# Progress And Foremost Aspects In Functional Neurosurgery

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The basic and well-known concept of surgery is to remove a harmful mass such as tumor or hematoma or to mechanically reconstruct anatomical structures like plastic surgery. Such concepts are easy to understand and readily accepted. On the contrary, in functional neurosurgery, we deal with abnormally functioning neurons and/or neuro-fibers that look morphologically normal even with detailed imaging studies. Chronic electric stimulation of a deep brain structure (deep brain stimulation: DBS) is a well-established procedure for various types of abnormal movements of the body such as Parkinson disease and dystonias. DBS opened a new era in functional neurosurgery due to its reversibility and adjustability. However, life-long implantation of DBS has negative impact on patients' emotion like fear about malfunctioning and restriction of daily life. Device related complications are not rare in DBS. Traditional radiofrequency lesioning (RFL) of a small brain target is resurging to cover the negative aspects of DBS. RLF used to be regarded as riskier than DBS based on the data obtained before the era of MR imaging and computer technologies. Precise imaging of the brain and the use of computer planning like trajectory view made RFL more accurate, reliable, and safe. Furthermore, a modern technology called MR-guided transcranial focused ultrasound treatment (FUS) became available, which enabled non-invasive destruction of abnormal neural circuit in a deep brain structure. Such treatment is now being used for control of intractable movement disorders, refractory pain, epilepsy, psychiatric disorders, and so on. As the audience of this symposium consists of various sub-specialties in neurosurgery, I will show as many comprehensive clinical examples as possible to facilitate understanding recent advances in functional neurosurgery