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Neurosurgical Treatments for Psychiatric Disorders

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This apparatus is being used for psychosurgery.
Spiegel et al., 1947 [1]

The very first clinical stereotactic procedures in the late 1940s were attempts to treat psychiatric symptoms [1]. However, both the old era of functional stereotactic surgery in the 1950s through 1970s and the renaissance of stereotactic functional neurosurgery in the 1990s were driven by the field of movement disorders [2, 3].

There are numerous similarities between the neural circuits that generate movement, mood and mentation. So why is there such disparity between the stereotactic neurosurgical advances made in movement and psychiatric disorders? Perhaps this was to be expected. After all, objectivity is greater with motor symptoms, and ethical issues present less of a challenge. Nevertheless, one of the main reasons is almost certainly the difference in attitude between neurologists and psychiatrists towards neurosurgery. The two disciplines of neurology and psychiatry, intertwined in the days of Charcot and Freud, have become divorced from each other, both methodologically and physically. Psychiatry is often 'banished' to stand-alone mental hospitals, with little scope for interaction with other disciplines. As a result, few psychiatrists attend stereotactic and functional neurosurgical meetings or publish on the subject of surgery for psychiatric illness.

The modern era of stereotactic neurosurgery for psychiatric disorders began in 1999 when deep brain stimulation (DBS) for obsessive-compulsive disorder (OCD) and Tourette syndrome was introduced, respectively, by Nuttin et al. [4] and Vandewalle et al. [5]. Sixteen years on, the neurosurgeons Bomin Sun and Antonio De Salles bring together numerous international experts to discuss both DBS and stereotactic ablative procedures in the multi-author book *Neurosurgical Treatments for Psychiatric Disorders*.

The opening chapter provides a detailed and well-illustrated summary of the relevant neural circuitry. Two contributions are dedicated to modern imaging techniques as applied to psychiatric disorders. A considered narrative on the 'Pendulum of history' reflects on the pitfalls of bygone times and how these may be circumvented in the modern era. A comprehensive account of various ablative surgical approaches in neuropsychiatry is followed by a review of associated legal issues. The importance of patient evaluation, selection and life-long follow-up by dedicated multidisciplinary teams is emphasized in the next chapter.

Having discussed these scientific, ethical and clinical foundations, in the rest of the book individual chapters are dedicated to ablation or DBS for specific psychiatric indications. The knowl-

edge base of surgery for depression, OCD, Tourette syndrome, drug addiction, anorexia nervosa, schizophrenia and aggressive behaviour is reviewed. The theory and application of MRI-guided focused ultrasound and radiosurgery are also covered.

Although it provides meaningful improvement to a limited number of patients with chronic refractory psychiatric illness, the level of evidence available suggests that neurosurgery for many of these indications (depression, OCD and Tourette syndrome) is still investigational. For other indications (anorexia nervosa, schizophrenia, drug addiction and aggressive behaviour), surgery remains exploratory and sometimes controversial.

In this book, numerous authors from China provide a novel and interesting perspective – not readily available elsewhere – on what functional stereotactic neurosurgery might offer in various psychiatric disorders. The number of Chinese patients reportedly undergoing surgery for anorexia, addiction and schizophrenia is in the hundreds, far beyond that in the rest of the world. However, the lack of validated grading systems and the paucity of comprehensive long-term outcomes in peer-reviewed literature may pose difficulties in the application of this data when designing future studies.

As with any multi-author book, the time to publication means that the most recent peer-reviewed articles are not included. Notable by its absence is the first double-blind randomized controlled trial that provides class I evidence of the efficacy of gamma knife capsulotomy in the management of severe refractory OCD [6]. Otherwise, this book offers up-to-date information that should be perused by functional neurosurgeons and that might also inspire some psychiatrists to take neurosurgical approaches into consideration. Improved recruitment to trials of functional stereotactic neurosurgery in psychiatric disorders would assist in terminating the current 'era of mindless neurology and brainless psychiatry' [7].

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