. Along with this has grown neuroanesthesiology. Neuroanesthesiology courses ranging from 1 to 3 years are being offered by several institutes. The residents of these courses need a book to understand the complexities of this subspecialty. The book “Neuroanesthesiology—Case Companion” meets this demand. Some years ago there was a book titled “Synopsis of Anaesthesia” by Lee and Atkinson which covered the entire subject of anesthesia in the form of bullet points. The student could depend on this book for a quick revision before the examination. “Neuroanesthesiology—Case Companion” is analogous to that book for neuroanesthesia students. In an era of multiauthored text books Dr. Shailendra Joshi should be congratulated on bringing out a single-authored manual.

The book is organized into four sections: (1) Applied anatomy and physiology, (2) neuropathology for anesthesiologists, (3) neuroanesthesia case management, and (4) appendices. The chapters are brief and focused. The illustrations help a great deal to understand the subject. Some of the important features of this book are as follows.

The chapter on cell biology of the nervous system describes concisely the cell diversity of the nervous system, human neuronal types, synaptic transmission, postsynaptic receptors, and various types of nerve fibers. The chapter on blood–brain barrier (BBB) describes the function of BBB and the consequences of its disruption. Organization and function of the

spinal cord is described in the chapter on spinal cord. Cerebral blood flow anatomy and regulation and metabolism flow coupling are described in the chapter on cerebral circulation–anatomy. The chapter on hypothalamo–pituitary axis gives an insight into how pituitary interacts with various organs in the body. The chapter on neurological monitoring covers brain tissue oxygen tension, transcranial Doppler, jugular venous oximetry, intracranial pressure (ICP), ultrasound, optical spectrometry, computed tomography, and magnetic resonance imaging (MRI). The current knowledge on neuroprotective effects and neurotoxicity of anesthetic agents is covered in one chapter. The chapter on ICP and cerebrospinal fluid (CSF) drainage describes the pathology of raised ICP and intracranial compliance and the methods of treatment of intracranial hypertension. Atherosclerotic basis and management of stroke are covered in the chapter on atherosclerotic cerebrovascular disease. The chapter on brain tumor pathology describes tumor blood flow, ICP concerns with tumors, effects of blood loss during surgery, and intraoperative tumor imaging. The chapter on brain edema explains the various types of brain edema and, with a nice diagram, explains various types of brain herniations. The anatomy, risk factors, clinical presentation, and investigation of cerebral aneurysms are described succinctly in the chapter on cerebral aneurysm. The chapter on subarachnoid hemorrhage (SAH) describes the presentation, investigation, and complications of SAH. The pathology and anesthetic management of moyamoya disease are described in a separate chapter. The mechanisms of chronic pain, approaches to treatment of pain, and various pain syndromes are discussed in the chapter on surgical treatment of chronic pain. Under pathophysiology of spinal cord injury, various neurological syndromes, multisystem effects of spinal cord injury, intraoperative electrophysiological monitoring, and delayed complications of spinal cord injury are very well described. Various types of movement disorders such as parkinsonism and essential tremor are described in a separate chapter. Classification of epilepsy and treatment of status

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epilepticus are covered in the chapter on seizure types and management. The chapter on venous air embolism covers its hemodynamic effects, monitoring techniques, prevention, and treatment. The chapter on traumatic brain injury (TBI) covers the concepts of primary and secondary injury and assessment, serum markers, and the role of MRI, electroencephalogram, and Evoked Potentials (EP) in the assessment of TBI. The chapter on brain death deals with prerequisites for its diagnosis and clinical examination and ancillary tests required to confirm it.

In the section on neuroanesthesia case management, the author describes the clinical management of nearly 25 case scenarios. Each chapter is followed by 4 to 5 case reports for discussion by the reader. Routine plan for craniotomy is described along with concerns like monitoring, positioning, maintenance, and emergence. A chapter is dedicated to the technique of awake craniotomy. The chapter on carotid endarterectomy (CEA) lists out the studies published from 1991 to 2022. It also describes the operative procedure, neurological monitoring, hemodynamic management, pros and cons of regional versus general anesthesia, and complications of CEA. In the chapter on clipping of cerebral aneurysm, preoperative and intraoperative hemodynamic management including transient circulatory arrest are described. The pros and cons of various drugs used in the treatment of cerebral vasospasm are described in the chapter on treatment of cerebral vasospasm. Various aspects of management of TBI such as initial management, identification and management of impending herniation, conservative management, preoperative assessment, and maintenance of anesthesia are very nicely covered. Brain herniation syndromes are explained with the help of nice diagrams and a table. In the chapter on acute spinal cord injury, manifestations of injury at different spinal levels are well described. The pros and cons of various techniques of intubation in spinal cord injury are presented in the form of a table. The advantages and disadvantages of various positions

used for posterior fossa surgery are very well described in the chapter on posterior fossa surgery. Neurological symptoms and various endocrinal syndromes associated with pituitary disease are described in the chapter on transsphenoidal surgery. Classification of hydrocephalus and complications of CSF drainage procedures are very well described in the chapter on endoscopic third ventriculostomy and shunt procedures. Pros and cons of various induction agents used during electroconvulsive therapy are given in the form of a table. Maternal and fetal concerns of anesthetics in a pregnant patient for neurosurgery are described in a separate chapter. The chapter on pediatric neurosurgery mainly covers surgery for craniosynostosis. The anatomical abnormalities in a child with syndromic craniosynostosis are very well described in this chapter. The pathogenesis, clinical features, anesthetic management, and infection risk of Creutzfeldt-Jakob's disease are provided in the chapter on Creutzfeldt-Jakob's disease. The anatomical and physiological basis of postoperative visual loss and intraoperative care to prevent this complication are described in the chapter on postoperative visual loss. The chapter on massive blood transfusion provides a lot of information related to transfusion and coagulation. Brain death certification and the care of potential organ donor are very well described in the chapter on brain death.

The vignettes at the end of each chapter provide interesting historical anecdotes related to the chapter. The appendices at the end of the book provide quick access to important information during clinical management of the cases.

Overall, this book serves as a handy reference both for trainees in neuroanesthesia and clinical practitioners of the subspecialty of neuroanesthesia.

**Conflict of Interest**

None declared.