

3. In every chronic case there should be a routine digital examination.

4. Where much tissue has been found and removed, the process of healing should be watched that no fibrous bands form.

5. It is possible in a large majority of cases to predict the involved ear by the condition of the corresponding fossa.

6. Results, where after-treatment is followed, are particularly good in removing abnormal sensations, restoring uniform hearing without fluctuations in the partial or complete relief of tinnitus, and in the prevention of recurring salpingitis.

7. If directions are given to blow one side of the nose at a time and carefully, the affected tube is no more apt to be infected later than its fellow.

A PERIOSTEAL FLAP FOR USE IN PRIMARY AND RADICAL MASTOID OPERATIONS, WITH AN ILLUSTRATIVE CASE.*

BY GEORGE A. LELAND, M.D., BOSTON.

I SIMPLY want to show you one case: a woman, about twenty-five years of age, operated on a week ago for chronic inflammation of the middle ear and mastoid with caries. The patient's trouble began at seven years of age after measles and scarlet fever, both so near together as to practically be at one time. At nine years of age had discharge from left ear of uncertain duration. Five years ago she had discharge which lasted two months, and at that time there was some tenderness over the mastoid on pressure with very disturbing symptoms which, however, disappeared later. A week before she came into the hospital she had an earache with more or less absorption, shown by malaise, temperature, dizziness, headache and tenderness over the mastoid tip. The radical operation as usual was performed; the whole of the mastoid process being taken away (it was sclerotic in part) including the brittle tegmen antri. There was hardly any pus. The antrum and middle ear were more or less carious throughout.

The reason I bring forward this case is to show the results of a method I have been using for a couple of years to obliterate the posterior exenterated mastoid cavity, so that after the completion of the process the dermatized middle ear may be seen at the bottom of an external canal not much larger than before. The posterior cavity is a nuisance to a great many patients, depending, of course, on its size. Sometimes we have a very large cavity which one or more times a year, or oftener, has to be cleared out on account of the accumulation of cerumen and effete epithelial debris in this cicatricially dermatized cavity. Therefore, we have occasionally to perform more or less of a toilet to keep this cavity clean. Now, how can this be obviated?

Let me first recount the procedure in acute cases.

In ordinary mastoid operations for acute cases we clear out the cavity, pack it, and allow it to fill up. If in the healing we get a deposition of bone in the aditus then our mastoid cavity is shut off. If we have a deposition of new bone throughout the whole cavity we have no cavity to

be reinfected, therefore we do not get secondary mastoiditis. Probably many of us have had to do a mastoid operation over again, much to the disgust of the patient and others, including ourselves. The reason is, as you know, that if we get infection through the Eustachian tube into the middle ear and into the aditus, and our posterior cavity has not been filled up, we have the same liability to mastoid disease that we had in the first place. It has happened to me to have to do a secondary mastoid after a few months, and I had one such operation eleven years after the primary one was done, and within the last two weeks three or four such cases have come into my hands.

It has been interesting in these ante-mortem pathological examinations to see how much of bone was actually deposited in the mastoid cavity. Sometimes there is hardly any, but fibrous tissue lines the bony cavity enclosing, as in a capsule, a mass of old, pale, tough, loosely packed granulations, and then we have a real nice cavity for infection. Sometimes there is a greater deposit of new bone around the periphery of the cavity and a smaller mass of granulations, in the center of which a fistula leads down to bare bone near the aditus and so affords a good place for reinfection.

For several years I have been mulling over a method to prevent these secondary mastoids. I talked it over with several of the New York men and we agreed to try a piece of rubber tissue, first used by Dr. Abbe of New York (I think it was), in his operation for resection of branches of the fifth pair to prevent bridging over. I tried this in three or four cases to shut off the aditus, hoping almost against hope that it would remain, as of course the middle ear side of the rubber tissue was exposed to infection, whereas the posterior side, being covered by granulations, might be all right; but eventually this piece of rubber tissue made its way out.

About this time, I sought the aid of Dr. E. H. Nichols, our surgical pathologist, as to whether a piece of living tissue could be placed over the aditus and be made to grow there. The result of our conference was to try to obtain a large flap of periosteum with a broad base to insure its nourishment. For the last two or three years I have been using this flap. In the operation the usual curvilinear incision is made through the skin and the superficial muscles down to the fascia. Then the skin is dissected up from the fascia forward, till the depression is reached between the cartilaginous canal and the anterior mastoid wall; backward, it is then dissected upward for something like an inch and a half. With the posterior edge of the mastoid process as a guide an incision is then made down to the bone, from the tip upward and backward to the junction of the mastoid and occipital bones and then curved somewhat backward and then upward to the level of the linea temporalis; then forward on this ridge or a little above it upon the fascia, covering the lower edge of the temporal muscle. If the posterior edge of the mastoid process is strictly followed there will be almost no danger

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of cutting the mastoid emissary vein. The elevator is then passed down to the bone and this flap, including the periosteum and the fascia and the tissue between, is dissected upward and forward till the anterior edge of the mastoid process is bared, as it is in the ordinary mastoid operation. The flap is then drawn forward by the retractor and the operation completed as usual. After the cavity is thoroughly cleaned out this large flap is drawn backward and its tip pressed down into the antrum so as to cover the aditus, and is there packed rather firmly by gauze wicks. Should the flap be a little too short the posterior wall of the meatus may be somewhat shortened by the forceps, so the flap will reach well into the aditus. At first I tried to place this flap in position and then allow the wound to fill up with a blood clot, so as to get one of Dr. Sprague's blood clot organizations, but it always floated out, so I found it had to be firmly anchored in position. The posterior part of the cavity can be packed more lightly. The wicks which hold the flap in position are not disturbed till the second or third dressing, that is, about ten days after the operation. They can be then carefully removed, and in almost every instance I have found that the flap remains there and grows firmly in its new position.

Having done that in acute cases, it seemed to me we could do it in chronic ones; and now in this case, my fifth or possibly sixth, I have excavated as usual, taken away all the posterior wall down to the facial canal which, of course, is left as a ridge between the mastoid cavity and the middle ear, then brought this large flap down and put it directly on to the facial canal, holding it there by gauze on both sides. If both these cavities are clean and the flap is accurately placed it grows directly on the facial ridge, and we can take out the posterior packing, all except that down on the ridge at the first dressing; the second or third time we can clean out both sides, being careful not to dislodge the flap from the ridge.

This case was operated on ten days ago and this large flap placed down on the facial ridge. The posterior cartilaginous wall was slit and carried up and down as usual. We have a pretty large canal to look into, and if necessary that can be dermatized even now. I expect to dermatize it tomorrow. The posterior wound is granulating as in an ordinary acute mastoid, and is even now well filled; and it is found that the posterior wound fills more rapidly than usual, on account of the proliferation of fibrous tissue from the upper surface of the periosteum.

THE DETROIT ACADEMY OF MEDICINE celebrated its fortieth anniversary on Feb. 25. Five of the original thirteen members are still alive, and one of them, Dr. A. B. Lyons, was present at the meeting. Dr. Leartus Connor reviewed briefly the life and work of each of the deceased charter members, and personal reminiscences of the eight deceased members were given by members of the academy. — *New York Med. Jour.*

Clinical Department.

REPORT OF A CASE OF CARIES OF THE MIDDLE EAR, MASTOID PROCESS AND INTERNAL EAR WITH EXTRADURAL ABSCESS, PACHY-MENINGITIS AND DESTRUCTION OF THE SEMICIRCULAR CANALS.*

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THE patient, Miss R. McC., single, age twenty-three, domestic, presented herself at the Aural Out-Patient Department of the Massachusetts Charitable Eye and Ear Infirmary on March 8, 1907, suffering from right chronic suppurative otitis media and dizziness. The disease began during an attack of scarlet fever at the age of two, since which the discharge from the affected ear has been continuous. The patient states that she has been more or less dizzy ever since she can remember and that there has always been a foul odor to the discharge. For five days the dizziness had been increased with the addition of a slight feeling of nausea at times.

Examination revealed a large polyp protruding from the right external meatus with a thick purulent discharge from the middle ear which was foul in odor. The middle ear was not seen owing to complete occupation of the canal by the polypoid mass. The hearing was tested in the usual manner:

Low spoken voice heard at five feet.

Rinné test: Two hundred and fifty-six fork not heard by air; bone conduction six seconds.

Weber test: Vibrations appreciated only by left ear.

Galton whistle: Normal.

Low limit: 1,024.

Under cocain and adrenalin anesthesia, part of the polyp was removed by the snare, and as the dizziness and nausea were assumed to be middle-ear pressure symptoms, she was allowed to go home and instructed to return on the following day.

On March 11, the patient was admitted to the House for observation, the dizziness and nausea having increased. In addition she was suffering from frontal and temporal headache. On admission the temperature was normal, leucocyte count 9,300, no disturbance in the nervous reflexes, no mastoid tenderness, hearing test as above, remains of polyp filling the middle ear and about one third of the canal. Treatment consisted in rest in bed, and syringing the ear every three hours.

March 12. Temperature normal. Slight dizziness. No pain.

March 14. Temperature normal. No pain. Slight nausea.

March 16. No pain. No dizziness. No nausea. Free discharge from middle ear.

March 19. Discharged. Condition improved.

March 25. The patient re-entered the hospital with increased dizziness, nausea and vomiting, prostration, temporal and occipital headache and occasional chills. On admission the temperature was 104.6° F. Leucocyte count 23,000, pupillary reflexes normal, engorgement of retinal vessels in right eye on fundus examination, cerebation good, knee jerks delayed, doubtful Kernig sign, no Babinski, marked ankle clonus. There was no mastoid tenderness. The patient was prepared for operation in the usual manner, the field shaved and scrubbed and free catharsis obtained.

* Read at a meeting of the New England Otological and Laryngological Society, Nov. 17, 1907.