

The Current and Future Situation of Neurosurgery in Austria

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Received: March 1, 2015; Accepted: March 15, 2015

Keywords: Neurosurgery in Austria; History of Neurosurgery in Austria

Only two decades after Sir Victor Horsley had performed the first surgical procedure on the human brain in 1885 in London, Prof. Anton Freiherr von Eiselsberg succeeded in performing the first neurosurgical operation in 1904 in Vienna. This procedure, during which a cerebral glioma was identified and successfully resected, can be called the birth hour of Austrian Neurosurgery. Prof. von Eiselsberg in turn became a very trustful proponent of this new surgical discipline. At the same time, Hermann Schloffer, Chairman of the Department of Surgery in Innsbruck, pioneered the transsphenoidal approach to the pituitary gland. Similar approaches were then used by Hans Chiari, Leonhard Hochenegg, and Anton von Eiselsberg. It should be pointed out that even Harvey Cushing used the transsphenoidal approach as established by Schloffer in his cases. The number of 168 brain tumor operations performed until 1913 at the Department of Surgery in Vienna is remarkable. Moreover, Eiselsberg performed the first reported successful surgical procedure on a spinal cord tumor in 1907 in Vienna.

Since then Austrian artists, philosophers, and scientists have significantly contributed to human history, including physicians like Sigmund Freud and Nobel Prize laureate Wagner Jauregg, who added to our knowledge in neurology, as well as Nobel prize laureate Karl Landsteiner who discovered and first described the ABO blood group system. Austrian surgeons have significantly contributed to medical sciences, including Semmelweis introducing antiseptics in obstetric surgery and Theodor Billroth describing new techniques in abdominal surgery.

Thereafter, World War I, with its multitude of severe traumatic brain injuries, inadvertently further promoted the new discipline of Neurosurgery. After World War I, Neurosurgery initially developed at a rapid pace in post-war Austria. Further development was, however, impeded by the big caesura in social, economic, and scientific life in the late 1920s and particularly by the emigration of the intellectual elite at the brink to World War II. This

situation posed tremendous challenges for Egon Ranzani and Leopold Schönbauer, the chairmen of the Department of Surgery at the Vienna General Hospital (Allgemeines Krankenhaus) by then. Finally at 1964, Neurosurgery became an independent specialty. The beginning of academic neurosurgery was marked by the appointment of Herbert Kraus as the first chairman and ordinarius of Neurosurgery at the University of Vienna in 1964. His pupil and successor in this position became Wolfgang Koos, who pioneered microneurosurgery in the early 1970ies. Axel Perneczky and Engelbert Knosp thereafter established minimally invasive key hole approaches and endoscopic approaches in neurosurgery. Bernd Richling pioneered endovascular neurosurgery in the 1980s as a fully integrated part of neurosurgery, thus keeping vascular pathologies as a main topic in the Department of Neurosurgery in Vienna. At the same time, Prof. Heppner and Prof. Kloss established academic neurosurgical services at the universities of Graz and Innsbruck.

Hence today in Austria three University Centers in Vienna, Graz, and Innsbruck, as well as a future University Center in Linz, a Private Medical University in Salzburg and local centers in Vienna, St. Pölten, Wiener Neustadt, Klagenfurt, and Feldkirch serve a population of 8 million inhabitants, which is unevenly distributed between the large catchment areas in the eastern flatlands and the alpine regions in the western part of the country.

Austrian neurosurgery has established many international cooperations with leading centers in Europe and America, including the long standing connection between Prof. Koos and Prof. Spetzler, which resulted in the writing of the world renowned Color Atlas of Microneurosurgery, and the long standing cooperation between Prof. Knosp and Prof. Samii, which has again resulted in significant contributions to the scientific neurosurgical literature. Currently Austrian neurosurgeons are actively involved in the World Academy of Neurological Surgery (WANS), the endocrinological section of the World Fed-

eration of Neurosurgical Societies (WFNS) and the cerebrovascular section of the European Association of Neurosurgical Societies (EANS).

The situation of neurosurgery in Austria is special insofar as neurosurgery often functions as a basic neuroscience platform for the management of disease. Gamma knife neuroradiosurgery performed by neurosurgeons has turned out as an ideal complement to skull base surgery as well as in multimodal treatment of vascular pathologies. Endovascular therapy of cerebrovascular disease was first performed by neurosurgeons in the late 1980s at the University of Vienna, later the endovascular service was provided also by radiological departments in Graz and Innsbruck. Today, neurointervention is performed by neurosurgeons at the University of Vienna and the Private Medical University Salzburg, further promoting the concept of multimodality management of cerebrovascular disease by hybrid neurosurgeons.

Neurosurgery is a field that cannot be mastered by one specialty alone. Many fruitful cooperations have been established over the years at the vast majority of Austrian neurosurgical centers with ENT surgery and maxillofacial surgery. The field of peripheral nerve surgery in Austria and essentially world wide has been mastered by Prof. Hanno Millesi, who chaired the Unit of Plastic Surgery at the University of Vienna from 1961 to 1993. Prof. Millesi began his scientific and surgical work on peripheral nerve surgery in the early 1960s and devoted the vast majority of his professional life to the advancement of microsurgical management of plexus and peripheral nerve lesions. The work of Perneczky and Knosp would not have been possible without the closest relationship to the Anatomical Department of the University of Vienna, where Man-

fred Tschabitscher pioneered endoscopic neuroanatomy.

Neurosurgery today is better understood as a field of neuroscience that continues to evolve in ways that will significantly impact medicine as well as patient care. Through a collective brain trust of clinical and institutional knowledge, as well as our mutual commitment to and passion for advancement of treatments, we are endowed with a great responsibility. Neurosurgery currently functions as a platform of cooperation between surgical specialties, medical specialties and basic science, all devoted to the further improvement of neuroscience. An active cooperation in the field of image guided neurosurgery, robotic neurosurgery, and surgical simulation has recently been established with the University Center in Calgary.

Such cooperations extend to Neurology in the fields of awake craniotomy and preoperative epilepsy monitoring, as well as to Endocrinology in the field of pituitary surgery and to Pediatric Medicine in the field of pediatric neurooncology. Future research, including stem cell transplantation for the management of traumatic brain injury, spinal cord injury, and stroke, as well as functional neurosurgery involving deep brain stimulation for a possible management of psychiatric disorders, e.g. depression, will require extensive cooperation with basic scientists and can only succeed if we make use of the full potential of translational research in the field of neuroscience.

International cooperation, as stimulated by this new International Neuroscience Journal, will create new intersections of thoughts that will further inspire us to carry out our missions and meet our full potential as difference makers in the field of neuroscience and neurosurgery.