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Methods of Diagnosticating Diseases of the Antrum of Highmore, and their Treatment.

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METHODS OF DIAGNOSTICATING DISEASES OF THE ANTRUM OF HIGHMORE, AND THEIR TREATMENT.*

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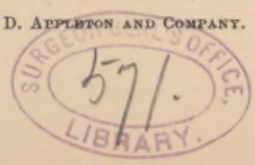
In my opinion too little attention is given to this cavity in connection with affections of the nose. Disease often exists in this sinus when no visible indications are present.

Lennox Browne says that he has always found empyema of this antrum when suspected, probably only having operated on patients where disease had so far advanced as to make diagnosis almost certain.

Lichtwitz, of Bordeaux, recommends irrigation by puncture with a straight trocar through the inferior meatus. When the diagnosis of empyema is a little uncertain, this, he says, in all cases, clears it up conclusively. In 167 punctures already made, 54 gave positive results, while in 113 the antiseptic solution returned clear. But, in my opinion, this is not by any means a positive diagnosis, as always more or less blood

* Read before the Kings County Medical Association of Brooklyn.



is present, making it impossible to tell whether there is pus or not, unless in large quantities.

In many cases, even under a local anæsthetic, the pain is considerable, and patients complain of what they think unnecessary suffering; and I concur with them in saying that it is needless and uncertain in its results. In many cases have I used it, but prefer other methods.

Zeim makes an exploratory puncture through the alveolar arch, which is more painful and unsatisfactory than that through the inferior meatus.

Hartmann and Kaufmann irrigate through the natural orifice and treat through that opening, but usually this is most unpleasant and objectionable, and can only be done in skillful hands.

For diagnosis, Lennox Browne relies upon the old methods—viz.: discharge of a fluid of the consistence of cream, of a pale lemon-yellow color, and, as a rule, unconnected with any ulceration or inflammation of the rhino-mucosa of the affected side and generally unilateral, and the patient is always aware of the offensive character of the flux. He says that in illumination pus may almost always be seen oozing from under the anterior extremity of the middle turbinated bone, and if this be wiped away, and the patient made to lie on a couch, with head slightly bent downward, the secretion will reappear. Also, there is generally pressure, redness, pain in that region, in eye, fullness of nose, etc.

This may do very well when these points are clearly developed, but is useless in cases in which there is no pus. When in doubt, he recommends puncture through the alveolus, canine fossæ, or the wall of the middle or inferior meatus.

These methods are all good, but in my opinion, based

on past experience and that of others, I have come to the conclusion that the most feasible and practical way of diagnosis is by electrical illumination, now practised by but few. I believe it was first introduced by Voltolini, and later in Vienna privately by Chiari, and in the clinic of the late Dr. Schnitzler, where I have seen it used quite extensively. Not only has the electric light been found a convenient, painless, and reliable diagnostic measure in antral disease, and other sinuses about the head and face, but in the stomach, rectum, bladder, etc., and what developments await us in the future we know not.

As already stated, the present methods employed are usually painful, and that of syringing *via* the middle meatus is to most persons extremely unpleasant, and even in skillful hands great difficulties are often experienced in reaching the natural orifice.

To the use of the electric light in the mouth there can be none of these objections, and if in the future, after greater experience and better instruments, full reliance is found possible, a great gain will be secured; for the lamps may be put to many uses in diagnosis, not only in disease of the antrum of Highmore, but in frontal and ethmoidal disease as well. In the latter, however, I have found the light of little use, although in the hands of others partial success has been attained. Still, many say that it is of no practical value, but I think I may be able to prove that it is of real, not assumed, practical value.

I have been using one of Leiter's lamps, of about three candle power, which was most satisfactory; but this lamp having given out, and not being able to replace it with another, I have more recently been using one

of Meyrowitz's, of about one candle power, and find this nearly as good as the higher; but of course the light spots are not so well defined as with the greater power. The handle is so arranged that the current may be turned on or off at will, and I do not press the button until the lamp is in the mouth and lips and nostrils are closed. The room must be absolutely dark, with not a ray of light to interfere with this delicate and accurate diagnostic method.

The points of diagnosis in illumination of the antrum are in appearances under the lower eyelid, over the antral sinus; if healthy, a large triangular light spot is seen, and, if clearly shown, we may be quite sure of a sound antrum. A more subdued illumination exists over the whole cheek and lips.

A good deal of practice is necessary to clearly and easily recognize the lines of demarcation. In well-developed antral disease the whole area of the antrum is in the deepest shadow. Sometimes in health the antral area is dark, but very rarely is this the case.

The lamp may also be used for diagnosis in the nose, placed in the mouth and the nasal speculum used. The frontal sinus may be illuminated by placing the lamp under the orbital ridge, and in disease a dark shadow is formed. The normal tissues in these regions in persons of all ages are transparent, as is proved by the light, and in disease, no doubt, the umbra is caused by the hypertrophied condition of the mucous membrane and not the presence of fluid in the sinus. After all discharge has been cleared out the shadow still remains, and no means at our command can enlighten us as to the nature of the contents.

After diagnosis, the next consideration is the best

method and point for opening and treating the maxillary sinus, and it is essential that an artificial opening, easy of access, be provided, where surgical measures may be carried on and perfect drainage effected, because in many cases very complicated conditions are found. To attempt the treatment of such cases through the natural canal is, to say the least, most unsatisfactory, as in many cases of disease it is imperforate, and if found, which is difficult, treatment through it yields little or no permanent results.

As already intimated, entrance to the antrum through the nasal wall as a means of diagnosis or treatment is most undesirable, as there are so many extensive diseased conditions of the sinus on which this method could throw no light, owing to the fact that there are many affections without purulent secretion, as polypoid degeneration of the antral mucosa, inspissated discharge, and in many cases locking up of fluids by sæpti.

Also, the approach to the sinus by the way of the alveolar process is almost as unsatisfactory as the other methods, because here it is almost impossible to make a proper exploration or diagnosis, or get good drainage or access for surgical purposes, and to sacrifice a sound tooth for such a purpose is open to criticism. If there is merely a little pus present, then this opening may answer every purpose, but how are we to tell that this alone is the condition?

I puncture through the anterior wall of the sinus at the canine fossæ. The lip is well retracted and a crucial incision made down to the bone. With an elevator the soft tissues are cleared away over quite a large space, say about the size of a silver twenty-five-cent piece. With a large burr in a dental engine the per-

foration is made through the bone and carefully enlarged with a small chisel to the size desired, being cautious that the contents of the antrum are not disturbed.

The sinus is now examined, with the electric light in the mouth or by reflection. If sæpta are present they are broken down, and polypi, if present, are removed, and if there is a granular or adenoid condition of the mucous membrane it is curetted. Sometimes hæmorrhage is excessive, but it is easily checked by packing the sinus for a short time. The opening is made flush with the floor of the sinus, and a drainage-tube placed along its floor and allowed to remain a week or two. Occasionally a gold eyelet is put in, and the patient is thus in a position to syringe out the cavity at will.

The great difficulty is to keep the cavity open long enough, and subsequent repair is always perfect. The operation may be carried out under cocaine with but little pain, but I am in the habit of using bromide of ethyl for most cases. This general anæsthetic acts quickly, safely, and pleasantly. Professor Politzer, of Vienna, uses it almost exclusively in slight operations on the ear, and in the numerous cases in which I have seen him use it I have never observed the slightest unpleasant effect.

Some authors assert that carious teeth are the chief factors in antral troubles. Lennox Browne says that in forty-six cases recorded he found carious teeth present in all but three, but he does not state whether he believes the dental irritation is the cause of the trouble or not, but says that possibly the condition of the teeth may be caused by disease of the antrum. It is true that most persons afflicted with antral disease also have carious teeth, but I believe that only in rare cases are they

produced by empyema of the antrum, and then only in those cases of necrosis of the floor of the sinus, or the rare cases of roots of teeth penetrating into that cavity.

Chiari, of Vienna, says that only in exceptional cases is the trouble caused by periostitis and abscesses at the root of the tooth, and occasionally the mere extraction of a tooth will effect a cure. Sometimes repair follows the frequent irrigation of the nose by medicated fluids and by the way of the natural orifice, but oftener only improves the trouble. Only recent inflammations may be so handled with any degree of success or certainty.

Probably in the greater number of cases of nasal blennorrhœa presented to the specialist, the seat of discharge is the maxillary sinus, and I do not believe the fœtidity of the pus to be an important factor in diagnosis, as the odor seems more to depend upon the length of time the pus is pent up by sæpti, etc., than by the place of origination.

Case I.—A gentleman, merchant, American, aged fifty-four years, presented himself at my office complaining of stoppage of the left nostril and a most fœtid discharge from the same, which permeated every room where he sat, making life not only disagreeable to himself but to all others in the house as well. On examination I found the nostril filled with a muco-purulent secretion of the most offensive character. An antiseptic spray was used for several days and the discharge somewhat abated, and on a second inspection several large polypi were discovered, extending into the postnares; these I removed by snare, and cauterized the bases as well as possible with the electro-cautery. Very marked atrophy had taken place. The discharge was soon controlled, but fœtidity remained as bad as ever, and as there were no visible indications of disease I sus-

pected antral trouble, and with electric light in the mouth found the following: the whole antral area on the left side was in deep shadow, whereas the light-spot showed distinctly over the antrum on the right side, thus convincing me that the left sinus was diseased; but as to its nature I was still in the dark. I endeavored to irrigate through the natural orifice by means of the Hartmann cannula, but with no success. The patient's teeth were in excellent condition and the mucous membrane was healthy. I concluded that this was a good case for operation, but he being in delicate health I thought better to delay for a time, and in the meantime kept up treatment of the nose.

A few days later, however, on one of his visits, he called my attention to a sore over the socket of the second superior left bicuspid, where that tooth had been extracted some weeks before, but the tissues at my first examination seemed perfectly healthy, and now considerably swollen and abraded, presenting an ugly appearance. It was most suspicious and I was somewhat puzzled as to its nature, but I treated it the best I could and he retired, only to return a few days later to tell me that it was rapidly increasing, and on looking I found that it had considerably extended along the alveolus.

With a probe I entered the mass, and, as there was only the slightest pain, concluded to see how far it would go, and, to my surprise, it first came in contact with necrosed bone which it penetrated, and continued on to the floor of the orbit. Hæmorrhage resulted through the natural orifice, but soon ceased. I now decided that I had cancer to deal with, so excised a portion; I examined it microscopically myself and had it examined by the pathologist at Harvard, my diagnosis being confirmed. The increase was very rapid, and soon prevented closure of the jaws and extended the whole length of the palate. Hæmorrhage on several occasions was profuse. The fœtidity was extreme and remained about the same from the first time I saw him.

There was nothing in this case at first to indicate disease of antrum excepting the shadow test and odor;

no pain, swelling, redness, discharge, or pressure. He died twenty-five days after I first saw the sore.

I should have stated that toward the last there was displacement upward of the floor of the orbit and walls of the nose, severe pain in the eye, etc.

CASE II.—A woman, twenty-four years of age, had a fœtid discharge from the right nostril, and after irrigation and drying I found the middle meatus bathed with thick pus and partially blocked with some small polypi, which were removed. Antiseptic washes were used in the shape of sprays, and after a few days the discharge abated greatly, but as the patient reclined on the left side more pus would at once appear. Here it was evident that we had a case of empyema of the antrum to deal with. All teeth were in place and healthy.

By the use of Hartmann's cannula the sinus was quite easily reached and washed with medicated lotions several times daily with good effect temporarily, but a few months later the patient was worse than at first. By electric illumination the left side was very clearly lighted, while the right side was quite dark.

An operation was decided upon and anæsthesia produced by bromide of ethyl, and the antrum opened and pus removed through the artificial opening and the nasal fossa. I could find no cause for the trouble. There was some thickening of mucosa, which would account for the shadow.

I treated it by boric-acid solution at first and later with zinc chloride, ten grains to the ounce, and the repair was perfect. In this case, as is shown, it seemed impossible to obtain good results through the nasal fossa.

CASE III.—Steven J., aged sixty-four years, mechanical engineer, was kicked on the nose by a horse without a shoe, ten years previous. There was considerable swelling and inflammation at the time and stoppage of the nostrils. From that time he has had constant trouble.

The sæptum was deflected to the left side and there was marked hypertrophy of the right middle turbinated.

There were several polypi in each nostril and very little pus. He was a great sufferer from asthma. Both antra were in deep shadow under the electric light. I removed the polypi and hypertrophied tissue.

I gave chloroform and, as usual, opened through the canine fossæ into both antra. On the left side the antrum was divided by a sæptum, locking up a quantity of pus of extreme fœtidity. I irrigated and found the mucous membrane much infiltrated.

On my attempting to break through the sæptum the whole thing was found in a state of necrosis and immediately collapsed; behind, the cavity was plugged with a thick purulent caseous mass. I curetted very freely, irrigated, and put in a drainage-tube. The right side was found one of simple empyema and thickened mucosa, with an inspissated mass blocking up the nasal orifice. It was curetted and carefully treated. On this side the repair was quick and thorough, but the left remained some time in a diseased condition; but by persistence and keeping the opening patent, the repair eventually became perfect. The nares remained free of disease, asthma disappeared, and he became as it were a new man.

In the two cases mentioned the restitution was so perfect that the light reflex became clear. The discharge is free through the natural orifice, and the health is much improved.

In many cases I find ear complications, particularly tinnitus.

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EDITED BY

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