SUPPURATIVE INFLAMMATION OF THE FRONTAL SINUSES.*

BY F. E. SAMPSON, M.D., CRESTON, IOWA.

With the location and general anatomy of the frontal sinuses I take it for granted we are well acquainted. These cavities have probably suppurated in some individuals ever since they formed a place in the noble brow of man, and may be before.

As a distinct entity, suppurative inflammation in this region has not occasioned much remark until recent years. Along with the other accessory cavities of the nose the frontal sinus is beginning to attract something like the attention it deserves.

I am aware that most of our text books treat the subject rather lightly, and refer only to the cases in which the outlet becomes occluded. They speak of the frontal sinus as a well-drained cavity, and on this account deserving little notice so long as the infundibulum is open. I might mention the fact that the uterus is a well-drained cavity, and on the same ground urge expectancy in the treatment of intra-uterine suppuration so long as the os remains open. We have certainly learned to look with suspicion upon suppurative inflammation in any part of the body, especially in any part that is in close relation with the brain and thereby rendering possible the occurrence of thrombosis of its sinuses, infection of its coverings and metastatic abscess in its substance. The study of suppurative lesions of the nose and ear, with their accessory cavities, is throwing light on the etiology of encephalitis as the study of the vermiform appendix has elucidated peritonitis.

Furthermore, suppuration of the nasal accessory cavities is generally recognized as having an important bearing on general health, aside from the local mischief and its possible transmission to the encephalon.

When we further remember the position of the frontal sinus in relation to the other accessory nasal cavities, with its outlet in close proximity to those of the ethmoid cells and maxillary sinus, it is at once apparent that persistent suppuration from the frontal might be a

*Read by title before the Western Ophthalmological, Otological, Laryngological and Rhinological Association, St. Louis, Mo., April 7, 1897.

source of constant reinfection of these cavities. I have been repeatedly impressed with this fact by cases of maxillary abscess that were treated without result until the corresponding frontal sinus was made a party to the offense and placed under discipline. Enough as to the importance of considering this lesion.

Infection of the frontal sinus usually occurs by extension through the infundibulum, or directly from without, by trauma. Neoplasms within the sinus may become infected through the circulation. Contributory features are, inflammation of the intra-nasal structures. In obstructed outlet cases, narrowing of the nasal cavities by deviated septum, polypi, or hypertrophies is often an important element in producing occlusion of the infundibulum. The acute infectious diseases, especially La Grippe, seem to establish conditions favorable for the infection of this as well as the other accessory cavities of the nose.

Suppuration in the ethmoid may break through and directly infect the frontal sinus.

Abscess of the maxillary sinus may be the primary lesion and establish direct communication with the frontal sinus.

The diagnosis in true empyema is not generally difficult. With complete obstruction of the outlet, the pressure phenomena become pronounced. The pain is severe. Mental application impossible. Insomnia often a marked feature. Percussion over the sinus elicits pain, and trans-illumination shows a dark area over the suspected region. The abscess may bulge into the orbit. With this array of evidence, the only thing to be excluded would be a solid neoplasm, which could not be positively excluded without invading the cavity.

The cases in which the outlet remains open, or is intermittently obstructed, are not so easily recognized. Pain may be referred to the frontal region in maxillary sinus abscess, when there is no suppuration in the frontal sinus. On the other hand, suppuration may occur in the frontal sinus with but little or no pain, and percussion elicit no tenderness, so long as the outlet remains open.

History of a purulent discharge from one side of the nose is highly suggestive of trouble in some of the accessory cavities. Having ruled out foreign body, rhinolith, septal abscess and purulent dacryocystitis, we proceed to determine which of the accessory sinuses is at fault. With the exception of the sphenoidal sinus, all these cavities drop their overflow into the middle meatus, where it may be seen along the lower border of the middle turbinate. Much has been written by way of attempt to locate the lesion by appearance of pus, as to color and consistency, by the constance or intermittance of its flow,

by posture of the patient and observing the location of the pus—the inspected parts having been previously cleansed. Evidence derived in this way is of itself very indefinite. And furthermore, even though we be positive of pus in the maxillary sinus and ethmoid cells we may be still in doubt as to the frontal sinus.

Trans-illumination is by some considered unimpeachable. While my experience with it has so far been satisfactory, yet I can see how it might lead one into error.

Ordinarily, when the sinus shows dark we will find pus, or at least a greatly thickened mucosa; but let us run briefly over the possibilities; if the sinus shows clear, it means one of two things, it is either healthy or contains a mucocoele; if clearer than its fellow, it does contain a mucocoele; unless the other sinus be diseased, absent or contains a solid neoplasm. If it shows dark, the sinus contains pus or has a thickened mucosa—unless it be a solid neoplasm or the sinus absent and its place occupied by a part of the frontal lobe of the brain.

We must also bear in mind that even though we find pus in the middle meatus, can exclude all the other accessory cavities from participation and find a dark area over the frontal sinus; that all these conditions could come from a neoplasm which had become infected either via the infundibulum or through the circulation. In other words, that the certainty of pus coming from the frontal sinus does not rule out neoplasm.

It appears, then, that our diagnosis of frontal sinus suppuration, unaccompanied by complete obstruction of the outlet, must often, if not usually, be reached by the consideration of well-selected probabilities. Assuming now that we have a suppurative lesion of the frontal sinus, what is to be done about it? I shall not attempt to enumerate the various measures which have been accused of *curing* this trouble. Many of them doubtless get well spontaneously. If we happen to be treating the case by some mild or soothing method, we naturally take credit unto ourselves—the credit often being about the same quality as that which obtains in nursing an abscess elsewhere—until it breaks. I do not mean to say that methods of treatment other than operation are without value. In the absence of urgent indications, expectancy is often a good line to follow—at least until we see that nature, unassisted, is not going to get through with it. Before resorting to operation on the frontal sinus, we should do what we can for any nasal disturbance. Keep the parts clean, and, even if the infundibulum is occluded, applications of cocaine solution about its lower orifice may restore its patency. If we succeed in opening

the passage, and in cases where it has remained open, we may try to medicate the sinus with some gas, such as formaldehyde, forced into the nose under pressure. Our English friends claim good results from oxygen. The general condition of the patient must not be forgotten.

If these measures fail to give the desired result, we have the operative procedures.

The indications for operation I would state as follows:

1. Retention of pus within the sinus, not relieved by the above mentioned measures.
2. Persistent purulent discharge from the frontal sinus, after any other involved accessory cavities of the nose have received proper attention, viz.: Opening and treatment of the ethmoid cells and maxillary sinus, in event of their involvement.
3. If, after months of thorough but unavailing treatment of suppurative disease in the ethmoid or maxillary sinus, trans-illumination of the frontal sinus shows a dark area, we are justified in opening this cavity from without, even though there be no evidence of empyema of the sinus, or positive proof of purulent flow through the infundibulum.

Before considering methods of operation, let us briefly review some recent studies in anatomy of the frontal sinus. Dr. Tilley, after examination of 120 skulls, reports as follows: "The capacity of the frontal sinuses varies from a few minims to half an ounce or more. The sinuses may be absent in the adult. The prominence of superciliary ridges is not a safe index to the capacity or extent of the frontal sinuses. The two cavities are not always symmetrical; the cavity on one side may be small while its fellow may be large; or it may even be absent on one side, the other being well developed. The openings and direction of the infundibulum are also subject to wide variations."

In speaking of operations I shall not refer to methods in detail. The frontal sinus may be approached from below, via the nose, or from without—opening through the anterior wall. By the intra-nasal method an attempt is made to catheterize the infundibulum. In event of failing in this, a way is broken through with gouge, bur or trephine. This method has distinguished advocates. A glance at the anatomy of the part, the frequent anomalies, and a review of the disasters that have followed this method, tends to make one afraid of it. A few months ago Vohnsen reported a case where the attempt was made to medicate the frontal sinus by blowing powder through a catheter, supposed to be in the infundibulum. At the autopsy it

was found that the cranial cavity, instead of the sinus, had been medicated. Another, reported by Mermod, in which a probe, and subsequently a catheter, was supposed to have been passed into the sinus *per viam naturalis*. Fatal meningitis followed, and at the post-mortem, part of the frontal lobe of the brain was found to occupy the space usually occupied by the sinus.

Even when successfully done, this method only gives drainage, and possibly enables us to medicate the cavity. The cases that can be catheterized *without force* will, in my opinion, get along fully as well without. When force is used, the operation is painful and is likely to require frequent repetition. It does not give us exact information as to the contents of the cavity. It may be the means of infecting a neoplasm which has given us the pressure symptoms and trans-illumination shadow of empyema, and possibly delay the recognition of conditions that should receive prompt and radical attention.

These considerations, along with the doubts that must often arise as to the accuracy of diagnosis, lead me to believe that where operative interference is indicated, opening through the anterior wall is to be preferred, and an opening of sufficient size to permit free exploration.

Bilateral Zoster of the Mouth and Pharynx.

This affection presented itself in a male patient, seventy-eight years old (M. Lermoyez and M. Barozzi, *N. Y. Med. Journ.*, March 12, 1897). No general symptoms appeared except pain in the mouth for forty-eight hours. The eruption occupied the palatine arch, the velum of the palate, the upper gums, and the neighboring gingivolabial grooves. It was formed of groups of vesicles seated upon erythematous patches, and was seen as a symmetrical zone, around the floor of the mouth. Several attacks occurred, but no eruption was observed on the body. The disease lasted about four weeks. Owing to the absence of general symptoms and relying upon the perfect symmetry of the eruption, a diagnosis was made of bilateral symmetrical bucco-pharyngeal zoster of the parts innervated by the second branch of the trigeminal nerve.

M. D. L.