Acoistic tumors have been observed at autopsy at least since the eighteenth century, and isolated clinical accounts of this condition began to appear during the first half of the nineteenth century. During the second half of the nineteenth century, the clinical diagnosis of acoustic tumors was perfected as more cases were reported and as the mechanisms of cerebellar function were elucidated by experimental studies. Ancillary techniques were soon developed to further perfect the diagnosis of these tumors.

“In 1912 the young Swedish pathologist, Folke Henschen, soon to become Professor and now one of the world’s leading neuropathologists, added an important contribution. He was already well known as an authority on acoustic tumors. In his communication Henschen gave an excellent up-to-date account of the value and limitations of radiology in the diagnosis of brain tumors and went on to describe how he had found at autopsy that acoustic neuromas nearly always widened the internal auditory meatus. He felt convinced that this feature should be demonstrable radiographically in life and he sought the aid of his radiological colleague Dr. Forsell....

“In February, 1910, Henschen had a case of suspected acoustic tumour which he submitted to radiography. Unfortunately only one side of the head was X-rayed and the patient was allowed to depart. Henschen had to wait just over a year for another case (March, 1911). On this occasion he obtained two radiographs, one of the normal and the other of the abnormal meatus. The patient died in April and Henschen confirmed the radiographic findings at autopsy....”

By later modifications in radiological technique, Stenvers and Towne each increased the usefulness of Henschen’s original observation.

Another significant contribution to the diagnosis of acoustic tumors was made by Robert Bárány when he originated the caloric tests of vestibular function. Bárány had been born in Vienna in 1876, and after his formal medical training, he returned to that city to practice. He restricted his work to otology and soon became widely recognized for his studies of vestibular function.

“...In 1913-1914 he was awarded a number of international prizes, culminating in his selection as Nobel laureate. The confusion which accompanied the outbreak of the First World War caused postponement of the 1914 award until 1915. At that time Bárány was a Russian prisoner of war in Siberia. Through the intercession of the Swedish Red Cross, however, he was released, and the award presented to him through diplomatic channels. ...”

The operative treatment of acoustic tumors began during the last decade of the nineteenth century.

“... However, in most cases, the results were poor. ... At the International Congress of Medicine in 1918 in London, von Eiselsberg reported 16 cases with 16 immediate fatalities, Krause 31 cases with 26 deaths. Thus, the over all operative mortality in this condition was almost 80 per cent. These poor results were attributed by Cushing to excessive emphasis on speed of execution and attempts to remove the tumor completely by finger enucleation. As was his custom, he proceeded in a much more painstaking manner, with the result that he was able to lower the operative mortality to 15 per cent by 1917....

“Feeling that none of the originally used procedures provided enough room, and that the cerebellum and brain stem were traumatized by efforts to work in a restricted field, Cushing utilized the cross-bow incision, and recommended that the entire operation, wherever possible, be carried out in one stage. After performing a bilateral cranietomy, and tapping the lateral ventricle, the dura was opened in stellate fashion, the cerebellar hemisphere retracted medially and the tumor exposed. Cushing felt that attempts at total extirpation had led to the high mortality rate, and therefore suggested merely incising the capsule of the tumor and enucleating the tumor piecemeal from within, leaving the capsule in situ....”

“In November, 1920 Cushing, in remarks at a meeting held at the Peter Bent Brigham Hospital, reported final statistics in 47 cases of acoustic nerve tumors with end results and pointed out that among the last 19 consecutive patients operated upon by him there was only one surgical death, bringing his operative mortality for this most difficult surgery down to 5.3 per cent!...
"By a curious coincidence, in the very year (1917) that Cushing published his classic monograph 'Tumors of the Nervus Acusticus,' in which he made the following statement: 'I doubt very much, unless some more perfected method is devised, whether one of these tumors can safely be totally enucleated,' Dandy[10] presented before a local meeting of the Johns Hopkins Medical Society a patient from whom he had successfully extirpated in toto a tumor of the nervus acusticus while his surgical chief, Dr. Heuer, was out of town. This trick of fate seemed to fire Dandy with a special zeal to out-do Cushing in the latter's own special domain. . . .

"In 1932 Dandy[10] reported two more successful total removals of acoustic nerve tumors, and in 1935[11] he reported 17 cases in which the tumor had been totally removed, but with 7 deaths; however, in 12 of these cases the tumor had been shelled out with the finger and all of the 7 deaths occurred in this group; in the 5 cases in which the capsule had been carefully dissected away from the pons there were no deaths. In 1934 Dandy[12] described an operation for the removal of acoustic nerve tumors through a unilateral approach, but did not give any statistical results for this modification. . . ."[24]

Seven years later, Dandy[13] supplied these results. There had been only 5 deaths in his series of 46 cases, a mortality of 10.9 per cent.

"The great disadvantage of the total excision method of treating acoustic tumors was the facial distortion resulting from the damage to the seventh nerve. Although surgeons had considered attempting to spare this nerve, it was not until 1931 that this was achieved. Cairns[6] in the course of removal of an acoustic tumor recognized the nerve and was able to complete the excision without sectioning or destroying it. Olivecrona[22] after 1937 attempted to save the nerve in every case. In 1940 he reported on 25 cases with anatomical preservation of the nerve in 15 cases. In 14 of the latter facial paralysis developed, but function returned in a few months to a year in almost all cases. . . ."[17]

The experience of other neurosurgeons with the techniques of Cushing and Dandy showed that the morbidity and mortality associated with the total removal of acoustic nerve tumors was consistently greater than the morbidity and mortality accompanying their partial, intracapsular removal.[16,19,21,37]

". . . Survival after operation, however, is not the only consideration in evaluating the operative results. As reported by Cairns,[6] among 10 patients who had had intracapsular removal of the tumor by Cushing while Cairns was associated with Cushing, there were 8 survivors after an interval of 9 years, but only 3 were able to work, 2 had considerable disturbance of gait, and 3 were severely incapacitated. Givré and Olivecrona (1949) further pointed out that 50 per cent of their patients who had had the intracapsular operations had either died or had been reoperated upon within 3 to 4 years with a 50 per cent mortality attending the second operation."[24]

These experiences, combined with the development of techniques for restoring the function of the facial nerve, have resulted in the present emphasis on the total removal of acoustic tumors.[20,24]

References