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FISTULA OF THE ORBIT DUE TO DISEASE OF THE
LACHRYMAL DIVISION OF THE ETHMOIDAL
CELLS; OPERATIONS AND CURE.*

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Illustrated.

In November, 1897, I presented to the *Philadelphia County Medical Society* † the report of a case of abscess of the orbit which resulted from suppurating ethmoiditis, and described an operation which resulted in its radical cure. In this paper I referred to certain fistulas of the orbit above the internal tarsal ligament due to disease of the ethmoid, which Gruening ‡ had described and cured by forcing with a strong probe an opening through their bases into the nasal cavity, and thus facilitated drainage. It is to the treatment of this class of cases that I wish to direct your attention by the following report:

Kate Patterson, aged 19, born in Pennsylvania, unmarried, a factory worker, came to the Philadelphia Polyclinic in October, 1897, with the hope of obtaining relief from what she believed to be a purulent discharge from the lachrymal duct.

History.—The family history is good, the mother being a healthy, hard-working woman. When the patient was seven years of age she had chicken-pox, followed shortly afterwards by scarlet fever. Some time later, probably when she was about eight years of age, the mother noted a small lump in the neighborhood of the inner canthus, which was poulticed and discharged purulent material.

In 1892 she was taken to a hospital, where the tear-duct was opened and probed a number of times, but pus continued to form and to exude from an opening near the inner canthus. She was then admitted to this hospital, where she remained for five months, according to her statement the lachrymo-nasal duct being probed daily. A number of minor operations also appear to have been performed, probably curettings of the

* Paper read before the *Ophthalmic Section of the College of Physicians of Philadelphia*, March 21, 1899.

† *Philadelphia Medical and Surgical Reporter*, November 20, 1897.

‡ *New York Eye and Ear Infirmary Reports*, January, 1896.

fistulous track. After leaving the hospital she continued as a more or less regular attendant in its dispensary service, the treatment consisting of irrigation of the lachrymo-nasal duct and syringing of the sinus with peroxide of hydrogen and other antiseptic materials. As before stated, in the fall of 1897 she presented herself at the Philadelphia Polyclinic.

Examination.—The girl was small, but well formed, with good color, and a voice typical of nasal disease. Examination failed to reveal anything abnormal in her general condition. The eyes, which were practically normal, require no special comment. The right canaliculus was widely dilated, and the duct admitted with the greatest ease a No. 6 Bowman probe. When this was in place it was evident that a fistula, surrounded by slightly everted edges and a few granulations, which opened just above the inner tarsal ligament, did not communicate with the duct, nor apparently with the lachrymal sac. A second probe was next introduced into the fistula, and after a little difficulty was passed inward, slightly backward and downward. With the two probes in place the patient was taken to the laryngological rooms, where Dr. Walter J. Freeman made a nasal examination, which revealed that the one probe had passed through the lachrymo-nasal duct and was in its ordinary position, while the other one could be seen in the middle meatus, occupying another position, and at that time was supposed to traverse the frontal cells.

The patient had been examined by Dr. Freeman four months before, when he had noticed deviation of the septum to the right, thickening of the cartilage on that side, and, on rhinoscopic examination, pus coming from the right side of the nose, but its origin was not determined. There were synechiaie also between the turbinals and the septum on both sides.

After consultation with Dr. Freeman, it was determined that an operation should be made from the orbit in order to secure, as Dr. Gruening had advised, intra-nasal drainage.

On the 16th of November I made a curvilinear incision, beginning just below the fistulous opening at the inner tarsal ligament, and passing along the side of the nose and the margin of the orbit, as far as the supraorbital foramen. The tissues were dissected away, the margin of the orbit above was explored, and the region of the ethmoidal foramina was examined and seen to be healthy. The fistulous track was then with some difficulty followed and found to open just above the tendo oculi and to pass into the nasal chamber. A quantity of carious bone was curetted away, and a free opening was made into the nasal chamber. Through this opening a fenestrated drainage tube was introduced, brought



FIG. 1.
Introduction of drainage tube after
making an opening through fis-
tula into nose.



FIG. 2.
Result after complete cure of fistula.



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out through the anterior naris, and held in position in the manner seen in the accompanying illustration (fig. 1). The subsequent treatment consisted of daily irrigation of this tube with various antiseptic solutions—saturated boric acid lotion, bichloride of mercury (1-8000) and formaldehyde (1-6000). There was no reaction, not even a rise of temperature, and only moderate swelling of the tissues around the eye.

On the 23rd of November the large drainage tube was substituted with a smaller one and the irrigations continued, and on the 29th of the same month the patient was discharged from the house, but came daily for intra-nasal treatment and irrigation of the drainage tube. This part of the work was attended to by my resident physicians, Dr. Haines and Dr. Van Meter.

There was marked improvement at first, and for a time we thought the fistula had closed. Later, in January, slight swelling of the tissues began in the neighborhood of the old fistula, which was relieved by a flow of pus. Furthermore, the introduction of a probe indicated that there were still undetached areas of carious bone, probably intra-nasal. Dr. Freeman and I now agreed that as the orbital end of the diseased tract had been thoroughly curetted, the process should be attacked from the intra-nasal side. Dr. Freeman very kindly undertook thorough treatment from this standpoint. His notes are appended:

“At Dr. de Schweinitz’s request, I took charge of the case to see what could be accomplished by nasal treatment. The septum was so much hypertrophied and the tubercle of the septum was so enlarged it was impossible to see much of the middle meatus and the middle turbinal was almost entirely concealed. I found later that it was united by synechiæ to the septum, and there were other bridges in the nose, showing that a severe nasal inflammation had existed in the past. From these evidences of previous inflammation, there is no doubt in my mind but that the orbital fistula arose from the nose.

As the drainage tube was not draining well, an aluminum stylet was substituted for it. I then removed the obstructing hypertrophies of the septum with the electric trephine, until the olfactory cleft could be readily seen, and later cut through the more dense masses of bone around the stylet, which I could now readily see projecting into the nose. Using urettes and delicate biting forceps on the softer portions, the lachrymal cells were obliterated until only a thin plate of bone lay between the nose and the orbit. The various synechiæ were broken up and the nose put in good hygienic condition. Just four months from the time the stylet

was put in it was removed, as the purulent discharge into the nose and from the orbital fistula had entirely ceased."

The ultimate result may be seen in the accompanying illustration (Fig. 2). There is practically no deformity—only a slightly indrawn cicatrix at the seat of the old fistula. The function of the eye is normal in all respects and the intra-nasal structures are free from active disease.

In order to cure this fistula, which had existed certainly for six and probably for eight years, for it no doubt dates to the time of the swelling which the mother describes at the inner canthus of the eye, required nearly seven months and a good deal of operative interference, the entire credit of the final work belonging to Dr. Freeman. Whether a case of this character could be cured by intra-nasal treatment alone does not appear from the present record, as both the orbital and intra-nasal methods of reaching the diseased area were employed. I am inclined to think, and Dr. Freeman, I believe, agrees with me, that it was the part of wisdom first to enlarge the fistula from the orbital end, and clear out the dead tissue which was found there, and then attack it from the nose. Personally, I believe that I might have curetted with greater freedom at the original operation and perhaps shortened the intra-nasal treatment, but with the knowledge that the septum was greatly hypertrophied, and that synechiæ attached the middle turbinated body to the septum, it seemed safer to trust to Dr. Freeman's skillful intra-nasal manipulations to complete the cure.

My chief reason for calling attention to this case, no matter which form of operation is considered the wiser, or whether, as I believe, both methods may be needed, is to emphasize the origin of certain orbital fistulas. I am inclined to think that they not infrequently must be due to disease either of the ethmoid proper, or, as in this case, of the lachrymal division of the ethmoidal cells, which it will be remembered are located just beneath the extreme anterior end of the middle turbinated body and near its junction with the outer wall, and form one of the divisions of the ethmoidal cells. Furthermore, fistulas of this character may be mistaken for chronic dacryocystitis. Certainly my patient submitted to eight years of treatment directed toward the lachrymo-nasal apparatus without benefit. Indeed, this apparatus was not at fault, or if so, only secondarily, i. e. it was in no sense the original seat of the disease.