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NOTES ON NASAL SUPPURATION.

By J. Mackie, L.R.C.P.Ed.

In the few remarks which I wish to submit for your consideration my contention will be:

1st. That the essential cause of nasal suppuration is defective drainage.

2nd. That defective drainage is mainly due in childhood to adenoids and lymphoid hyperplasias.

3rd. That later it is the result of hypertrophies and deformities resulting from lymphoid hyperplasias during the period of active growth and development.

4th. That by adopting this view of the natural history of nasal suppuration the whole subject becomes more intelligible, and a simpler and more rational treatment becomes possible.

We are all agreed that from earliest infancy to adult life the naso-pharynx is a region peculiarly liable to catarrh and hyperactivity of lymphoid tissues. This means that for a considerable period of early life, while the growth and development of the nasal orifice is being effected, the naso-pharynx is in a state of active congestion, its mucous membrane is bathed with purulent or other irritating discharges. We can all, when an operation for adenoids is being discussed with an anxious mother, wax eloquent over the arched palate, the gaping mouth, and the stupid look which comes from habitual mouth-breathing. I doubt if we think so much of what is perhaps of more serious import, the malign

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influence of early naso-pharyngeal disease on growth and nutrition. If we systematically investigate this point, and take every opportunity of inquiring into the early history of people with normal noses, we will seldom find that there has been any prolonged catarrh in early life. If, on the other hand, we take our cases of septal and turbinal distortion, our chronic smouldering empyemata, above all our cases of ozæna, we never fail to find a history of naso-pharyngeal trouble in early life. Further, how often do we find young adults brought to us for sinus and other intra-nasal mischief on whom years before we had operated for adenoids.

Adenoids is often a disease of very early life, and frequently before cases are brought under our notice changes have been produced by them in the nasal passages which a simple scraping of the pharynx is too late to remedy. Personally, for some time it has been my custom in all adenoid cases to carefully examine the nose, and if I find any considerable obstruction, I endeavour to deal with it at the same time that I perform the adenoid operation, the part most often receiving attention being the head of the middle turbinal.

I hold that most if not all cases of ozæna have their origin in childhood, and are due to the causes I have mentioned. If this view is correct, then an ordinary case of ozæna will form a fitting study to test the influence of foul discharges on development. Taking an average fairly severe case, the middle turbinal will be found in its anterior half broadened, pressed against, and seemingly incorporated with the outer wall. Its posterior half is even more hypertrophied, often twisted on itself, and curled backwards and upwards. In extreme cases, where the face is flattened and the spheno-ethmoidal recess shortened, it may be found pressed against the anterior wall of the sphenoid. It is very easy to see in such a case how drainage is interfered with. The outlet from the posterior ethmoidal and sphenoidal cells is blocked, while the spheno-ethmoidal recess itself has become practically a closed cavity.

If the view that nasal suppuration has its origin primarily in the nasopharyngeal diseases of childhood is the correct one, we would expect to meet with its first indications in the region of the middle turbinal and the ethmoid cells. My belief is that such is the case.

The study of the diseases of the nasal sinuses began with those most obvious and those approachable by the general surgeon. Old beliefs die hard, and the errors of one text-book have a knack of showing themselves in its successors. At the present day, if those of us who have considerable rhinological experience would disregard

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for a moment the importance formerly attached to disease of the antral and frontal sinuses, we should, I think, find that an enormous preponderance of all cases of sinus disease had their seat in the ethmoid.

I do not propose, however, to enter into the question of the relative frequency of disease of the various nasal sinuses, thinking it of more importance that we attempt to bring into some sort of cohesion our knowledge of straggling facts, and, if possible, to arrive at some practical common-sense view of the situation, which shall offend neither our conceptions of normal nor of pathological anatomy, which shall be explanatory as far as causation is concerned and helpful as far as treatment is indicated.

Let us, therefore, not cavil over the anatomy of individual sinuses, but look on them as massed together, interdependent parts of the composite skull. It is evident at once that the centre of this system must be the region of the middle turbinal. Here the various sinuses open, through here all discharges must pass, and here disease or obstruction, by all the laws of surgery, will surely lead to disease in the parts beyond. And if we except a few cases of antral disease of dental origin, probably almost all our cases of nasal suppuration do so originate.

As an individual sinus, the frontal is frequently the seat of disease. To some extent this probably accompanies most cases of anterior ethmoidal suppuration. But who is prepared to say that he has seen a case of primary frontal suppuration? The same may be said of the sphenoid, where I believe disease is more common than in the frontal, and where it is associated with posterior ethmoidal mischief, the victim of which has but to lie on his back to get a drip of infecting pus into the sphenoidal opening.

With the antrum of Highmore, where we may have infection from a dental source, it is different. The proportion of such cases is probably much over-estimated, a greater number arising, as in frontal and sphenoidal disease, from conditions obstructive or infective within the nasal passages. This is strikingly seen in some of my cases, where antral suppurations, which had persisted even after so-called radical operations, rapidly disappeared when disease in the middle and upper regions of the nose was dealt with.

It is a convenience to divide ethmoidal cases into anterior and posterior—not, however, from mere anatomical considerations, for which perhaps it is possible to have a too slavish regard. As our experience broadens, we soon see how often nasal suppurations laugh both at anatomy and physiology, the presence of pus in

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any particular region of the nose being about as deceptive as the position of pain, and as uncertain as a safe guide to the true focus of disease.

With reference to disease of the posterior set of cells, of all nasal suppurations perhaps the earliest and the most common, the characteristic symptom is post-nasal catarrh. This time-honoured term covers a set of symptoms which has been a fruitful source of worry to the physician down the whole history of our art. With its simple forms we are all familiar, and they need not be further considered here. I should like, however, to draw attention to a type less common, perhaps, but of which a full knowledge is essential not alone to the rhinologist, but to the family doctor and practising physician. I refer to those cases in which the constant foul drip from the diseased posterior cells has infected not only the pharynx and larynx, but even the trachea and bronchi, where a set of symptoms has been set up, which, along with the depressed health and occasional elevations of temperature, is often mistaken for phthisis. In these cases it is not a question of irritation and cough from the mere physical presence of pus, but a genuine and specific infection from above. I was able to verify this in some of my cases, where a profuse purulent discharge could be seen bathing the larynx and clinging to the side of the trachea, a discharge similar in every way to that which was found on the back of the palate and oozing from the posterior nares.

On several occasions I have remarked the muddy brown nature of this pus, and an odour varying from a faint sickly aroma to the full fœtor of ozæna.

The following may be taken as an extreme example of the cases I refer to:

F. W——, a young lady aged twenty-five, but with the worn, sallow look of a much older woman, had suffered for some years from cough, expectoration, headaches, and general debility. For the past two years her breath had acquired a most offensive odour, so much so that it could be detected on going into any room where she sat. She coughed up large quantities of foul dirty brown pus, while a similar discharge was seen in her posterior nares. Diagnosing disease of the posterior ethmoidal cells with infective tracheal and bronchial catarrh, I removed her middle turbinals and laid open her posterior ethmoidal and sphenoidal sinuses. Improvement was rapid after the operation, and although the bronchial trouble was some time in clearing up, within a year she was well in every way and looking the picture of rosy health.

Another case, A. B——, aged nineteen, on whom I had a few

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years before operated for adenoids, for some time had suffered from post-nasal catarrh, cough, and expectoration, with increasing general ill-health. She was at school abroad, but was brought home on the advice of the school medical attendant, phthisis being feared. This fear was accentuated when advice was sought in this country. On account of her post-nasal symptoms she was brought to me. I dealt with the case by operation as one of ethmoidal disease; her symptoms, both chest and nasal, disappeared, and now, two years after, she is a magnificent specimen of a healthy active English girl.

A. C——, a similar case, was brought to me after having passed the winter in a Bournemouth sanatorium for the cure of consumption. I performed a similar operation, with a similar happy result.

Another case, O. H——, as a boy had a foul nose, which never quite cleared up and merged in manhood into a case of recurrent polypus. These polypi were attended to at intervals, but in the meantime bronchial trouble set in, and there was increasing difficulty, with cough and expectoration. When I saw him he was expectorating immense quantities of a liquid brown pus, with, as often seems to be the way in such cases, little or no difficulty. In operating on this gentleman I removed perhaps a larger amount of diseased nasal tissue than I have ever done in such a case. Nine months after the operation all pus had disappeared from the nose, and gradually too the bronchial symptoms subsided. Needless to say, the general health and appearance of this patient immensely improved.

I could relate many other cases where diseases of the posterior set of cells lit up mischief in the air passages below, but these will perhaps sufficiently indicate the type I refer to.

The antrum and the anterior set of cells I shall not specially refer to here. My remarks on these will come better, perhaps, when considering treatment.

Treatment.

As regards treatment, I fear I have nothing very striking to suggest. The general principles of surgery hold good in the nose as elsewhere, and must not be ignored. The general surgeon when he meets with an inflamed and suppurating area, with pockets of pus ramifying among the tissues, will be satisfied with nothing short of a thorough exposure and drainage of the whole diseased area. It is not otherwise with the rhinologist, and, unless he bear

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this constantly in mind, his results in treatment are not likely to be striking. Judging from my own early cases, and perhaps to some extent from what I have seen of the work of other surgeons, I am satisfied that tinkering surgery in the case of advanced sinus disease does more harm than good. If we do not feel sure of our ground, if we are not satisfied that the confidence of our patient will stand the strain of a tedious and painful course of treatment, if we are not ourselves prepared to go fearlessly on with our case straight to the end, it were better for our patient that we altogether held our hands.

In cases comparatively recent, due perhaps to an attack of influenza or even a severe ordinary cold in a patient in whom drainage is obstructed in the middle meatus, a complete cure may generally be effected early, by dealing with the obstruction. But in cases of long standing, where the passages are blocked by bony deformities, redundant soft tissue and polypi, progress must be slow. In such cases I have often operated twice, and not infrequently three times under a general anæsthetic before effecting a cure.

I may here state that in using the term "cure" I do not necessarily mean that the last vestige of discharge has ceased. After all, discharge is only a symptom, and by no means the symptom most painful or dangerous to the patient. The surgeon who takes his stand on the symptom of discharge alone, and whose prime consideration is to secure its complete cessation, runs the danger of holding his own skill and his own mere technical results of higher importance than the welfare of his patient. By extensive, perhaps dangerous, operations and the removal of great masses of tissue, an early drying up of the sinuses may be secured, but a nose so treated has to a large extent lost its functional usefulness, a condition of affairs that must ever be greatly deplored. I feel very strongly on this point, and think that in cases of extensive disease, where there is no pressing evidence of extension of infection, we ought to move slowly in treatment, first establishing free drainage through the main pathways of disease, then watching and waiting until it becomes evident what parts are hopelessly diseased, what parts show evidence of returning health, then at a subsequent operation dealing with the hopelessly diseased areas. By proceeding in this way we conserve much that otherwise would be sadly missed in the future of the nasal economy.

Where there is evidence of extending infection we must be bolder and take risks. By so doing I believe in two or three instances I may have saved the lives of patients. In one I failed.

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This case, where my operation probably only hastened death by a few days, is the only fatal case I have had in nasal surgery.

When we have satisfied ourselves that we have to deal with extensive disease of the posterior sinuses, and when the passages are obstructed by masses of diseased middle turbinals, I hold that it is better to operate pretty freely at first. It would seem that the physiological efficiency of the nose is much less interfered with by operations on the middle than on the lower turbinals. If you examine one of your cured cases of extensive ethmoiditis, and bear in mind the masses of diseased tissues which were removed, you will be struck with the almost normal appearance of the passages, and will wonder how accommodation was ever found for such masses of disease. This happy result is in part, I think, due to the falling back of the framework of the nose, in part, I am almost inclined to think, to something which looks very like regeneration of tissue. These considerations and the impossibility of effectively dealing with the posterior group of cells until a complete clearance has been made in the middle meatus has led me to use more energy in operating here than elsewhere in the nose. Here I may fittingly note one interesting point in diagnosis, which I consider of value. In going over a suspected case, when you have administered cocaine and adrenalin to the middle meatus to help in your diagnosis, you will at times find that the middle turbinal remains red and turgid, after the neighbouring parts have become blanched and contracted. This, I find, is a pretty sure indication of underlying disease, and when I meet with this in association with chronic purulent post-nasal catarrh I do not hesitate to perform the complete operation for disease of the posterior sinuses. That is, I remove the middle turbinal and boldly lay open the cells with the curette. This proceeding, though it looks a formidable one to the uninitiated, is both simple and safe in the hands of the rhinologist.

The sphenoid must be left for later treatment, should such prove necessary. In most cases, however, it will be found that, after the operation I speak of, sphenoid suppuration will clear up without further attention. Should it not do so, the sphenoidal is perhaps the easiest of all the nasal sinuses to treat. Its anterior wall is easily broken down, when, thorough drainage being established, it soon gets well. Although during the past few years I have dealt with a considerable number of cases of sphenoidal disease, it has not been my lot so far to meet with an example of those cases one sees frequently recorded in books and papers, where the sinus is filled with polypi and granulation tissue. I do not think that the

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histological character of the lining of this cavity readily lends itself to such a condition. Its mucous membrane is exceedingly thin and intimately adherent to the underlying bone; its submucous layer is reduced to a minimum, nor does the blood supply seem very ample. In health it seems almost bloodless, having an appearance very similar to the inside of an oyster-shell. In many of my cured cases, where you can see from the anterior nares right through to the posterior wall of the sinus, this can be well seen.

With reference to the question of polypus, I may note that I have several times seen in suppurative disease of the sphenoid that the mucous membrane of the nasal aspect of its anterior wall had become degenerated into a condition which would perhaps be best described as myxœmatous œdema.

In dealing with the anterior set of cells, the frontal often gives trouble. Let me here state that I am perfectly aware of the distress often caused by frontal suppuration; I am perfectly aware of the importance attached to its treatment, and of the ingenious operations devised for its cure by several eminent rhinologists. All the same, judging from my own experience, I am obliged to differ from them as to the frequent necessity for such heroic measures. Among my cases of nasal suppuration I have had not a few with frontal complications, but in only one have I found an external operation necessary. Of all the nasal sinuses the frontal surely is the one best adapted by Nature for ridding itself of catarrhal secretions, and if it becomes the subject of empyema it can only do so by obstruction in the neighbourhood of its ostium. By dealing thoroughly with this I think we will generally find it possible, not perhaps in every case to completely dry up the frontal discharge, but to reduce it to a minimum and to remove pain and discomfort. I submit that a slight frontal discharge through a free ostium is a small matter, for which a dangerous and disfiguring operation should not be lightly entertained. Were any rhinologist here unfortunate enough to become the subject of frontal suppuration, I think I may venture to say that he would be very much inclined to take my view of this matter. It is only fair, perhaps, for me to say that, my cases being all private ones, I exercise a more effective control over them, and meet with perhaps more intelligence in the carrying out of after-treatment, than I would have done in the case of hospital patients, on whom I can well conceive that on this account external operations may at times be the better treatment.

As regards antral suppuration, though I am prepared to admit, as I have already said, that a certain proportion of all cases is due

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to dental origin, I maintain that a larger proportion of them is due to the same causes as sphenoidal and frontal disease, viz., to obstructive or infective disease in the neighbourhood of the natural opening. If you take a case in which there is no obstruction in the middle meatus, and where the indications are all in favour of a dental origin, all that is necessary as a rule is to remove the offending tooth and insert a drain for a week or two, when the discharge will often be found to cease. On the other hand, where there is obstruction in the middle meatus, and where the teeth are sound or gone, a simple drain through the canine fossa is alone a very futile measure, but when accompanied with the removal of the disease or obstruction in the nose, then such a case often speedily gets well. In some cases I have found that the antrum, though well drained, continues to discharge for months without appreciable improvement, when an operation to remove other intra-nasal disease automatically cured the discharge. It may be—and this is a point which must be borne in mind—that the nasal disease keeping up the antral discharge may be anywhere, even in the posterior ethmoidal cells. The following case will illustrate this last point.

Miss L—, aged twenty-nine, for years had suffered from ill-health, headaches, nasal discharges, a macerated pharynx, hawking and coughing. Diagnosing double ethmoidal disease and empyema of the left antrum, I operated. The patient was to some extent relieved, but the antral discharge continued profuse and there was still pus in the throat. I again operated, further clearing the nose, enlarging the antral opening, and thoroughly cleaning out the cavity. The symptoms still continued, as also did the patient's distress, and she again implored me to operate if I thought there was a chance of my being able to get at the root of the disease. By this time, feeling more sure of my ground in such cases, I performed the complete operation for disease of the posterior cells, in no way interfering with the antrum, which was well drained through the canine fossa. This patient was in low health, and for a long time had been taking very little nourishment, so I advised a month in bed after her operation, with modified Weir-Mitchell treatment. At the end of this time her nasal symptoms had entirely disappeared, her post-nasal discharge had ceased, while her antrum was healed and her drainage-plug abandoned.

The following case is interesting, not only as showing the importance of clearing the nose in antral disease, but is highly instructive in connection with other points.

J. S— had scarlet fever twelve years ago, after which she

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suffered from nasal suppuration and headaches. Five years later her right antrum was opened in London. The operation was unsuccessful, and two years later an eminent specialist performed a radical operation on the same side. The thoroughness of this operation may be estimated from the fact that now, seven years after, a large hole passes from the canine fossa into the antrum, and another from thence into the lower meatus, the lower turbinal having been removed. Pus continued to come through the antrum, and the headaches persisted. She had periodical attacks of fever and pharyngitis, while there was great falling off in general health. Two years ago, in conjunction with a medical relative and a well-known physician, I saw her in one of these attacks. The pharyngitis and the fever passed off in a few days, but a persistent pain remained over the left eye. I diagnosed ethmoidal disease, and suggested that it should be dealt with surgically. The London specialist who had performed the radical operation was brought down to see the case. He could not agree with me as to the ethmoidal disease, and from certain eye symptoms feared deeper mischief. Nothing was then done, but later, the pain over the left eye being so distressing and persistent, her medical attendants thought it wise to explore the left frontal sinus. This was done by a general surgeon. The sinus was found quite healthy, but for some time the pain disappeared, probably from division of the nerve. After an interval, however, it returned, and the case stood as it did, the feverish attacks and pharyngitis continuing. At this stage I was asked to take full charge of the case, and take what steps I considered necessary. I removed the left middle turbinal bone and laid open the posterior ethmoidal cells, liberating a large quantity of pus. A week later I broke down the anterior wall of the sphenoid, which was full of pus, and established drainage throughout. The patient improved, but the pain over the left eye never quite disappeared, while she had further feverish attacks. Up to now, from the pain being so distinctly localised over the left eye, I had perhaps paid too little attention to the right side, though the head of the middle turbinal had always seemed to me suspicious, and the persistent discharge from the freely drained right antrum was a puzzle. I now operated on the right side, carrying out the same procedure as I adopted on the left, laying open the posterior ethmoidal cells. Though the way was now clear to the anterior wall of the sphenoid, I could find no opening into its cavity, and as the mucous membrane covering it continued deeply congested, I broke through to the sinus, and found it full of dirty brown pus, pus of a different character to what had come

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from any of the other sinuses. It drained badly at first, and I had to enlarge the opening. The case then rapidly did well, and at last the right antrum ceased to discharge.

I have described the case at some length, on account of its many instructive points. Chiefly I would draw your attention to these :

1. Even a brilliant radical operation on the antrum will fail if we leave diseased areas above to drain into it.

2. Persistent pain over one eye in a mixed general sinus case, a pain too which continued after all disease on the same side was cured.

3. The attacks of fever headaches and pharyngitis, a feature of many advanced sinus cases, were very marked.

4. The possibility of a closed empyema of the right sphenoidal sinus.

To return to our consideration of antral cases. I had been led by such experiences as in these two cases, and in others, to considerably modify my procedure. All along antrum cases have proved most troublesome to me, and at one time or another I think I have performed most of the operations, radical or otherwise, which have been suggested for their cure. I now, even in the most chronic cases, content myself with an opening in the canine fossa sufficiently large to enable me to explore the diseased cavity. With this simple proceeding and the thorough clearing up of all disease above, I find that my results are more satisfactory than hitherto. I may say that I think we sometimes court trouble by paying too little attention to the drainage. For some time I have abandoned all tubes, either rubber or silver, and a few days after the operation get a dentist to fit in a solid vulcanite plug, with a small flange to rest on the gum. These, well fitted, produce little or no local irritation, whilst their composition lends itself to a more efficient cleanliness.

The interesting points in connection with the subject of nasal suppuration are so numerous that the difficulty is, not in knowing what to say, but in knowing when to stop.

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