TWO CASES OF SUCCESSFUL OBLITERATION OF THE FRONTAL SINUS AFTER REPEATED OPERATIONS.*

BY H. HOLBROOK CURTIS, M.D., NEW YORK.

The two cases which I present, illustrate the importance of total obliteration of the frontal sinus, as the only sure method of guarding against recurrence of the suppuration from reinfection.

Case I. The first case was referred by his physician in a western city, to Dr. Charles McBurney, and by him sent to me for a radical frontal sinus and antrum operation. The letter giving an interesting history of the case by his own physician reads as follows:

"Dear Doctor.—About five years ago Mr. B. had the Grip, at which time he had some swelling and puffiness under the right eye over the right maxillary antrum. There was pain over both antra. Some time after that, both antra were drilled into after the removal of the second molar tooth on each side. Pus was found in each antrum. These were douchèd. Within two months the left one recovered and the discharge stopped; two years later the left antrum was again drilled into and pus found. In the right one the discharge ran along a year and finally stopped. At intervals of from six months to a year the right antrum was again drilled into, up to November, 1901, when the present opening was made in the incisive fossa. All this time there was a great deal of pain. The pain was located under the right orbit, over the frontal sinus and at the top of the head. The pain in the top of the head extended to the occipital region. The pain has always been worse in damp weather, and preceding a storm. After a day of unusual mental effort the pain is increased.

"Mr. B. is very susceptible to pain, although he has great powers of resistance. For a number of years he suffered intensely from sick headaches at intervals of perhaps two weeks, which were sufficient to put him in bed. For a great many years he has had nightmare; he hollóos, and runs about in his sleep, and, to one who does not know him, it is quite alarming.

"Mr. B. came under my care on the 22nd of February, 1902, at which time he had the present opening in the right maxillary antrum, which was excreting from a teaspoonful to two teaspoonsful of

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pus in twenty-four hours. The left antrum was also excreting pus in smaller quantities. He was suffering very much from pain under the right orbit, under the left orbit, in the frontal region extending across the brow, and in the top of the head and occipital region. The condition of both antra had been properly diagnosed. In probing the right antrum, an opening was found at the upper, inner and anterior portion of the antrum, through which a probe passed into what was at first thought to be the anterior ethmoidal cells. Afterwards it was determined that this probe passed into the frontal sinus. An X-Ray examination revealed this fact, as well as the presence of the point of the probe in the frontal sinus when the operation of opening it was made. Trans-illumination never showed the frontal sinuses dark. The character and location of the pain led me to believe that more than the antrum was involved. To confirm this, the anterior half of the middle turbinate was removed April 8, 1902. The anterior ethmoidal cells were found to be diseased, and pus came from them after the removal of the middle turbinate. No pus was found in the nose at any time prior to this, to help locate the disease. The anterior ethmoidal cells were curetted and an unsuccessful effort made at this time to wash out the frontal sinus through the nose. September 22, 1902, the frontal sinus was opened at the point indicated by the present wound. The opening made into the bone was about three-eighths of an inch in diameter. The frontal sinus was found to be filled with granulation tissue which was very dark and bled easily. An effort was made to curette the whole frontal sinus on the right side. The opening into the nose from the frontal sinus was made free and large so that there was free access between the sinus and nose. We irrigated the frontal sinus and the antrum at intervals of from 24 to 72 hours, using sterile water, or sterile water containing boric acid, or Borolyptol, or Formaseptol, or equal parts of bi-carbonate of soda, bi-borate of soda, and chloride of soda. The odor of the discharge at first was quite offensive. Recently the discharge has almost subsided, and there has been very little or no odor. By reason of the continuance of the pain, the posterior half of the middle turbinate was removed from the right nostril about February 1, 1903, and some of the posterior ethmoidal cells were broken down and more of the floor of the anterior ethmoidal cells was cut away. Pus was found in the posterior ethmoidal cells. The sphenoidal cell has been probed a number of times at intervals extending over the observation of this case, without at any time finding any evidence of involvement of the sphenoidal sinus.
"The left antrum was irrigated through a puncture in the nose and has not discharged any for the past six months, although the pain over the left antrum has been as severe at times since then as at any time when it contained pus.

"Not more than five or six drops of pus have been washed out of the frontal sinus and right antrum at any recent washing. In spite of this fact the pain has not diminished at all. If there is any difference in the degree of pain, it seems that it has been worse for the past five weeks. Recently the frontal sinus has been irrigated through the nose.

"As a boy Mr. B. had a periodic internal strabismus in which the left eye was the offender. He has an esophoria and a compound hypermetropic astigmatism in each eye. Repeated ophthalmoscopic examinations have shown normal fundi.

"Recently there has been considerable pain in each ear which has seemed to be in excess of that which would be expected from the local disturbance in the ears themselves.

"The question now confronting us is: What is still producing the pain? Is it due to pus still retained in some cell or cells that have not been opened? Is it due to the inflammation that is still present, though not sufficient to cause pus? Or, is it due to the presence of the plugs which evidently produce more or less irritation to the branches of the fifth nerve?

Yours truly,

__________________________________________________ M. D."

When the patient came to me he was wearing a gutta percha obturator in his right canine fossa perforation and a similar contrivance through the inferior wall of his right frontal sinus, to keep the wound open for the purpose of douching. The latter plug he had worn for several months. His right antrum was discharging pus as was also his frontal sinus; the antrum was causing much pain, but the discharge was not appreciable in the middle meatus. Most agonizing and constant pain was a marked characteristic of this case throughout. The right eye-lid was indurated and inflamed from the obturator. There seemed every indication for a Killian operation upon the right sinus, but the condition of his eye-lid and the inferior wall was such that I did not see my way clear to making a flap which would be satisfactory. I determined however to attempt to save the supracciliary ridge to prevent deformity and though the bone was very necrosed below the ridge I elected to enter the anterior wall. The patient was anaesthetized by Dr. Denton and I operated as follows: The incision was from the root
of the nose on a line above the eyebrow, rather higher than usual as you see by the photograph, having previously ascertained that the sinus was a very large one and extended three quarters of an inch above the ridge. The sinus walls were found luxuriant in granulation tissue of most unhealthy type, with necrosis of the anterior wall and almost complete destruction of the inferior plate. I cleansed the sinus and curetted the anterior wall in the supra orbital portion, which I preserved as a thin bridge. I then dissected out the old wound in the inferior tissues beneath the ridge and removed the entire inferior wall. The next step was the breaking down of the posterior ethmoid cells which were badly diseased, clearing out the anterior cells as well. Having done this work most thoroughly, I decided to attempt to obliterate the sinus by packing. The condi-

dition of the soft tissues in the orbital region was such that it was impossible to attempt to close the old wound so I left both incisions open and after careful washings with peroxide, packed the entire cavity with iodoform gauze. After a week I succeeded in closing the inferior wound and obtained a primary healing. For eight weeks I carefully packed the sinus with iodoform wool which I have previously described, using this after the first dressing of gauze. This I consider the very best dressing for exciting granulations. Little by little the granulations approached and tended to close the nasal orifice; the moment this was accomplished the sinus filled up with great rapidity and the frontal wound was closed after slight paring of its edges at the tenth week. The point I wish to make is this: Obliteration of the sinus is the objective point to be attained
in frontal sinus work, and if patience and discretion is used in packing, this object may be accomplished even in very large cavities with extensive ethmoidal complications. I will not detail the operations on the antra and the sphenoid sinus in this case, which were performed after the dread of reinfection was removed by obliteration of the frontal sinus. Suffice it to say that an individual to whom life had become unendurable, has been relieved of his suffering and is able to comfortably carry on the arduous duties of Secretary of an important financial institution in the west. I will say that the photograph is taken to show the cicatrix and that the scar on the individual is not as prominent as it appears to be in the picture.

Case II. I wish to cite a case which, like the last, has been through many hands, and failures always took place from the fact that the sinus as well as the antrum regularly became reinoculated. A description of the case by a colleague in Philadelphia, may be of interest:

"Mrs K. has had empyema of the right frontal sinus and of the right antrum of Highmore for one year at least, though there is a history of neuralgia dating back 3 years.

In December, 1895, shortly after she first consulted me, I removed ½ drachm of thick muco-pus from the right maxillary sinus. While the antrum steadily improved under frequent irrigations through the ostium maxillaris, the frontal inflammation got steadily worse.

Numerous small polypi were removed from about the naso-frontal duct, but at no time was any pus seen there.

Trans-illumination of antrum was positive, of frontal, negative.

Frequent attacks of inflammation of the frontal sinus, causing marked oedema over that cavity, occurred with extreme pain at the time, but the severity lasted only a day or two. These attacks becoming worse and more frequent, the frontal sinus and antrum were opened under ether. The frontal cavity was filled with small polypi or granulations and some thick pus, the antrum contained thick muco-pus. The floor of the frontal sinus was broken through into the nose and a rubber drainage tube passed through and out at the nostril. Both antrum and frontal sinus were packed with iodoform gauze, the former daily for over 4 weeks.

The drainage tube was removed on the 10th day and a horse-hair drain substituted for a couple of days longer.

At the time of operation, I endeavored to pass a filiform bougie through the naso-frontal duct, but it was either markedly stenosed or entirely obliterated.
With a delicate curved probe one can now enter the cavity through the new opening which is beneath the extreme anterior end of the middle turbinate.

When the flow from these cavities was obstructed, before the operation, Mrs. K. had very severe neuralgia of the right side of the neck and in the right ear. There was seldom complaint of pain over the antrum, and over the frontal only during the attacks, which occurred several times a week at first but later once a month. When less frequent, the pain was severer.

The tooth is not the cause of the difficulty. It has been repeatedly examined by skilled dentists, a mirror even being used inside the cavity to view it."

________________——M. D."

This letter was written in 1893 and the patient continued the victim of pain and discharge until 1903 when, in December of that year, she was referred to me by Dr. Kinnicutt. I operated on the frontal sinus by entering and removing the anterior wall above the orbital ridge, except at the nasal portion where I was obliged to remove part of the ridge itself to obtain better access to the posterior cells.

As this case had been previously twice operated upon through the inferior wall, I was obliged to remove a greater portion of this wall during the operation but preserved the integrity of the soft tissues.

Here, as in the previous case, I made a very free opening into the nose and packed for some weeks with iodoform wool until the sinus was obliterated. I then did a slight plastic operation to remove the edges of the cicatrix. The photograph shows the scar to be scarcely visible.

In three weeks I operated on the antrum through the canine fossa, making a very free opening through the inferior meatus for packing. The wearing of obturators through the alveolar puncture which had gone on for years in this case made it necessary to remove much of the floor of the antrum, but I succeeded finally in closing a large buccal orifice and carried out my treatment through the nose until an absolute cure was effected. The patient wrote me a month since that for eighteen months she has had no pain and no discharge from the sinus or antrum.

The questions of interest which have suggested themselves to me as the result of these and like cases, are these;
1st. Is it ever expedient to attempt to incorporate the anterior sinus wall in a skin flap, after removal of the inferior wall, for the purpose of obliteration?

2nd. Provided thorough asepsis is carried out, the obliteration of the sinus always becomes possible. How often then are we justified in closing our superficial wound until we are sure that we have secured this end?

3rd. Even with a Killian bone incision, may we not get better results by packing from above and keeping our flesh wound open until we are satisfied with the appearance of the nasal cavity as viewed from above?

4th. In operating on the frontal sinus, should not the integrity of the inferior wall be preserved if possible, for two reasons? 1st.

The pulley of the superior oblique muscle should not be interfered with, and 2nd. The venous return, through the angular and opthalmic veins into the cavernous sinus should not be unnecessarily exposed to infection.

It has been my observation that cases of fatal termination have been those in which the inferior wall near the nasal junction has been attacked and the infection carried to the cerebral sinuses through the above mentioned channels.

These and similar questions have been discussed from many standpoints, I would simply say that in my hands obliteration of the sinus by packing has more than proved the success I predicted for the method, which I advocated in my paper read before this society in 1902.

118 Madison Ave.