Among all the oily substances, I have concluded that liquid vaseline was to be used in preference to vegetable oils. We can get the same results, according to my experience, with other oils; for example, olive oil and sweet almond oil. Still, we know that these are often adulterated and rapidly become rancid by a fermentation which changes them partly into oleic acid or other analogous acids, and they may thus become very irritating to the tissues with which they come in contact. Moreover, the least lack of asepsis is capable of making of them an excellent culture medium.

On the other hand, liquid vaseline has none of these disadvantages. It is a neutral mineral oil, and it does not change either with light or in the air; consequently it does not become rancid. It is very stable and can resist the action of the most energetic chemical substances; moreover, it cannot be infected. For these reasons it is to be preferred to all other oils for this kind of dressing.

The small number of patients treated hitherto by this new procedure does not allow me to deduce fixed conclusions. The aim of this communication is rather to submit this method to my *confrères*, and to suggest that they should try it, and, later, communicate the result of their personal experience.

In conclusion I would remark that with vaseline oil dressings: (1) There is no pain; (2) the wound does not granulate; (3) epidermisation proceeds rapidly; (4) the cavity retains, if so desired, the shape which it had immediately after operation.

OBSERVATIONS ON FRONTAL SINUSITIS.[1]

By Chichele Nourse, F.R.C.S.Ed.

The following observations upon frontal sinusitis pertain almost entirely to that affection in its chronic form.

Acute frontal sinusitis, as met with by the surgeon, is accompanied by symptoms which are sufficiently definite in character, and it usually tends to resolution without the necessity for operative interference. Cases generally yield to inhalations of mentholised steam, the application of adrenalin and cocaine to the middle

[1] A paper read in the Section of Laryngology at the British Medicine Association meeting at Exeter.

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meatus, and other medical measures. Occasionally it is possible to pass a curved probe through the fronto-nasal canal. In one such case the introduction of the instrument was followed by a gush of bloody discharge, immediate relief from pain, and a speedy cure.

It is not clear what relationship, if any, exists between these cases and the chronic form. Not only does it seem that perfect recovery from acute sinusitis is the rule, but generally in chronic cases there is no history at all of any previous acute catarrh. In one case only was a history obtained of what might perhaps have been a previous acute attack. On the other hand many sufferers from chronic sinusitis state that they have previously suffered from attacks of coryza.

As the distinctive symptoms of acute frontal sinusitis are due to retention, it is possible that there are other cases also, without retention and therefore without symptoms, which pass unnoticed, and it may be that these sometimes lay the seeds of chronic disease. Whether this is so or no, or whether chronic sinusitis takes its origin *de novo*, cannot at present be determined.

Certainly most cases of chronic frontal sinusitis are latent from the first. As stated by Luc, the entire clinical expression of the affection may be confined to a discharge of pus from one of the nostrils or into the pharynx. The other prominent symptom is pain over the frontal region, which is very frequently present; and it may be observed that neither pain nor tenderness in chronic frontal sinusitis is dependent upon obstruction of the fronto-nasal canal or retention of discharge.

The condition of things which is found is altogether different from that present in acute sinusitis, where the primary seat of the disease is the epithelial surface, as in any other acute catarrh.

In chronic sinusitis, on the other hand, with the exception of certain cases, to which reference will presently be made, the disease is located in the substance of the muco-periosteum itself, which is not only engorged with blood, but œdematous, and infiltrated with inflammatory products. It is often thickened to an enormous extent, and polypoid outgrowths project into and greatly diminish the lumen of the sinus.

A considerable secretion of pus takes place, but it trickles away nearly as fast as it is formed, partly because there is no room in the sinus for any large collection, and chiefly because the ostium, situated at the lowest and most dependent point, is usually widely open.

As a rule the fronto-nasal canal becomes larger than in the

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normal state, and the pus drains away continuously in a scanty stream, often so small as to be scarcely noticeable. Sometimes, however, a granulation or a cluster of polypi may impede the exit of discharge, which then collects in greater quantity; or the lining of the fronto-nasal canal may become acutely inflamed and swelled from some temporary cause.

Permanent retention does occasionally occur, with the production of an entirely different clinical picture, but it is not common.

Sometimes the disease extends to or penetrates the bone and gives rise to complications, and there are some cases besides in which a bony swelling occurs over the diseased sinus, due apparently to a limited area of osteitis.

Two such cases of bony swelling have been recorded by Dr. Scanes Spicer (JOURN. OF LARYNGOL., RHINOL., AND OTOL., 1902, p. 124, and 1905, p. 378), both of which were apparently specific; one by Dr. Peters (*ibid.*, 1906, p. 295); and one probably similar by Mr. F. J. Steward (*ibid.*, 1903, p. 264).

The author has met with this condition three times, in each of which the bone was thickened and vascular.

CASE 1.—*Left frontal sinusitis and empyema of the antrum.*—A bank clerk, aged thirty, whose occupation consisted in counting dirty silver money. Duration of symptoms two years. Left frontal pain, mental dulness, continual discharge into the throat. Marked prominence of the bone over the left frontal sinus. No tenderness. Intra-nasal treatment of sinus by injections for eighteen months before the radical operation. Sinus contained granulations and pus. A second operation performed four months later. Antrum drained through alveolus. (Case shown at the British Laryngological, Rhinological, and Otological Association in 1899.)

CASE 2.—*Left frontal and maxillary sinusitis.*—A girl, aged twenty. Duration of symptoms two years. Discharge from the left nostril, subjective fœtor, swelling of forehead, tenderness, pain. Operation. Bone thickened externally over sinus and rather vascular. Lining membrane thick and red. Sinus contained granulations. Operation on antrum twelve days later.

CASE 3.—*Right frontal and ethmoidal sinusitis.*—A traveller, aged thirty-four. Duration of symptoms two and a half years. Discharge from the right nostril, frontal headache, bony swelling over right frontal region. Puffiness in upper part of the right orbit and swelling of the upper lid. Local tenderness. Supposed

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cause, a cold following an evening cycle-ride. Sinus contained pus and granulations.

Exceptionally the author has met with a condition which can only be regarded as chronic catarrh. In these cases the symptoms were the same, but the sinus contained thick mucus, and the lining membrane was hardly thicker than the normal.

A similar case has been recorded by Mignon, of Nice, in December, 1903 ("Abstract," JOURN. OF LARYNGOL., RHINOL., AND OTOL., 1904, p. 170). A woman, aged thirty, complained of great pain in the left frontal region, which was less translucent than the right. Local applications and irrigation through the catheter gave no relief. At the operation the sinus was found to contain only mucus secretion.

CASE 4.—*Chronic catarrh of frontal sinus.*—Male, aged twenty-five. Duration of symptoms six months. Discharge from right nostril for six months. Frontal headache for two or three months, with severe paroxysms. Polypoid degeneration in the middle meatus. The patient had influenza nine months before. There was a definite history of syphilis five years earlier, and he had been a heavy drinker. Sinus full of thick, jelly-like, greyish, transparent mucus, which welled up under pressure when the sinus was opened. There were one or two masses so thick as to resemble polypi. No bleeding from the lining of the cavity. A little later the patient developed tertiary disease in the nose and a gumma in the tongue.

CASE 5.—*Maxillary and ethmoidal sinusitis, and catarrh of the frontal sinus.*—A servant-maid, aged thirty-five. Duration of symptoms two years. Frontal headache and nasal discharge. Recurrent nasal polypi. Frontal sinus small; it contained thick, grey mucus. The maxillary antrum and ethmoid were dealt with later.

CASE 6.—*Catarrh of right frontal sinus.*—Male, aged twenty-nine, came under treatment in 1903 for right maxillary and thmoidal sinusitis; after some local treatment he was operated upon in 1904. The right frontal sinus, which appeared less translucent than the left, was examined at that time with a curved probe and cannula, and appeared to be healthy. The patient lost all his symptoms, and seemed to be perfectly well.

In September, 1906, he returned again with the following history: A fortnight before, while at the seaside, he had very severe pain on the right side of the head lasting for two days, then a yellow discharge came from the right nostril and he felt relief. Since then he had constant pain over the right eyebrow, a profuse

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discharge of pus from both nostrils and into the throat, and stiffness round the back of the neck, which, he said, made him lose himself.

In March, 1907, the right frontal sinus was opened. It was very large, extending as far as the outer angle of the orbit, and upwards for some distance. The lining membrane, which was thin, was distended with thick, opaque, grey mucus, which Dr. Wyatt Wingrave kindly examined. His report was as follows: "The "material consisted of mucin, with a small amount of globulin. "There were only a few lymphocytes and leucocytes, and no epi- "thelial elements. The only bacteria present were a few diplo- cocci." A month after the operation the patient reported that the headache and pain over the brow were gone, but that he still had a little stiffness round the neck. All discharge of pus had ceased.

In one case both frontal sinuses were full of polypi.

Case 7.—*Double frontal sinusitis; polypi.*—A coachman, aged twenty-five, was sent on account of polypi, which completely filled both nostrils. They had been removed several times. Duration, two years or more. After removal of the polypi at several sittings the frontal sinuses were examined. On the right side the probe entered, but not the cannula. On the left side the cannula entered easily, and on perflation blood and pus were expelled. Both sinuses were large, and were quite full of mucous polypi. The left sinus had an extension backwards over the orbit. This side afterwards gave trouble and was re-opened.

In reference to diagnosis, the establishment of a certain conclusion as to the presence of chronic frontal sinusitis is not always easy. For this purpose the frontal sinus cannula is particularly useful. The only method of making the diagnosis absolutely sure is by demonstrating the presence of pus in the sinus. With this object it has been suggested to dam up first one and then another of the ostia in the hiatus by small tampons of gauze, and after cleansing the parts to watch for the reappearance of a bead of pus. But the most satisfactory way of investigating the condition of the sinus is by means of a probe and cannula.

If a suitably-curved instrument can be introduced into the sinus, and discharge blown out, the existence of a diseased condition is proved beyond question, and radical treatment can be undertaken with much more confidence.

It is not always possible to introduce a probe through the fronto-nasal canal from the nose, especially if the sinus and canal are healthy, but if the instrument is of a suitable form it can

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certainly be effected in the majority of instances where the sinus is suppurating. The fact has already been stated that in such conditions the fronto-nasal canal is generally of a larger calibre than in the normal state. This is of such regular occurrence that the author considers that a sinus which would not admit a probe after two or three careful trials is probably healthy.

As regards the form of the instrument, each surgeon probably has his own preference. For diagnostic purposes it should be of such a shape that there can be no doubt of its position when it is in the sinus.

The floor of the sinus slopes downwards from front to back towards the ostium, which is usually situated at its hinder and most dependent part. The fronto-nasal canal, in health generally a short and narrow track between ethmoidal cells, is directed downwards, backwards, and a little inwards, and enters the middle meatus of the nose at the upper end of the hiatus semilunaris, or just above it. In a certain number of cases there is no canal, but the lowest point of the sinus opens directly into the middle meatus.

Lichtwitz remarked that the axis of the fronto-nasal canal forms about a right-angle with a line drawn from the hiatus downwards and forwards to the hinder edge of the nasal orifice.

The form of the probe and cannula preferred by the author consists of a segment of one third of the circumference of a circle with a straight shaft. It has only one drawback, namely, that the long curve makes it sometimes a little difficult to introduce; this, however, becomes less by practice.

It has been said that if the quantity of pus flowing from the middle meatus is profuse, the frontal sinus is the cavity affected, but this is not quite correct. From a suppurating frontal sinus with a gaping ostium, the secretion drains away as fast as it is formed, often in a stream which is so nearly imperceptible as to escape notice until a blast of air driven through the cannula dislodges the few drops which are retained in the interstices between the polypoid masses, and causes them to appear alongside of the instrument. A drop of blood sometimes trickles down the cannula.

In all the author's cases the sinus had been examined with the probe previous to operation.

In two cases only was a cannula of Hartmann's pattern with a wide curve passed more easily than the much curved form. In one of these the ostium lay near the front of the floor. In general, the pattern described is most suitable, and in many cases it is the only shape which will enter.

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The fact that the anatomical disposition of the frontal sinus with the ostium at its lowest point is so favourable for good drainage, and the tendency of acute catarrhs to spontaneous cure directly drainage is established, may be used as arguments in favour of treating chronic frontal sinusitis through the infundibulum. A very little further help, it might be said, would be successful, where cure has not been effected by the unaided efforts of nature. But these considerations are based upon the theory that chronic frontal sinusitis is kept up by obstruction of the outlet and insufficient drainage. This proposition is open to doubt.

After a prolonged experience with intra-nasal methods, it must be confessed that the results so far have been rather disappointing.

The cases were treated by irrigations and injections of various kinds through the cannula, and, further, with the view of creating a large outlet for discharge, rubber drainage tubes of increasing sizes were introduced into the fronto-nasal canal and worn constantly by the patient for a week or two at a time. It is true that the symptoms can thus be often reduced to a minimum, but they are apt to recur, and we have to fall back on radical measures after all.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Thirteenth Annual Session, held in New York City, May 30, and 31, and June 1, 1907.

WENDELL C. PHILLIPS, M.D., *of New York, President, in the chair.*

FIRST DAY, MAY 30.

Dr. JOHN A. WYETH, President of the New York Academy of Medicine, welcomed the Society on behalf of the Academy.

Research Prize.

The PRESIDENT, in recounting the recent achievements of the Society, called attention to the fact that the Council had set apart

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