

OBSERVATIONS ON SOME UNUSUAL CASES OF FRONTAL SINUSITIS.*

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The cases of frontal sinus disease presented in this paper are selected to illustrate some unusual symptom or condition and to emphasize two symptoms that have been usually attributed to some other condition, namely, vertigo and neuralgia of one or more branches of the trigeminal nerve.

First, vertigo, with a tendency to pitch forward. This is by no means a constant symptom, but it is met with frequently in both acute and chronic cases, and to my mind is suggestive of frontal or anterior ethmoidal involvement. I have one case in which the vertigo is severe enough to cause the patient to pitch forward on her face; another that could not go about the street without an attendant; another, weaver by trade, who was nearly injured by falling upon the looms; and still another double acute case that could not get out of bed because of the vertigo.

Neuralgia, due to frontal sinus disease starts in the supra-orbital branch and may extend to any other or to all the branches of the trigeminal nerve. This form of neuralgia is usually caused by the sinus and yet is of a very periodic type. I have never seen the neuralgia in a chronic frontal sinusitis. The period of pain is about the reverse from the ordinary type of frontal pain, which is felt as soon as the individual rises and continues during part of the day, stopping when the sinus has partially drained itself. On the contrary, the frontal neuralgia comes on at about the same time every morning, continues for a number of hours, and stops as suddenly as it began. I have seen a patient experience intense suffering while the pain lasted, and a short while after it ceased, feel quite well again.

There is the same pain and tenderness about the region of the frontal duct, with considerable congestion of the membranes, with slight or no evidence of purulent secretion from the frontal sinus. The neuralgia will cause congestion of the conjunctiva, with lachrymation, flushing of the skin, high tension of the blood vessels (temporal artery), and pain. The secretion in the sinus is thick, tenacious mucus, mixed with some pus cells. It looks as though

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the frontal sinus had become filled with muco-pus and the lining membrane had endeavored to absorb it again, taking up all the more fluid elements, and leaving behind the mucus which seems to have the special mission of irritating the supra-orbital nerve. When the plug of mucus can be douched out, it comes away as a gummy mass and the neuralgic pain immediately ceases; at times the mucoid mass cannot be immediately washed out, and then it seems as if the addition of the fluid from the douche helps to dissolve the mucus and it comes out of its own accord or when the sinus is subsequently douched. These patients have some tenderness over the frontal sinus, but as they usually consult you during the pain, it is generally masked by the neuralgia. I am at a loss for a reason, why the neuralgia suddenly starts each day at the same hour and as suddenly stops at a stated time about the mid-afternoon, as this mucoid mass remains in the sinus day after day, but as soon as it is removed the neuralgia ceases to return.

REPORT OF CASES.

E. T., English, aet. 45, female. For five years has had headaches, vertigo, loss of smell, purulent nasal discharge; in 1904 some polyps removed; in 1906, I opened and removed ethmoid cells and anterior sphenoidal walls, also entered right antrum below inferior turbinate. These sinuses ultimately became clean and dry. I also enlarged fronto-nasal duct and douched frontals; headaches and vertigo disappeared, and she regained her sense of smell. Six months later headaches and vertigo returned, also vomits, sometimes in conjunction with the vertigo. Pain is most intense while it lasts. I again enlarged frontal ducts, which relieved symptoms for several weeks. Since then has headaches, vertigo, and vomiting about twice a month. The vomiting is not accompanied with nausea. The vertigo is so severe at times that she has fallen down stairs, pitched forward in the street, etc. These attacks last twenty-four to forty-eight hours, when pus appears from nose and attack ceases.

Between attacks the sinuses are clear on transillumination, only a small amount of pus in the sinus. There is necrotic bone in left frontal duct, as revealed by the probe and her sense of smell has again disappeared.

I strongly advised external opening of both sinuses, but she consulted a colleague between attacks, and he found no urgent reason for external operation. He had an X-ray plate made which tended

to show that the sinuses were empty—all of which I believe to be true, but the facts remain that she has some frontal tenderness, vertigo and anosmia at all times, with intense pain, vertigo and vomiting, about once a month. She puts off operative procedures from month to month so I am unable to say what the true condition is. It appears to me that she has either an extra-dural abscess that fills periodically—which would explain the permanent loss of smell and attacks of pain or may be the lining mucous membrane of the frontal sinus swells enough to cut off the drainage through the nose, and until this is relieved the symptoms of pressure continue.

S. M., male, aet. 15, American. For several years has had attacks of pain about the left eye. I have seen him during several of these attacks, but there was little tenderness and no evidences in the nose of frontal sinus disease. An ophthalmologist has prescribed glasses, which he wore. General doctor called it malaria and treated it accordingly, but the attacks became worse and he developed vertigo. I succeeded in washing a few drops of pus from frontal sinus. The anterior end of the middle turbinate was removed and this followed by irrigations, which brought away some pus. The symptoms cleared up entirely in about six weeks.

Mrs. N. H., aet. 40. January 1, 1909. Some two years ago had grippe with profuse yellow discharge from nose, which continued in less quantity up to two months ago, when frontal pain and headaches began, accompanied with vertigo. There was a small quantity of pus about the anterior end of the infundibulum. The anterior portion of the middle turbinate was removed, and though the frontal duct could not be probed, the region was injected every second day with lactic acid bacillus suspension. This seemed to diminish the symptoms for several weeks; then they returned, and some of the anterior ethmoids were removed, without relief.

She was admitted to the hospital, and X-ray plates were made, which, however, were not clear enough to be of service. At this time she complained of headaches (frontal) pain and tenderness over frontal sinus, and vertigo which caused considerable restlessness. Eye grounds normal. Nasal douche q. 2 h. Transillumination: dark both sides; no improvement at end of week. Operation. As soon as anterior frontal wall was opened, the sinus was found to be normal; work on anterior wall discontinued and ethmoids entered via frontal maxillary process. These cells were completely filled with pyogenic membrane, there being no space for

pus. One cell extended out over the orbit fully one inch just behind the frontal sinus, being separated from it by a thin partition of bone. It was about a quarter of an inch wide and flat, and hugged the frontal sinus in the form of a crescent. The remaining ethmoid cells were removed and the sphenoidal orifice enlarged; wound closed with metal clips, which were removed in twenty-four to thirty-six hours. Immediate relief of headaches. Vertigo gradually subsided in four weeks.

F. N. F., aet. 34, American. June, 1908. Has had neuralgic frontal pain for two days; some yellow post-nasal discharge. The first time I saw him it was about 3 p. m. The region of the nasal orifice of the frontal duct was intensely congested; considerable pain and tenderness of frontal sinus. While I was attempting to probe the frontal duct under cocaine and cuprenalin the pain suddenly ceased. I thought I had established a vent for the frontal sinus through the congested area, and felt quite content with my efforts. The patient said that four years previously he had a similar attack that came on every morning at 10 o'clock and lasted until 3 p. m., when the pain stopped as suddenly as it appeared and he could return to work. At that time he was in a mining camp without surgical aid. He said that the pain was so intense that he went out of his mind nearly every day during the attacks, and that this present attack—though not yet so severe—started at about 10 a. m. and ceased about 3 p. m. He came in the next morning about 10 o'clock free from pain, and I tried to douche sinus; while I was working the neuralgia suddenly appeared, and in spite of everything I did it grew worse until 3 p. m., when it ceased. He tried hot nasal douches over Sunday, with no relief, and on Monday I again observed the neuralgia develop at 10 a. m., and continue with intense suffering, in spite of local anesthesia, until I gave him a quarter of a grain of morphine for relief. While he was under the influence of the narcotic, I removed the anterior end of the middle turbinate, but as the pain had exhausted him it was impossible to douche the sinus. He returned the next morning, and at the same time the neuralgia began, but before it became too intense I washed out the sinus, getting a very thick plug of muco-pus, brownish-gray in color. The instant this came out he exclaimed that the pain was gone and his head felt many pounds lighter. The sinus was douched daily for about ten days; the secretion at first was thin yellow pus, which rapidly disappeared. No neuralgia after the plug of muco-pus was removed.

Mrs. W. H., aet. 30, American. Has had coryza for couple of weeks (first time in seven years), which for the last week has caused daily attacks of neuralgia, starting about left frontal sinus and extending to other branches of the trigeminal nerve. Begins about 9:30 a. m., stops at 4 p. m. During the rest of the twenty-four hours does not feel that she is sick. Considerable swelling in the region of the frontal duct, with some pus. Cuprenalin and nasal douche for twenty-four hours gave no relief. Great frontal tenderness; dark on transillumination. I removed the anterior end of the middle turbinate but could not get into frontal sinus. Soon after, there began a discharge of thick tenacious muco-pus, and she had only a slight neuralgia on the second day for a few hours. The frontal discharged muco-pus for two weeks, and she was well in four weeks.

L. R., aet. 16, male. December, 1906. Has had at intervals considerable frontal headache for several years. Now has had cold in head for about one week. This morning had a chill, followed by a temperature of 105° , pulse 135, with much pain and tenderness over left frontal sinus. Examination revealed membrane in region of frontal duct much inflamed, with some pus. Transillumination showed right frontal light, left dark, antra light. Enlarged cervical gland at angle of jaw. Saline douches preceded by adrenalin ordered every two hours. I also attempted to inject adrenalin into frontal duct. The temperature dropped to $99.4-5^{\circ}$ the next morning, but again reached 105° at 3:30 p. m. Tried to wash out region of frontal duct. 11:30 p. m., temperature still at 105° . I removed part of middle turbinate with considerable difficulty on account of a deviation of the septum, but could not get into frontal sinus. I washed out a large anterior ethmoid cell and the temperature dropped to 103° , but the next morning the temperature was climbing again, 104° , continuing to 105° . I decided to open the sinus externally.

Blood Count by Dr. Sondern; December 6, 1906. Number of red corpuscles in 1 cmm. 5,010,000; uniformly normal in size. Leucocytes, 25,500. Differential count based on percentage in 500—small lymphocytes, 11.6 per cent; large lymphocytes, 4.8 per cent; polymorphonuclears 81.6 per cent; eosinophiles 2.0 per cent. Haemoglobin 88 per cent, color index 0.88; no plasmodia found. Note: The noteworthy features in the specimen are, the decided leucocytosis as stated, with a considerable increase in the relative number of polynuclear cells on differential count.

At 4 p. m. I opened sinus through usual Killian route, found sinus full of pus under considerable pressure; the lining membrane necrotic and easily lifted away from the bone. The sinus was rather large. There was a large ethmoid cell with a very thin bony wall that pressed upward into the frontal where the nasofrontal duct should be. It was impossible to pass a probe by the cell into the nose; the frontal was entirely shut off from the nasal cavity by this cell, which when broken into immediately led into the nose. This cell was filled with a mucoid material that might suggest a cyst. Some of the ethmoid cells were removed for drainage, and the wound closed. The temperature came down gradually, striking normal on the third day. Seven weeks later, entirely well.

This patient has hay fever, and during the attacks in June, 1907 and 1908, the eyelid and where the anterior sinus wall was removed, would puff out in an alarming way. This condition rapidly subsided with applications of ice and pollutin in nose.

November, 1908. He presented himself with a swelling in centre of forehead two inches in diameter, and also one about the sinus that had been opened two years previously, with oedema of the scalp extending back to the occiput. The old frontal incision was opened, and about one ounce of pus evacuated (pure streptococcus infection) from forehead; left sinus cavity filled with pus. The bony partition between frontals was bare, necrotic, and perforated. The old cavity everywhere else was well covered with fibrous tissue. The bony partition at time of first operation was perfectly solid, though denuded of membrane. When the necrotic bony partition was removed it revealed the membrane of the right sinus to be in a thickened polypoid condition, bathed in pus. The fronto-nasal duct was small and situated rather posteriorly. A very interesting condition was found in the left sinus—which when operated upon two years before had had the bony orbital wall removed, which was in relation to the floor of the frontal and external to ethmoids—namely, that this bone had been reproduced, thin, smooth, and hard; also that the sinus had been obliterated down to the level of the fronto-nasal articulation.

The purulent cavity was drained, and on December 3rd, the right sinus was cleaned out and drained into the nose, all the floor removed, also all the bony partition between sinuses, but the anterior wall was left in place to support root of nose. Incision closed. On January 5th, returned to school well.

L. P. H., German, aet. 50. For three years past has had recurrent head colds, frontal and occipital headaches; extremely nervous, lack of mental application, feels mentally dull and fatigued; for last eight weeks some gastric derangement; at present on the border of melancholia. He has a chronic diffuse nephritis with arterial sclerosis. Most of the above symptoms were attributed by the family physician to the sclerotic processes. Three years ago spur removed; two years ago anterior end of middle turbinate removed, also some polypoid tissue around the frontal duct. Examination showed reddened nasal mucosa, purulent secretion about the frontal duct, slight septal deviation, anterior portion of middle turbinate gone. Necrotic bone on the posterior wall of frontal duct. Considerable pus in frontal sinus. Some granulations about the sphenoidal sinus orifice. Dark on transillumination. X-ray plate plainly shows disease of frontal and ethmoids. The frontal could easily be entered with a large probe or canula, and the sinus was douched two hours before operation with the idea of reducing infection. Typical Killian operation performed. When the anterior wall was opened, the pus was found under pressure; the lining membrane was very thick. The previous introduction of the canula had left a bloody tract through the membrane and had washed out only the purulent secretion along its sides, and had relieved the sinus of neither pus nor pressure—clearly showing how little good is done by douching a sinus when the membrane has become much thickened. There was a small spot of softened bone on the posterior sinus wall near the orifice of the nasal duct. All the ethmoids were removed. Six weeks later the nose was free from secretion and entirely healed. The mental and nervous symptoms passed away within three months, and now,—three years later,—he is an apparently healthy man, notwithstanding his arterial sclerosis.

Mrs. O. H., German, aet. 45. August, 1904. Previous history negative. No syphilis. Eight months ago had grippe, high temperature, dizziness, and intense pain about the frontal sinus. Since then has had headaches, and pus in one side of nose. Two months ago had a swelling about one inch in diameter appear on forehead, about one inch above the eyebrow. This was incised, but refills as soon as the skin heals. It evidently discharges into the frontal sinus, because she says when pressure is put upon the swelling, it diminishes in size and there is a purulent discharge from that side of the nose.

Examination reveals purulent secretion about the frontal duct. Left frontal and antrum dark on transillumination; right sinuses clear. There is some fluid in swelling on forehead, but she was not able to squeeze any out into nose. I removed anterior end middle turbinate and washed out the frontal sinus which contained a small amount of cloudy secretion. This was in August. The sinus was douched every other day and a strong solution of silver nitrate injected. The swelling disappeared, and in January, 1905, was absolutely well. One year later there was a slight infection of the frontal and antrum, lasting five weeks, but the swelling on forehead did not reappear.

Captain C., aet. 49, Italian. When first examined his two frontals, ethmoids, and antra were all secreting considerable pus, the history of which dated back seven months. Much frontal pain, headaches, vertigo. An endeavor was made to relieve the condition by removal of the middle turbinates and as many of the ethmoid cells as could be reached. While under treatment for some three months, he developed an acute otitis and mastoiditis, which required operative procedures. During all this time he complained of a great deal of frontal pain, with considerable discharge of pus from the frontals, remaining ethmoids, and sphenoids. Two months after mastoid operation and during the fifth month of observation it was decided to open the sinus externally and remove all diseased tissue. This was done on the right side. Two days later he developed ether pneumonia and died on the seventh day.

At autopsy, besides the lesions of septic pneumonia; the brain was removed, which was normal; the dura was normal, except that it was slightly adherent to the region corresponding to the posterior and external wall of the sphenoid sinus. The bone beneath was salmon colored and soft. The cribriform plate and superior wall of the frontal sinus was removed. The operative area contained no pus, but simply some thick blood mixed with mucus.

This case shows the danger of conservatism in such condition though the excess of pus drained from the sinuses. A radical procedure should have been done long before. If this man had not unfortunately developed pneumonia, and had lived, would the softened bony walls of the sphenoid sinus have taken care of themselves, or would they have later produced inflammatory changes of the meninges and brain?

Mrs. C., Scotch, aet. 40. Duration of sinusitis, six years. Had antrum opened through tooth socket four years ago in Glasgow,

also all the teeth on that side extracted. Is still wearing hard rubber plug in alveolar opening. Washes out antrum twice daily. Has considerable frontal pain and headaches. Examination reveals middle turbinate removed, also some of the ethmoids; pus is exuding from frontal, ethmoids, sphenoid, and from alveolar opening into antrum. No vertigo. Probe passed into frontal sinus encounters necrosed bone in frontal duct. Dark on transillumination.

Operation (Killian). Frontal sinus filled with thickened mucosa and pus. When this was removed, the fronto-nasal duct was found to be necrosed until it was as large as the little finger. There were no bony septa in the frontal sinus, yet in spite of the large opening into the nose the thickened mucosa prevented drainage. The ethmoids and anterior sphenoidal wall removed; behind the anterior ethmoidal vessels the bony wall of the orbit was necrosed away about one-third of an inch in diameter, but not through the periosteum. The alveolar antral opening was curetted, and closed within one week.

The point of special interest in this case was the large communication between the frontal and the nose, yet the conditions were such that she had pressure symptoms in frontal sinus.

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Cancer of the Ear. L. MAHLER. *Ugeskrift for Læger*, 1906, p. 817.

Carcinoma auris in a woman of fifty-eight. The swelling occupied all of the posterior wall of the bony auditory canal, and from there it had spread to the mastoid process and to the tympanic cavity, producing facial paralysis. Chiseling out, curetting and Roentgen-ray treatment were resorted to, but fatal termination quickly followed.

KIAER.