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Original Communications.

THREE CASES OF TRAUMATIC PERFORATION OF THE MEMBRANA TYMPANI.

Read before the Boston Society for Medical Improvement, by HENRY L. SHAW, M.D.

THE bony encasement of the membrana tympani effectually protects it from mechanical injury, except in cases where it is reached through the external auditory passage. The small size of the passage, its natural obliquity, and the sensitiveness of its lining membrane, insure it against the accidental introduction of foreign bodies, except in some rare instances. The three cases of traumatic perforation of the membrana tympani which are cited below are cases of this kind, and are particularly interesting as showing the readiness with which wounds of the healthy membrane heal, when not complicated with trouble of the tympanum. In two of the cases reported, the injury was confined to the membrane. The third, the notes of which are not complete, remains in doubt, although it is very probable that the tympanum was involved. As will be seen, the seat of the perforation is the same in all of the cases, viz., at the anterior and inferior part. It is at this part of the drum that traumatic injuries almost always take place. This can hardly be accidental, and is undoubtedly due to the peculiar shape of the external surface of the membrana tympani, which is concavo-convex. The prominence of the malleus probably increases the resistance of the membrane at this point, and serves to divert the force of the blow to the inferior parts of the drum. The above explanation we do not remember to have seen.

June 21st, 1868. Mr. —, æt. 28, book-keeper. Day before yesterday, while the pointed end of a rubber pen-holder was in the external meatus of the right ear, his elbow was struck by a friend with such force as to push the point of the holder through the membrana tympani. The pain at the time of the accident was severe;

after half an hour it increased in severity, and continued for several hours. On using his handkerchief, soon after the accident, he found that the air passed freely through the ear, accompanied with an audible whistle. Being a gentleman of intelligence, he immediately surmised what had happened. Since the subsidence of the acute pain of the first day, he has had a dull aching, with a feeling of fulness in the affected side of the head. His chief annoyance, however, has been the constant tinnitus, which he describes as very loud, almost unfitting him for business. On examination, the hearing point, with watch, was $2\frac{1}{2}$ inches. Conversational power much diminished. As usual in aural cases, the power of the (left) well ear was tested. It was found to be but 2 inches. He was then for the first time made aware of the deafness of this (left) ear, which he had always considered perfectly good. The external auditory passage of the injured ear was normal, with the exception of slight moisture at the bottom. The membrana tympani was dull, white, and showed no signs of active inflammation. The handle of the malleus was plainly seen, and just below and anterior to it was a circular perforation rather more than a line and a half in diameter, with sharp and well-defined edges. Through this opening air from the throat readily passed. He has been troubled with pharyngeal catarrh for several months, and there is now chronic inflammation of the mucous membrane of the fauces.

The large size and shape of the wound in the drum seemed to preclude the possibility of its ever being restored to its normal condition. As is well known, cases of perforation, either of traumatic origin or from disease, when of this size, or even much smaller, are very liable to go through a long suppurative process. After more or less disorganization of the middle ear, they sometimes heal, but the hearing is almost always much impaired. The absence of inflammatory symptoms in this case seemed to call for stimulation of the edges of the perforation with nitrate of silver or some other agent; but from experience in previ-

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ous cases it was thought best not to make any application to the injured parts.

Treatment.—Tincture of iodine to be painted frequently over the mastoid process, until it becomes sore, and then to be used often enough to keep it so. In case of pain, leeches front of the ear. If there should be any discharge, injections of tepid water sufficiently often to keep the parts thoroughly clean. The patient was requested to avoid using the handkerchief, and on no account to force air through the injured membrane.

June 30th.—No change in the perforation. Has had no pain or discharge. The tinnitus continues, obliging him to give up business as accountant during the day. Is, however, able to do a little at night, when it is perfectly quiet. Mastoid quite sore from iodine.

July 3d.—Hearing point, with watch, 4 inches, an improvement of $1\frac{1}{2}$ inch. Tinnitus in full force. Otherwise as at previous visit. Ordered chl. potass. gargle for the throat.

15th.—Tinnitus as bad as ever. Is still unable to do business during the day. The ear looks the same as at first visit, with the exception of the absence of moisture at the bottom of the canal. No apparent diminution of the opening in the drum. Hearing point, 4 inches. Thinks conversational power slightly improved.

Aug. 6th.—Has reported every few days. Since last visit, has noticed decreased intensity of the tinnitus, and a decided improvement of the hearing. Has been able to attend to business the last few days. Noticed, a day or two ago, on using the handkerchief, that air did not pass through the ear. Hearing point, 8 inches. Conversational power very much improved.

On examination of the membrana tympani, the perforation was found perfectly healed, and no trace of it to be seen, either with solar or artificial light. Just above the point perforated was a white spot of recent origin, the exact nature of which is unknown.

Sept. 18th.—The patient called to-day. The ear feels perfectly well. Hearing point, 14 inches. The membrane of the tympanum looks the same as at previous visit.

Feb. 21, 1867.—Miss —, æt. 24. For several years has been in the habit of using ear-picks of various kinds. Three days ago, while using one half of a shell hair-pin, her elbow accidentally slipped, and the point of the pin was pushed through the membrana tympani. It was attended

with giddiness, lasting for several minutes, which was followed by a feeling of weight and fulness in the head, as in the previous case. Deafness was noticed almost immediately, and has gradually increased. Tinnitus and violent throbbing, the latter synchronous with the pulse, came on after a few hours, and has continued ever since. The second day the ear was tender, and the auditory passage somewhat swollen and red, which was relieved by the application of warm fomentations to the external ear.

Result of Examination.—Conversational power good. Watch heard at $\frac{1}{4}$ inch. Inner half of external auditory passage slightly inflamed; a thin, serous discharge at the bottom. Membrana tympani inflamed and unusually vascular over malleus. At the anterior and inferior part is a perforation, nearly circular, about one line in diameter. Through this opening air passes from the throat readily, as shown by the otoscope.

Treatment.—Two leeches front of the ear; to paint tincture of iodine frequently over the mastoid process, to keep the part sore; and to avoid forcing air through the drum. Iron and quinine internally.

Feb. 26th.—The ear has been comfortable since last visit. The auditory passage is of a normal color; the drum still a little vascular. The perforation unaltered. No moisture noticed. No throbbing for the last twenty-four hours. The tinnitus is less loud. Patient sometimes free from it for an hour at a time.

March 2d.—The perforation looks smaller; is now only seen as a small point with white edges. Tinnitus hardly perceptible, except when perfectly quiet. Hearing point $2\frac{1}{2}$ inches. Mastoid sore from iodine.

March 7th.—Patient has noticed a decided improvement of hearing within a day or two, with complete absence of tinnitus. Says the ear feels more natural. On examining the membrana tympani, it was found healed. The seat of the perforation could hardly be made out; the cicatrized portion looks a little dull and whiter than the rest of the drum. Point, with watch, 11 inches. Conversational power normal.

16th.—The ear was examined to-day, and no trace of the perforation could be seen. Hearing point 13 inches, being a little less than normal. She was discharged, with directions to report if troubled further.

Aug. 20, 1867.—Mr. — came to the Infirmary with the following story. Ten days ago, while fishing, he slipped from a stone on which he stood, and, to avoid falling into the water, threw himself with considerable

force headlong into some bushes. A severe shooting pain in the side of the head was noticed at the time, and a sensation as if something had entered the ear. He thought a twig went in at the time of the accident, but supposed it had immediately dislodged. The pain was of short duration, and was followed by a heavy feeling in the head. On the way home, deafness was noticed, and also a very slight discharge of blood from the external meatus. For the past week there have been dull, aching pains, particularly at night, sometimes depriving him of sleep. The second day after the accident, the deafness increased very much. Within the past two days, there has been a muco-purulent discharge, which at times has run from the ear. There has been constant tinnitus since the accident. By the advice of his physician, injections of soap-suds have been used several times.

Result of Examination.—Hearing point of watch (from memory), not heard at all. The external auditory passage shows a slight muco-purulent discharge. The whole lining membrane is inflamed; the bottom slightly swollen. Membrana tympani uniformly red; no distinct vessels to be made out. The projection of the malleus barely discernible. The drum, at its anterior and inferior part, is penetrated by a foreign body, which occupies the inner two thirds of the auditory passage.

The foreign body, which proved to be a twig, was grasped with a pair of rectangular forceps, and after using considerable traction it was removed. A slight oozing of blood from the tympanum and the edges of the wounded drum followed. The parts were afterwards cleansed with tepid water. The diameter of the perforation was, from ulceration, larger than that of the twig, which measures one inch in length and about one eighth of an inch in diameter.

The patient was ordered two leeches front of the ear, and injections of tepid water twice a day, with instruction to report in a day or two. The complete history of this case would be interesting, and it is to be regretted that the patient never returned.

PHOSPHORUS.—A recent memoir by a foreign chemist asserts that the poisonous action of phosphorus is entirely due to the formation of phosphuretted hydrogen gas, which, in passing into the blood, rapidly combines with the oxygen present. Hence it is concluded that death from phosphorus is nearly equivalent to death by suffocation.

—*Medical Record.*

A REMARKABLE CASE OF CHRONIC GASTRALGIA TREATED BY THE GALVANIC CURRENT.

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of New York.

THE following case of neuralgia is so unique and extraordinary that we think it well worth publication. It illustrates how utterly futile internal medication is in certain of these affections, and what a vast difference there is between the remedial powers of the induction and galvanic currents. It cannot be too often impressed upon the minds of the profession, that it is not so much electricity that cures disease as it is the physician who cures by means of electricity.

The method of application and the kind of electricity used is of vital importance in electro-therapeutics, and much of the disrepute into which this agent has fallen is due to the disregard which the profession, as a body, have shown to the minute details of its application. The host of charlatans who have in this country made a specialty of electricity, meet continually with good results in the treatment of chronic disease. Those who fail to be benefited far outnumber, it is true, those who are cured or relieved; for, as a rule, everyone who applies to these harpies for treatment, no matter what the disease is for which relief is sought, is positively promised a cure. This can be no argument against its reliability as a therapeutic agent.

CASE.—Mr. B., a gentleman from Charleston, S.C., consulted us in January of the present year. The history of his case is substantially as follows. In the latter part of 1861, he was taken with a severe attack of neuralgia in the back of the head and neck. Similar attacks recurred, in paroxysms, every few weeks for about two years. In December, 1863, while suffering from severe pain, colchicum was prescribed, to be taken every two hours. Not understanding the nature of the drug, he took it every half hour for five hours. This imprudent dosing was followed by persistent vomiting and retching, which lasted for eleven days and nights, producing excessive prostration, and, in the end, total unconsciousness.

Acute gastritis supervened, from which he recovered with difficulty, but only to suffer from neuralgic pains in the stomach, similar in character and severity to the distress which he had previously experienced in the head. These paroxysms were finally subdued by quinine and opium, and for three months he was comparatively a well