History of Cranial Nerves Surgery.
Introductory Lecture

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One expects a real introduction to start with a historical review which leads from the earlier roots of knowledge of the topic in concern to the present situation, outlines the actual problems and finally gives some perspectives of future development. The earlier the historical starting point, the better an introduction.

To fulfill these requirements I travelled to Greece. You certainly remember that in prehistoric times neurosurgery started in this area and that the first major published neurosurgical operation was the delivery of the goddess Athena from the head of her godfather Zeus. Therefore I asked the delphic Sybilla whether she could give me some informations about the beginning of cranial nerve surgery. After appropriate opening of my mind by smoke and a lot of Greek wine, she told me that I was foolish to travel to Greece. I should have known myself that neurosurgery started with cranial nerve surgery, with other words, that cranial nerve surgery is the fundament of neurosurgery, a statement which clearly underlines the importance of this meeting. I needed some more rhezina, this strange but lovely resined wine, to understand the meaning of this very delphic information. Zeus, when pregnant with his daughter Athena in his forehead, suffered from a neuralgia of the first trigeminal branch, surely a symptomatic trigeminal neuralgia, and was cured by removal of the tumor-like girl.

The differentiation between idiopathic and symptomatic trigeminal neuralgia had been unknown in those prehistoric days and is an invention mainly of our last century. You will learn during this symposium, that we are going to return to the wisdom of old Greek goddesses and doctors and to abandon the idea of essential or idiopathic trigeminal neuralgia, detecting more and more real and treatable causes of seemingly idiopathic neuralgias. One of the pioneers in this field, Dr. Jannetta, is present at this course as one of its initiators and lecturers.

Also in more recent times surgical procedures for cranial nerve diseases and symptoms belong to the beginning of modern neurosurgery. The first major operations for relief of optic nerve compression by transcranial subfrontal or subtemporal approach were done as early as 1889 by Horsley, followed by Krause (1900), Kiliani (1904), Schloffer (1907), Halstead (1909), only to mention some pioneers in neurosurgery.

The first intracranial operation for treatment of trigeminal neuralgia was performed by Horsley in 1891, unfortunately with fatal outcome. It was Fedor Krause who in 1892 successfully sectioned the second and third branch of the trigeminal nerve by an intracranial approach and in 1893 removed the trigeminal ganglion in order to treat trigeminal neuralgia.

The next important steps were:
- the retrogasserian section of the trigeminal root, using a subtemporal approach, first published in 1901 by Spiller and Frazier,
puncture and alcohol injection into the gasserian ganglion by Härter in 1913,
subtentorial approach and trigeminal root section by Dandy (1925),
electrocoagulation of the trigeminal ganglion (Kirschner 1933),
Sjöqvist’s procedure of transsection of the descending spinal trigeminal tract (1937)
and attempts to cure trigeminal neuralgia without neurological deficit by decompression procedures (Taarnhøj 1952, Stender 1953).

The last steps towards optimal treatment of trigeminal neuralgia have been the thermocontrolled selective trigeminal rhizotomy in the modification of Sweet, which tries to mainly destroy the poorly myelinated fibers for pain and thus to preserve the other functions of the trigeminal nerve, and the search for vessel loops and other mechanical factors which irritate the trigeminal root thus producing seemingly idiopathic trigeminal neuralgia, in order to treat the very causes of this disease without any function loss. Dandy was the first to perform this last mentioned way which nowadays is mainly propagated by Jannetta.

The long history of neurosurgical attempts to treat trigeminal neuralgia clearly shows two main tendencies:

- to improve our knowledge about the reasons of cranial nerve diseases in order to find causative treatment possibilities,
- or to treat the symptoms with a minimum of neurological deficit.
- Both trends are to be followed also in diseases of other cranial nerves.

Before leaving the trigeminal nerve I have to mention that neurosurgeons not only and always try to destroy this nerve but, in some special situations, to restore its function. To the best of my knowledge it was Samii, initiator, organizer and host of this course, who first described the reinnervation of the important first trigeminal branch by nerve graft.

Similar to the optic and trigeminal nerves also lesions of the VIIth and VIIIth nerves have been in the center of neurosurgical attention. The acoustic-vestibular nerve has the unfortunate tendency to produce neurinomas. The removal of these neurinomas confronted neurosurgeons with the problems of preserving the facial nerve or to restore its function when preservation failed. Improvement of operative technique improved not only the results of acoustic neurinoma removal regarding mortality and morbidity but also with regard to facial nerve preservation. The present state of operative technique recently has been described by Yaşargil (1977).

For restoration of facial nerve function or compensation of its loss, had the preservation of this nerve not been possible, four main ways have been used:

- plastic surgical methods for restoration of facial symmetry,
- anastomoses of the facial nerve with other nerves, mainly with the accessory, hypoglossal or phrenic nerves (for literature see Loew and Kivelitz 1973),
- anastomosis with the healthy facial nerve of the other side (Samii 1976, 1980),
- intracranial suture of the facial nerve or bridging or bypassing a facial nerve defect using a nerve graft. Prototype and starting point of this last mentioned possibility has been the Dott procedure (Dott 1958). Charles Drake as well as I myself tried the method of Norman Dott in the early 1960’s – like Dott without having a microscope – with remarkable good results.