Charles Albert Elsberg (1871-1948): Pioneer in Spinal Cord Surgery

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ABSTRACT

Dr. Charles Elsberg was one of the pioneers of spine surgery. Charles Albert Elsberg was born in New York City on august 24, 1871. He was graduated from Colombia University College of Physicians and Surgeons (1893). He first worked at Mt. Sinai Hospital, as a neurosurgeon as a specialty, in addition to working as a general surgeon. Than he worked at New York Neurological Institute at 149 East 67th Street, New York. He published 3 books about diseases of spinal cord. He published 80 of articles dealing with problems of the spinal cord. Elsberg was a privileged, shy family man with no hobbies, he did not get married until he was 67 years old. He married with Jane Stewart who had served as his technician. Elsberg died at age 77 years. Dr. Charles Albert Elsberg's efforts to develop and improve spinal cord surgery techniques contributed very much to development of spinal surgery.

KEY WORDS: Charles Elsberg, History, Spinal cord, Spine sugery

INTRODUCTION

Spine surgery has emerged mainly from different disciplines, including general surgery, orthopedic surgery, and neurological surgery. Although it is not still a separate discipline, it and its subdisciplines advanced greatly during the last three decades. Dr. Charles Elsberg was one of the pioneers of spine surgery, This study will review his life and career.

CHARLES ELSBERG

Charles Albert Elsberg was born in New York City on August 24, 1871. He graduated from Colombia University College of Physicians and Surgeons (1893). He began his professional career and worked as a general surgeon, then he went to Breslau in Lower Silesia, Germany (now Wroclaw, Poland), to improve his general surgery practice under Johann von Mikulicz-Radecki, one of the most popular general surgeons at that time.

Elsberg returned to New York City, as a staff of Mt. Sinai Hospital. He was first hired as a pathologist, then he had opportunity to work in general surgery. He became friend and began to work together with Dr. Bernard Sachs at Mt. Sinai Hospital and Dr. Charles Loomis Dana of Cornell University, both eminent neurologists. Especially Dr. Bernard Sachs increasingly relied on him to perform cranial and spinal procedures on patients admitted to the neurology service of the hospital. They influenced Elsberg to choose neurological surgery (Figure 1). The surgical service of Mt. Sinai Hospital, having been separated from the medical service in 1877, was given 154 beds. Directors of general surgery subsequently divided the work of general surgery and, in 1914, designated ward beds for four surgical specialty services, including neurosurgery. Elsberg was responsible for neurosurgery

Figure 1: *Dr. Charles Albert Elsberg (1871-1948): Pioneer in Spinal Cord Surgery.*

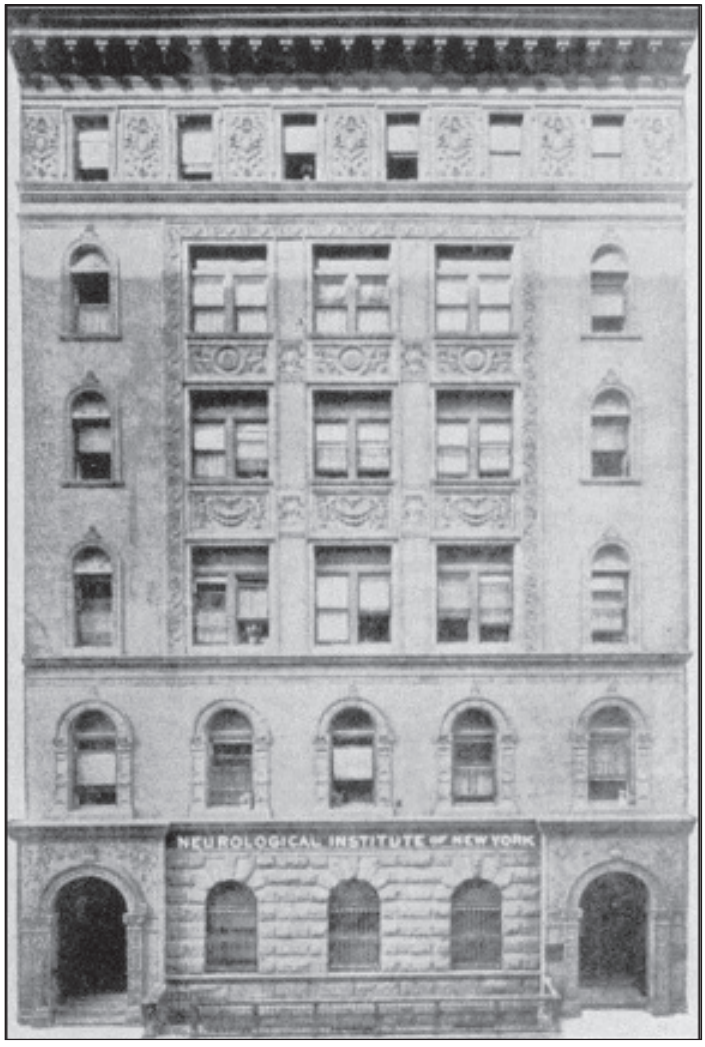
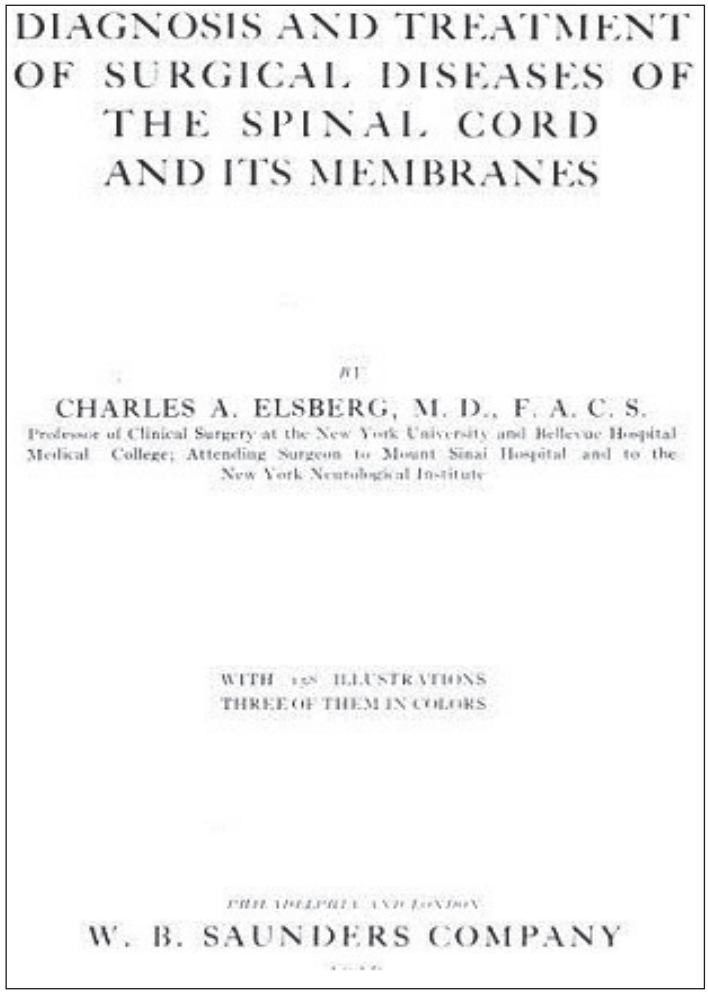


Figure 2: The first Neurological Institute of New York at 149 East 67th Street. View looking north across 67th Street, Manhattan/New York.

as a specialty, in addition to working as a general surgeon (9).

Dr. Joseph Collins and Dr. Joseph Frankel established the New York Neurological Institute at 149 East 67th Street, New York in 1909 (Figure 2) (11). Elsberg was invited to work there and carried out the first spinal operation on a female patient who had an intramedullary spinal cord tumor. The patient benefited from this surgery, and this result led to more success, both for Elsberg and for the Neurological Institute (3). However he also continued to operate at Mt. Sinai Hospital. Spinal surgery became the area that he achieved an international reputation. He contributed an important review, "Experiences in Spinal Surgery: Observations upon 60 Laminectomies for Spinal Disease" in 1913. Than he published his first book "Diagnosis and Treatment of Surgical Diseases of the Spinal Cord and Its Membranes" in 1916 (Figure 3) (5). This book influenced surgeons because it detailed the approach to diagnosis, particularly of spinal cord tumors. In this book Elsberg described innovative two-stage method of removing intrinsic cord neoplasms at a time when spinal fluid examination and plain spine x-rays were the only laboratory adjuncts to a detailed neurological examination.

Elsberg played an important role in training general surgeons in neurosurgical matters during World War I. The Surgeon General of the United States Army wanted him to organize a school for instruction in neurosurgery in New York, and he became military director of the institution. Even though he was known as an expert in the surgery of the nervous system, Elsberg also continued to perform general surgery operations. Elsberg gradually did less general surgery practice and stopped this kind of surgery by 1927 when he resigned from Mt. Sinai,


DIAGNOSIS AND TREATMENT OF SURGICAL DISEASES OF THE SPINAL CORD AND ITS MEMBRANES

BY

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Figure 3: Elsberg published his first book "Diagnosis and Treatment of Surgical Diseases of the Spinal Cord and Its Membranes" in 1916.

but he continued as chief of the surgical service at the Neurological Institute. Sharpe, Elsberg's second assistant at the Neurological Institute and in the general surgical procedures he performed in private homes quoted Elsberg as saying "General surgery is my bread and butter but neurosurgery is my true love" (12).

There were only five neurosurgeons in the 121-member American Neurological Association in 1917. First neurosurgical association was the Society of Neurological Surgeons that was founded on March 19, 1920. However Elsberg was not invited to join this society at the beginning. In the second meeting, on November 1920, there were 25 members of the society, and Elsberg was one of the active members. In the third meeting, on June 3, 1921 he became the chairmen of the nominating committee. Elsberg, along with Alfred Taylor hosted spring meeting in 1922 at the Neurological Institute. In 1922, he succeeded to the presidency of the Society of Neurological Surgeons and served for 2 years.

Elsberg published his second book, "Tumors of the Spinal Cord & the Symptoms of Irritation & Compression of the Spinal Cord & Nerve Roots: Pathology, Symptomatology, Diagnosis and Treatment" in 1925 (Figure 4) (6). In this book, he emphasized the role and importance of careful neurological examinations aided by spinal manometric determinations to find out the presence and location of intraspinal blocks. He analysed the effectiveness of lipiodol myelography, which had recently been introduced by Jean Sicard. Intrathecal injection of a foreign substance, "which is not absorbed

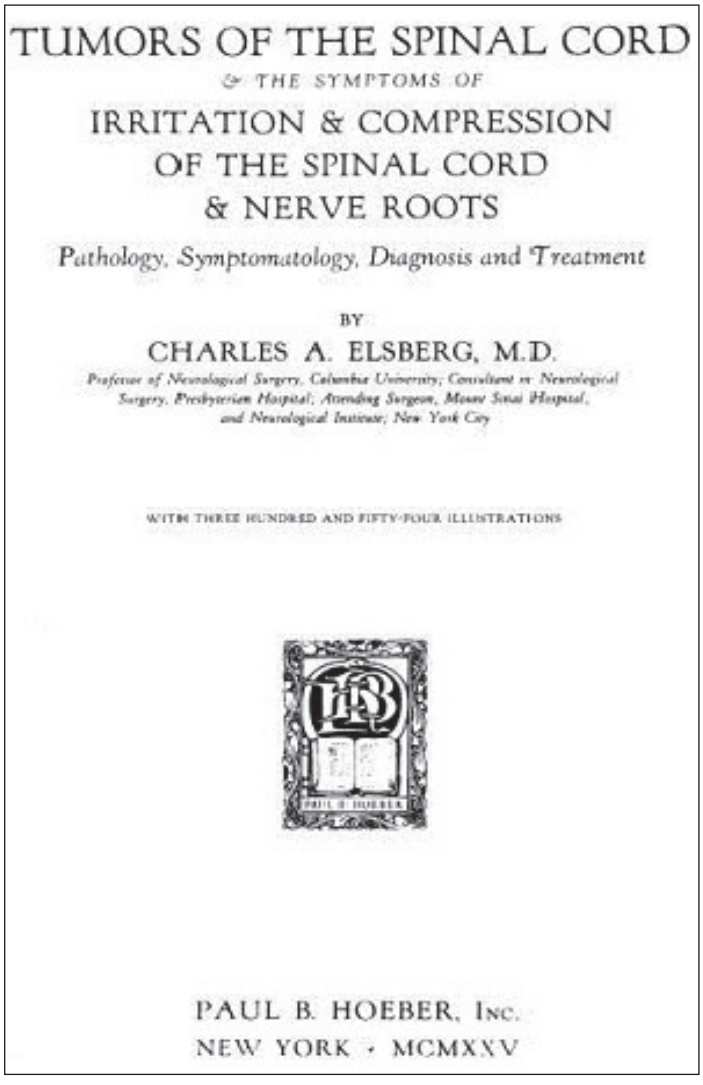
TUMORS OF THE SPINAL CORD
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Figure 4: Cover page of Charles Elsber book entitled as "Tumors of the Spinal Cord & the Symptoms of Irritation & Compression of the Spinal Cord & Nerve Roots".

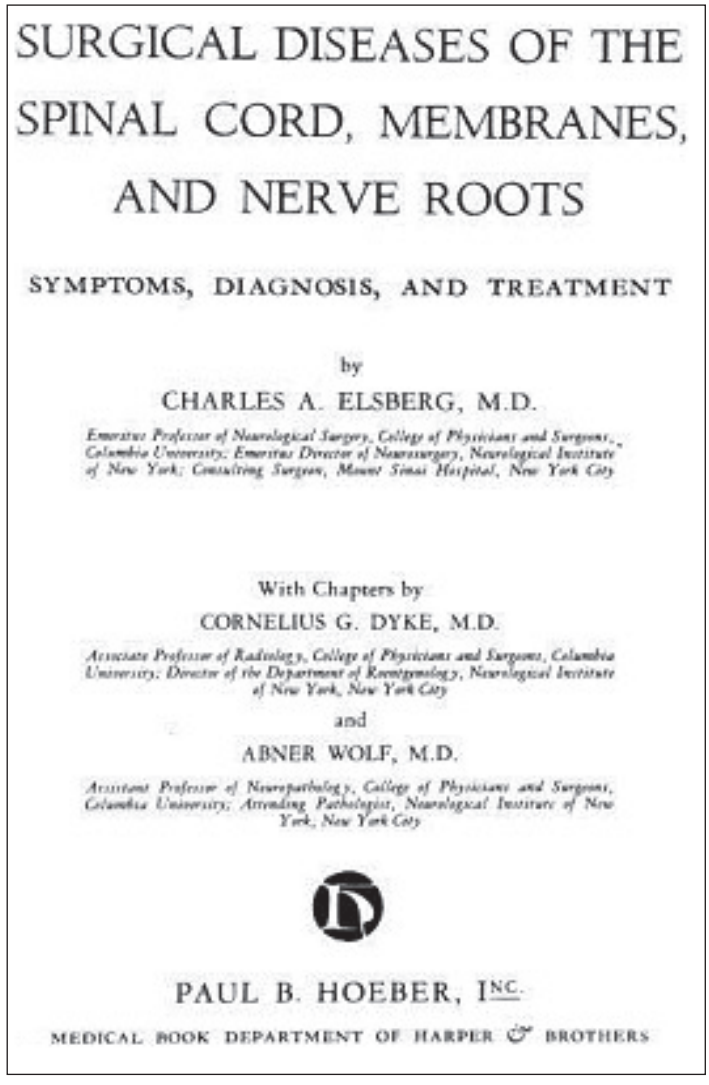
SURGICAL DISEASES OF THE
SPINAL CORD, MEMBRANES,
AND NERVE ROOTS
SYMPTOMS, DIAGNOSIS, AND TREATMENT
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Figure 5: Cover page of Charles Elsber book entitled as "Surgical Diseases of the Spinal Cord, Membranes and Nerve Roots: Symptoms, Diagnosis, and Treatment".

but which remains in the spinal canal for a long time-perhaps forever" was the main interest area of Elsberg.

A new facility adjacent to the recently opened Columbia-Presbyterian Medical Center in upper Manhattan was opened in 1929. Elsberg was intimately involved in the conceptual and construction phases of the building. He launched a new journal in 1931, the highly regarded Bulletin of the Neurological Institute of New York, and he also later edited this journal. He retired from active neurosurgical practice in 1936, and the Bulletin honored him with a Festchrift, containing 33 articles authored by his admiring colleagues. He was elected in1938, as president of the American Neurological Association, an honor previously accorded Cushing.

Elsberg published his best experiences in spinal surgery in a book "Surgical Diseases of the Spinal Cord, Membranes and Nerve Roots: Symptoms, Diagnosis, and Treatment" in 1941 (Figure 5) (7). He summarized his 4 decades of devotion to the study of the problems associated with spinal lesions with perfect illustrations. This thick book consisted of 598 pages, and included valuable chapters on radiology by Cornelius Dyke and on neuropathology by Abner Wolf. This book enlightened neurosurgeons for decades.

Elsberg was a privileged, shy family man with no hobbies. He did not get married until he was 67 years old. He lived with his bachelor brother until he got married. He married Jane Stewart who had served as his technician. He was happy with his marriage (2). Elsberg died at the age of 77 years.

DISCUSSION

Dr. Elsberg was a rapid surgeon and an excellent teacher. He was a hardworking writer, publishing four books (three of them were about spinal surgery) and nearly 200 medical articles. Nearly 80 of them dealt with problems of the spinal cord (3). Dr. Elsberg's most brilliant contributions were in the advancement of surgery of the spinal cord. Ge created several rongeurs for performing laminectomies. He found new techniques to diagnose and remove spinal cord tumors. He developed a new extrusion method to remove intramedullary tumors. In first operation, after opening the dura mater, the cord has been incised, and the growth partly extruded. In the second operation after 1 week, the growth was entirely extruded and was easily removed (10).

Elsberg operated for supposed spinal tumor on a large number of patients. Even though no lesion was found in some of these operations, these patients benefited from these operations. Elsberg proposed that these patients without tumor had neuritis of the cauda equina, and this neuritis somehow mysteriously benefited by exposure to light or air and the irrigation of the nerve roots with dilute mercury bichloride solution. Dr. Fritz Cramer later examined x-ray films of Dr. Elsberg's patients that were still available at the New York Neurological Institut , and he found that the patients with spondylotic changes and stenoses had benefited from the decompressive surgery that had been performed to reach the supposed spinal tumor. The patients with malignant diseases and metastases did not benefit from the surgery (4).

Elsberg was extremely astute at diagnosing spinal cord tumors. He tried different methods to find spinal cord tumors during the operation. He passed a rubber catheter subdurally three segments at thoracal levels until it met an obstruction so that it could find a thoracal spinal cord tumor.

Elsberg reported some of his important contributions to the history of medicine in his article "Mount Sinai in the late nineties and the beginning of neurosurgery in the hospital" published in the Journal of the Mount Sinai Hospital in 1938 (8). In this article he mentioned his great contributions to the development of the neurology and of neurosurgery wards at Mt Sinai. His difficulties in the long road in the development of spinal surgery were detailed in this article.

Elsberg together with Drs. Harvey Cushing and Charles Frazier have persuaded the American College of Surgeons to designate as a separate clinical specialty. Cranial neurosurgery was developed by Cushing and other giants, spinal cord surgery was developed by Dr. Charles Albert Elsberg (1). Dr. Charles Albert Elsberg's efforts to develop and improve spinal cord surgery techniques will always be remembered by neurosurgeons performing spinal cord surgery.

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Manuscript submitted May 21, 2012.
Accepted June 04, 2012.

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