

Raleigh Neurosurgical Clinic

*Looking back on 60 Years
and Looking Ahead*

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Looking back on 60 Years and Looking Ahead

Raleigh Neurosurgical Clinic has thrived for six decades, maintaining a commitment to excellence and incorporating the best in medical science and practice. Today, sights are set on continuing a legacy.

LeRoy Allen, M.D., founded the practice in 1954, a time when the field of neurosurgery was still in its infancy, and neurosurgeons were extremely sparse. In the 60 years since, neurology and neurosurgery have experienced a series of major advancements in re-

search and technology that have led to the wide range of surgical techniques available today.

A look back reveals an amazing evolution. Interestingly, some concepts that emerged since the 1950s are still important to this day.

Before the polio vaccine was introduced in 1955, the disease had reached epidemic proportions. In the first half of the decade, neurologists spent most of their time treating polio patients, and it was not uncommon for them to perform whatever surgical procedures were needed.

While spinal surgery was available, it only included a limited number of procedures and diagnostic tests, and surgeons still didn't understand the cause of many common problems. At the time, X-rays and myelography were considered less reliable than a physical exam.

Throughout the decade, neurosurgery experienced a number of dramatic improvements in the diagnosis and treatment of neurological problems. The angiography was introduced, and neurosurgeons began seeing many more patients with chronic neck and back pain, head trauma, headaches and disorders of the spine or peripheral nerves. The integrated circuit also was invented in the late 1950s, which paved the way for the introduction of automated and programmable computational machines.

The '50s may have experienced some major advances, but the techniques that truly revolutionized the field of neurosurgery were mostly developed in the 1960s. Sometimes referred to as the "decade of technology," transformation occurred on many fronts for neurology and neurosurgery.



Robert Allen, M.D.

While NASA focused on putting a man on the moon, physicians developed concepts that would lead to the first computed tomography (CT) scanner and the first microscope to be used in the operating room.

Important surgical advances were made for lumbar fusion, and a number of new approaches were developed for treating thoracic disc herniation. Microsurgical techniques also were developed for the first time and would go on to become an essential component of neurosurgery in the future.

This momentum continued into the 1970s, which were regarded as a period of tremendous growth in research, education and patient care for neurology. By far the most significant discovery of this era for neurology – and one of the greatest discoveries in the field of medicine – was proliferation of neuroimaging technologies.

In 1972, G.N. Hounsfield produced the first prototype of the CT scan and introduced it to the market in 1973. Magnetic resonance imaging (MRI) and positron emission tomography (PET) followed in the next few years, and though they were primarily used for research purposes only in their earlier days, their invention radically improved the ability of neurosurgeons to view the brain and spine. The decade also saw the development of many important treatment modalities for various neurological disorders like stroke, epilepsy and muscle disorders.

With the advent of neuroimaging, improvements in neurosurgery continued on into the 1980s. CT, PET and MRI scans became commercially available during this time, and they soon experienced widespread application throughout the entire country. Their introduction to clinical practice helped neurosurgeons exponentially in the diagnosis and man-

agement of a wide variety of neurological disorders. Research into both Parkinson's and Alzheimer's disease was enhanced during the '80s with landmark discoveries that would lead to improved treatment methods.

The era – which witnessed the first reports of acquired immune deficiency syndrome, identification of the prion in causing spongiform encephalopathy and application of antiplatelet agents for stroke – also saw greater understanding of neuroimmunology. Finally, stereotactic surgery experienced significant improvements of its own that would be expanded upon in coming decades.

The 1990s were defined by a continuing explosion in knowledge about the biology of neurological disease and an increase in the application of many techniques that had only been studied in the past. For the first time, a variety of new options became available for several neurological problems that had not yet been used. These included the first use of intraoperative imaging and the introduction of artificial discs to the United States, which had been used in Europe previously.

In addition, though pharmacotherapy remained the most widely used means of coping with illness, interest in deep brain stimulation and pulsed radiofrequency (PRF) lesioning experienced resurgence and soon began to be used in conjunction with pharmacotherapy.

Electrical stimulation of the brain using fish (the electric ray) to treat headaches was first conceived in ancient times, according to Vittorio A. Sironi in his study *Origin and Evolution of Deep Brain Stimulation*. Since then, electrical stimulation has been used to modulate the nervous system and to treat some neurological disorders

Today, deep brain stimulation uses an implantable pulse generator to deliver elec-



trical stimulation to specific areas in the brain as a way to block abnormal nerve signals that cause debilitating neurological symptoms.

Radiofrequency lesioning to block the transmission of chronic, debilitating pain is a variation of conventional continuous radiofrequency (CRF), which has been in use since the mid-1970s. Today's CRF technology uses safer pulsed radiofrequency heat to create the pain-blocking lesions on nerve tissue.

Significant progress also was made in the treatment of spinal cord diseases and traumatic brain injuries, and campaigns continue today to help increase public awareness about the dangers of these problems.

Progress in the fields of neurology and neurosurgery has shown no signs of slowing down in the current century and into today. Breakthrough discoveries linked to molecular biology and genetic engineering apply directly to the nervous systems and have helped usher in a new understanding of many conditions with novel approaches to treatment.

The fields of biology and technology have continued to merge and open up new possibilities in neurosurgery, like robotic surgery and the brain-machine interface and optogenetics, in which a light source is used to activate certain neurons and inactivate others. With continued innovations and technological advancements, the potential of neurosurgery in the years to come is only expected

to grow as neurosurgeons brave novel techniques never before thought possible.

During the past 60 years, Raleigh Neurosurgical Clinic has witnessed these advancements in neurosurgery, and efforts have been focused on integrating the best in neurosurgical practices into its services.

Today, Dr. LeRoy Allen's son, Robert L. Allen, M.D., his partners Russell R. Margraf, M.D., and Timothy B. Garner, M.D., and Kenneth J. Rich, M.D., are continuing the practice with an unyielding commitment to excellence. This assures a new generation of patients can benefit from even more effective treatment as medical advances continue in the coming years and beyond.

Raleigh Neurosurgical Clinic is located at 5838 Six Forks Road., Suite 100, Raleigh, 27609. For more information, call (919) 785-3400 or visit online at www.raleighneurosurgical.com.

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