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## History of epilepsy surgery

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# HISTORY OF EPILEPSY SURGERY

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Benjamin Winslow  
Dudley

The history of epilepsy surgery is as old as the roots of modern neurosurgery. Surgical intervention to cure epilepsy can be traced back to occasional reports from France and England of relief of post-traumatic epilepsy by trephination in the early 19th century. Trained among these European surgeons, the American Benjamin Winslow Dudley (1785-1870; left) at Transylvania Medical School in Lexington, Kentucky, was the first one to publish a series of reports of trephination for post-traumatic epilepsy. Four out of five patients were relieved of their seizures. A success of almost 80% is very impressive especially considering the fact that this was a pre-Listerian and pre-anesthesia era. These must have been very carefully selected cases. Dudley was an interesting man; he fought a duel with a surgical colleague, and then carried his opponent to the hospital to remove his bullet from the wound he inflicted.

In the late nineteenth century Victor Horsley, a general surgeon by training but with a tremendous interest in neurosurgery (considered one of the fathers of neurosurgery) reported three craniotomies for focal motor seizures that he did



Hughling Jackson



Victor Horsley

on the behest of Hughling Jackson (epileptologist who described Jacksonian epilepsy). Two of these patients improved. The pair of Horsley and Jackson produced milestones

in the history of neurosurgery. These included operations on motor cortex, removal of tumor compressing the spinal cord, and so on. While this was going on in Europe, two epileptologists Frederick and Erna Gibbs at the University of Chicago worked with Percival Bailey to perform temporal lobectomy on patients who were diagnosed to have temporal lobe seizures. Percival Bailey also had a strong influence from European surgeons. He obtained his MD from University of Chicago, got interested in neuroanatomy and got a PhD from Northwestern University before embarking on surgical training. He returned to University of Chicago with a dream to build a neuroscience center.

Unfortunately he could not fulfill his dream but did build a neurosurgical department of distinction at that institution.



L to R: Percival Bailey,  
Erna and Frederick Gibbs

The duo that eventually brought epilepsy surgery to the knowledge of common people was Wilder Penfield and Herbert Jasper. Penfield (1891-1976), born in Spokane, Washington, was initially not interested in medicine as he saw his father fail in his medical practice which eventually led to the divorce of his parents. His mother had a strong influence on him. His professional thinking about neuroscience and neurosurgery was influenced by Sir Charles Sherrington and Sir William Osler



Wilder Penfield



Herbert Jasper

at Oxford, and later by Harvey Cushing at the Peter Bent Brigham Hospital in Boston. This combination of neuroscientists (Sherrington and Osler) and a neurosurgeon (Cushing) influencing

the same mind was a very potent one. This eventually resulted in Penfield (and William Cone) establishing the world-class Montreal Neurological Institute. Herbert Jasper (1906-1999) was born in Oregon and came to Canada in 1938 to build his career at Montreal Neurological Institute as an epileptologist. Penfield and Jasper published a landmark book *Epilepsy and the Functional Anatomy of the Human Brain* in 1954.

Interestingly, after this initial excitement, surgical treatment for epilepsy went out of favor for several decades until it was brought into mainstream neurosurgery once again in the 1980s by neurosurgeons in the United States. Although medical management of epilepsy has made huge progress since the armamentarium of medications available to the neurologist has quadrupled, advancement in surgical technology has concurrently placed epilepsy surgery as a mainstay in the treatment of epilepsy.