VI.

INDICATION FOR THE LABYRINTH OPERATION, WITH REPORT OF EIGHT OPERATIONS AND SIX CASES IN WHICH NO OPERATION WAS PERFORMED.*

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In this series of operations my indications for operative procedure were based upon the teaching of the Vienna school of otology, headed by Neumann, Alexander, Frey, Bárány, and Ruttin.

At this time, under certain conditions, a labyrinth operation was recommended when the acoustic or static labyrinth was intact, and many operations were done in such cases, usually with good results. About two years ago the attitude seemed to change in regard to operative indications, and at present the entire labyrinth must be destroyed before an operation is indicated.

In my series of eight cases, four presented complete destruction of the labyrinth, and in four the static labyrinth only was destroyed.

In one case the horizontal canal was opened from the fistula to the vestibule and the cochlea broken off—all the others were operated on by the complete Neumann method. No facial paralysis or other complication resulted, and all recovered. The cases not operated upon assume more importance, it seems to me, because they fulfilled the indications for operation according to either classification.

Case 1.—Female, aged twenty-one years. Had ordinary diseases of childhood. Acute suppurative otitis following scarlet fever at the age of eight years. The discharge continued uninterruptedly for two years. Adenoids were removed and drops used in the ear, which remained perfectly

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dry for one year. Since that time the ear has discharged more or less.

Examination.—Weber towards good ear. Schwabach somewhat shortened. Rinné, right ear, positive; slightly shortened bone conduction; left ear, negative; considerably shortened bone conduction; very much shortened air conduction. Right ear, whisper twenty-five feet; left ear, on contact. Acoumeter on contact. Right ear apparently normal. Left ear, caries of the attic wall with a fissure extending into same. Some granulation tissue about this fissure with a tendency to bleed on manipulation with a probe.

January 19, 1905, radical operation with closing by Koerner flap. Posterior wound healed by primary union. On removing the periosteum from the mastoid the bone was of a dark blue color. This was produced by the carious necrotic mass of the mastoid cells. The outside shell of bone was more porous than under normal conditions. The hammer and incus were almost destroyed by caries. There was a fistula posteriorly and below the facial nerve. However, it was curetted as well as possible by the use of straight and curved curettes. I wish to direct particular attention to this lesion, as I consider it wholly responsible for the symptoms that will be recorded later. The wound was dressed every second or third day. The patient complained of so much dizziness, headache and pain on the side of the head that she remained in the hospital for thirty days. I attributed some of the headache to a compound astigmatism, which was partially relieved by the continuous use of her glasses. While in the recumbent position she was not dizzy. When she assumed the erect position she would become very dizzy, and at one time she fell from her chair. This can be accounted for in but two ways: First, injury to the semicircular canals at the time of operation; second, to an infection which most likely took place by way of the fistula which I described before.

Twenty-four hours after operation she was reported by the nurse to be delirious. This happened two or three times in the course of as many days. She complained of headache and soreness about this side of the head, which gradually subsided. When she began to walk, her gait was that of a person with a fractured pelvis. She is a highly sensitive, hysterical woman, and I attributed part of the cerebral manifestations to her mental condition. The fundus was normal.

March 27, 1905. The ear absolutely dry, hearing improved.

May, 1905. Seropus began to discharge from this fistula and continued until September, 1905, at which time I again performed a curettement. The wound was treated antiseptically until November, 1905, when she was again discharged as cured.

Since the recovery from her primary operation she has had no cerebral symptoms of any kind.

March 21, 1906. Complains of intense headache over this side of the head, and dizziness a great deal of the time. The whole of the temporal bone on this side was tender to pressure, and the slightest percussion would elicit excruciating pain. At this time there was a serous discharge from this fistula, which in the course of two weeks disappeared entirely. The cerebral symptoms continued with acute exacerbations, at times so severe as to require morphin. Her pulse repeatedly reached 50, full and strong. She had some vomiting which was probably due to morphin. Examination of the eye, negative. Physical examination, negative.

At repeated consultations operation was recommended by all but one physician, who maintained that the condition was a nervous manifestation.

May 15, 1906. Patient entirely well. Cerebral symptoms entirely gone.

Diagnosis.—Serous meningitis. Infection by way of the fistula to the semicircular canals and the aqueductus vestibuli. This explains the cerebral symptoms that followed the primary operation, as well as those that followed in the later infection. During the first infection the cerebral symptoms were scarcely sufficient to warrant further operative procedure, because they seemed to improve almost daily after the second or third day. However, when we are confronted with cerebral symptoms later, and the only possible source of infection is by this fistulous communication, it must be admitted that it was by this route. Furthermore, the patient had an association of cerebral symptoms such as dizziness, headache and localized pain on the affected side, which is suspicious of cerebral complications, especially when all the mastoid cells have been removed. In the near future it will be considered conservative surgery to open and to explore.

My diagnosis prior to her recovery was different. At thi time I thought she had an extradural abscess or brain abscess.

with a decided leaning for an extradural abscess of the posterior brain fossa, infection by way of the semicircular canals and the aqueductus vestibuli. No doubt the infection traveled this route and was a nonbacterial invasion. I wish also to call attention to the fact that the fistula, which was discovered at the primary operation and which has apparently been responsible for the infection that followed, should have been destroyed entirely, at the sacrifice of the facial nerve, to remove all possibility of subsequent cerebral affection. Or is it better to trust to fortune, as I did in this particular case, and almost lose the patient?

Case 2.—Woman, aged twenty years, stenographer, had discharge from the ear since childhood, and frequent attacks of facial erysipelas, also repeated attacks of vertigo for several years past.

Examination.—No pain or sensitiveness on pressure or percussion; entire destruction of the membranum tympani; small granulation protruding from the attic. Whisper, three inches. Weber to opposite ear, marked adhesive process in the other ear. Rinné, negative. $C,^{1}$ positive; C, negative; $C,^{4}$ positive. Watch on bone, positive. Vertigo, positive. Tinnitus, positive. Spontaneous nystagmus, negative. Caloric reaction, positive. Hearing, seven-foot tube, whisper positive.

Operative Findings.—Caries of attic and antrum; dura uncovered to the extent of two thumb nails. Fistula of the oval window with a blackened margin about it, demonstrating that it has existed for a long time; a good sized probe was introduced into the fistula. Neumann plastic: grafts in the usual manner and wound closed.

First day after operation everything satisfactory; second day, some vertigo; third day, vertigo, nystagmus to the opposite side, vomited five times; fourth day, dressing removed; not so much nystagmus; patient vomited twice. Grafts all adherent.

During the four days the patient had no fever; the vertigo and nystagmus disappeared gradually. The patient left the hospital in ten days, well in twenty-eight days.

Observations.—My only careful examination of this patient das made nine months prior to operation. From the examination as made at that time the cochlea and canals were intact, so that a radical ear operation would not have been attended with risk to the patient's life; but when I found a fistula, and

an old one at that, I felt sure there would be induced an acute exacerbation of the old labyrinth suppuration. However, the patient made an uninterrupted recovery. This patient should have had an operation on the labyrinth at the time of the ear operation, or no operation at all.

I relate this case in detail to accentuate the importance of repeated examinations, if operation is delayed.

At the time of examination the patient heard whisper at three inches.

If my labyrinth instruments had been accessible, I would have destroyed the labyrinth at once; as they were not, I concluded the operation with a skin graft. The patient made a good recovery, which can be attributed to good luck rather than to modern otology.

Case 3.—Female, aged twelve years. Discharge from ear since infancy; frequent attacks of pain back of the ear; frequent attacks of vertigo. This last attack began three days ago. Acute exacerbation of the chronic suppurative otitis media; pain on whole side of head. Vertigo so severe that when she moved her head she would vomit. She said the pictures seemed to jump on the wall.

Examination.—Painful on this side of the head, and especially so over the mastoid. Marked nystagmus to the opposite side and to the same side. Nystagmus of the third degree. Meatus swollen to such an extent a clear picture of the membrane could not be secured. Weber to the good ear, Schwabach shortened. Watch on bone negative. The hearing test was positive, but not properly made. By the introduction of cold water into the ear we thought the nystagmus was increased. Hot water did not seem to influence it in any way.

The following morning a radical ear operation was done.

Operative Findings.—Large pneumatic mastoid; cholesteatoma; fistula of horizontal canal; facial uncovered just below fistula. Plastic operation completed.

The following day some additional fever. Beginning facial paralysis; headache. Second day, semicomatose; head retracted, neck stiff; meningitis; facial paralysis; absolutely no hearing; no caloric reaction. Advised immediate labyrinth operation, which was refused. Patient continued in this condition for a few days and began to improve. The facial paralysis recovered entirely. The ear continued to discharge; no hearing; no caloric reaction; the rotary test later positive

for a destroyed labyrinth. At my first examination I had misinterpreted the findings in regard to hearing and the caloric reaction.

According to all the rules of otology this case should have died of a purulent meningitis. The patient has had no ear symptoms since she left the hospital. The ear continues to discharge.

Case 4.—Female, aged twenty-four years. Acute otitis in both ears for two weeks past, following influenza; past four days has had fever of 103½°; marked vertigo, nausea and vomiting.

Repeated incision of the drum membrane by family physician.

Examination by myself. Patient suffering great pain; temperature 102½.° Intense pain over the head and especially back of either ear; marked nystagmus to either side, more to the right. Would vomit when she attempted to move about in bed. Meatus on both sides closed by swelling; pus present. Operation on both ears was performed as soon as instruments could be secured.

Operative Findings.—Large pneumatic mastoid on both sides: dura uncovered on both sides in my effort to remove all carious bone. Operation completed.

The following day the temperature dropped to about 100°: not so much vertigo; no vomiting.

On the following day the temperature continued 101°; dressings changed and a wet bichlorid (1/3000) substituted. After four days of this wet dressing the temperature was 99 to 99½.° Very little vertigo. The dressings were made with dry gauze, and in the course of ten days she was about her room. Discharge from the ears stopped in a very short time following operation.

Three weeks following the operation the patient said to me that she did not hear. I could demonstrate with the tuning forks that she could not hear, which was verified by long speaking tube, noise apparatus, etc. Caloric reaction negative. Was free from vertigo in three weeks. The ear continued to discharge for about ten weeks. Undoubtedly this patient had a purulent labyrinthitis, which for some reason recovered in spite of her physician.

I neglected to make a more thorough examination because the apparatus for examination was not at hand, and I felt

that I could not put off operation to make a more thorough examination.

Case 5.—Male, aged seventeen years. Discharge from both ears since he was three years of age, following scarlet fever. This illness also destroyed his hearing. This case had the radical ear operation in. 1907 on both ears, neither one of which recovered, but continued to discharge pus. At this time I was not familiar with the findings of the labyrinth in chronic suppurative otitis cases of deafmutes.

Three years later a labyrinth operation was necessary on the left ear because of such symptoms that called for immediate action. This ear is now well and has remained so since the labyrinth operation.

The right ear has discharged off and on, four or five times a year for four to six weeks. Treatment with antiseptics relieves the condition. No hearing at all: caloric reaction, negative; turning has no effect whatsoever.

It is readily understood how some of these cases are misinterpreted. Some were overlooked because of lack of the proper way of arriving at a definite conclusion, and others were not subjected to the proper examination because it was almost impossible to make it under existing conditions. However, the patients recovered, which is most astounding to me, a believer in the Vienna school of otology and its teachings; at the same time I am more skeptical than I was as to the serious nature of the labyrinth infection, and that meningitis usually goes by the route of the labyrinth.

On the other hand, only two of the six cases are free from discharge, and they may at any time have a labyrinth affection or an infection of the meninges by way of the labyrinth with sudden serious complications.

The four cases that had remnants of hearing or a slight reaction following the use of cold water are all cured and out of danger. This speaks for the more thorough operation.

I am of the opinion that the pendulum will swing back again and include as favorable for labyrinth operation such cases as have only remnants of hearing on the one side, and no caloric reaction, or vice versa; so long as they remain in the present stage, they occupy the same position in surgery as a chronic appendicitis.

Does it not seem obvious that this is rather a dangerous

condition to allow? They do not get well of themselves, and only progress to a more serious complication as time goes on.

The more I reason with myself the more I am convinced that surgical interference in the cases spoken of will yield the best good for the greatest number.

In regard to my reported cases, in the light of modern otology, they should not have recovered. I cannot reconcile myself to the fact that they survived. However, my leanings are strongly towards operation.