THE MAXILLARY ANTRUM IN MASTOIDITIS.

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The following observations on the condition of the antrum of Highmore, in cases of mastoid disease, are based on the pathological reports of a series of fifty consecutive mastoid perations performed at the Bristol Royal Infirmary.

The method is, at the conclusion of the mastoid operation, to explore the maxillary sinus of each side with the Watson-Williams exploring syringe through the middle meatus of the nose. With this syringe 10 c.c. of sterile water are thrown into the antrum, vigorously sucked in and out a few times to thoroughly wash the lining mucosa of the antrum and stir up any deposit that is present. Sufficient of the wash is finally withdrawn in the syringe, emptied into a sterile test-tube and sent to the Bacteriological Laboratory of the Infirmary under Prof. Walker Hall.

There the wash is centrifugalised. From the deposit so obtained a film is prepared and examined for cells, and culture media inoculated for growth of organism. This method of exploration gives a very fine sample of the antrum's contents for naked-eye observation at the time, of operation and subsequent microscopical examination.

All stages of infection are found, from a little excess of mucus various degrees of turbidity of cellular origin, to thick pus.

The one obvious cause of error that must vitiate the bacteriological findings is the impossibility of puncturing the nasoantral wall without contaminating the needle in its passage through the nasal mucous membrane.

To correct this as far as possible, in the following analysis reports showing merely a feeble growth of staphylococci or even streptococci are regarded as negative. Only a growth of one or both these organisms, together with polymorphonuclear cells in quantity, is called positive.

The nose is sprayed with cocaine and adrenalin before exploration to avoid contamination with blood.

The table indicates the cases in which thick pus was found, but the various appearances of milkiness or turbidity are not entered, as being too various to classify.

In this table the cases are classified as acute and chronic by the definition: Acute case, one in which there is no history of suppurative otitis media earlier than three months before operation; chronic case, one with a longer history than three months, even though it be a recent re-infection in a patient with history of discharging ears in infancy or since.

It is generally accepted that a healthy antrum is sterile.

This investigation tends to show that in cases of otorrhœa the maxillary antrum is seldom so, but, particularly in chronic cases, is almost invariably infected, even though this has not proceeded to the length of obvious empyema of the sinus.

Is this subacute or latent infection of importance?

Is it the primary seat leading to the mastoiditis?

Or is it secondary to the otitis media by a spreading infection, or does it merely represent a passive collection of pus?

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This question is difficult to decide. It would appear most likely to be sometimes one, and sometimes the other. But, on the whole, the results obtained by a routine exploration give sufficient reward for its performance.

The number of times in which a very definite infection of the maxillary antrum has been found without any symptoms to suggest its presence have been very striking, and these must have been overlooked apart from this routine examination.

Possibly to be found later, when search was made to discover why the mastoid refused to heal or was so profuse in granulation tissue.

When necessary, the sphenoidal sinus can be explored at the same time; but this has not been done in these cases unless specially indicated, but infected tonsils and adenoids are removed when present.

Percentage Table of Bacterial Infections of Maxillary Antrum found in Cases of Mastoiditis coming to Operation.

	In total cases.	In acute cases.	In chronic cases.
	Per cent.	Per cent.	Per cent.
Both antra infected . . .	40	25	50·0
Antrum on same side as mastoid only	30	25	33·3
Antrum on opposite side as mastoid only	12	15	10·0
Both antra sterile . . .	18	35	6·6
One or both antra found full of pus	16	15	16·6
One or both antra infected	82	65	93·3
The infection being 2 per cent. pneumobacilli	Staphylococci alone, 38 per cent.	Streptococci, alone, 20 per cent.	Staphylococci together with streptococci, 40 per cent.

An unexpected point brought out in this analysis has been the number of cases in which the infection has only been found on the opposite side to the mastoiditis; sometimes accompanied by a less urgent infection of the middle ear of its side, sometimes by an approximately normal ear.

It suggests the action of gravity while the patient sleeps on his side or peculiar anatomical configuration, making the two cavities of opposite sides more prone to disease.

The treatment adopted towards the antrum of Highmore in this series of cases has been guided by three factors:

First, particularly in the chronic cases, by the anatomy of the mastoid as found at the operation.

A mastoid, very cellular in structure, full of granulation tissue and pus, has obviously had but little chance to heal, apart from nasal re-infection; whereas, when dense bone, small, mastoid antrum with little contents is found, there is stronger presumptive evidence against the nasal sinuses.

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Second, the naked eye appearance of the antral wash, as to excess mucus, general turbidity, or flakes.

Third, the bacteriological report.

The exploration takes but a minute at the conclusion of the mastoid operation; but little time more is taken to make an opening through the middle meatus for subsequent lavage.

Cases showing general turbidity, numerous flakes, and, in acute cases, thick pus, have been so treated, and, subsequently, washed out from time to time during the after-treatment of the mastoid. All these have quickly cleared up.

Where thick pus in quantity was found or polypoid degeneration of mucous membrane, and especially where the mastoid suggested nasal maintenance, a larger opening was made in the inferior meatus, through which subsequent treatment was carried out.

Some of these cases still had a discharge from the maxillary antrum after the mastoid was healed.

When the antral wash looked doubtful, or fairly clean, and the infection was latent—that is, only demonstrated by the bacteriological report—it has been found that the one treatment at the time of operation has, in many cases, been sufficient to cure.

While if the mastoid cavity was at all slow in cleaning up, a few washes of the maxillary antrum through puncture under local anæsthesia, followed sometimes by injection of collosol argentum or one of the various silver salts, have proved sufficient.

Similar observations on the maxillary sinus in cases of suppurative otitis media that have not come to operation show much the same results.

These have not been included in this report, as all such cases have not been explored, owing to the difficulty of doing so in small children in the time at liberty to see them.

But the cases that have been done are sufficient to convince me that it is desirable to do all, and that a routine exploration of the maxillary antrum in all cases of suppurative otitis media will discover many unsuspected infections. Is innocent of harm in itself, and, in fact, often appears to produce a beneficial effect even in those cases in which little evidence of maxillary antrum infection is revealed.

INTRINSIC CANCER OF THE LARYNX AND THE OPERATION OF LARYNGO-FISSURE,

WITH A DESCRIPTION OF SOME NEW INSTRUMENTS SPECIALLY DESIGNED FOR IMPROVING THE TECHNIQUE.

By Irwin Moore, M.B., C.M.Edin.

(*Continued from p.* 178.)

Incision and Dissection of the Pre-laryngo-tracheal Region.

In the preliminary dissection of the neck the following important points should be kept in mind:

1. Operate slowly and divide the structures carefully layer by layer.
2. Make a free, external incision, because it gives more room and facilitates the subsequent stages of the operation.
3. Use the knife as little as possible after the first incision through the skin.

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