THOROUGH EXPOSURE OF THE TYMPANUM.*

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(Translated by H. A. Alderton, Brooklyn.)

From the operative point of view it is impossible to establish precise rules. Only general lines can be laid down. The object is to uncover the suppurating surface, that it may be curetted, easily cleansed, and thus cured. Therefore, the regions for operation are the posterior-superior part of the tympanum (attic region); the aditus, tympanomastoid canal; the antrum and its annexes (mastoid cells). It is important to recall the disposition of the region and its anatomic relations (with their variations) in order to establish general rules.

Moure considers that in the adult with old chronic pathologic conditions the mixed type of mastoid is most rare, the process tending either to eburnation, or, on the contrary, hollowing into a cavity more or less vast, according to its contents (cholesteatomata, granulomata, etc.) It is undoubtedly true that in the adult old and chronic suppurations of the region modify its anatomic relations. The sclerosing process is, in Moure's opinion, one of the modes of spontaneous cure of old otorrhoeas (rare it is true, but possible,) which have disappeared after a variable duration. Unhappily, as a rule, "one can never tell where nor when an otorrhoea will end—Troelsch." The modern surgeon, therefore, suppresses the suppurating process, putting the patient beyond the reach of possible accident.

Indications for Operation.

Lubet-Barbon and Broca have laid down indications for operation in their volume, which might be called formal or obligatory; there are cases where there exists a chronic suppuration of the apophysis, a fistula which is the certain indication of more or less profound osseous lesion which should be exposed and treated by ordinary surgical

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proceedings (large opening, curettage, cauterization with chloride of zinc in solution, etc.), as in otitis in a region where it might become a source of danger. Conservatism is out of place here, as it only exposes the patient to grave complications.

Moreover, the existence of a complication (cerebral abscess, sinus phlebitis) imposes the necessity of opening the antrum largely and, at need, of penetrating by the roof of the tympanum, or of the antrum, into the cranial cavity to drain an abscess, which frequently is discovered in this region. This method is indeed the most logical and certain, as it suppresses the cause (aural suppuration) and the effect; *i. e.*, the intra-cranial complication. Abroad they do not fear opening the lateral sinus purposely to drain and curette it. But this operation should generally be preceded by opening the entire antrum to expose the initial lesion.

Besides these urgent cases, there is a large number of others where operation is also indicated, but where the indications are not so evident to one little accustomed to aural examinations. These are old suppurations in which medical treatment is fatally disappointing. In vain are liquid applications, dry dressings, operations by the auditory canal (curettage, ablation of the ossicles). Apparent cure is obtained only to have the otorrhoea reappear after a few days. *Without doubt, the persistence of the suppuration in spite of the above treatment, and especially the persistence of the fetidity, constitute an operative indication as precise as those above mentioned.* The opening of the antrum is the more imperative if the objective examination reveals either the existence of a superior or posterior-superior perforation of the Mt., or masses of granulations presenting behind the attic wall. When these polypoid granulations have been carefully removed and are reproduced, it is certain that the disease has passed the tympanum, that the aditus and the antrum are affected, and should consequently be opened. The expulsion by the canal of caseous matter from the region of the attic, either spontaneously or by injection, is a valuable symptom in the matter of operating.

Conclusions—When a suppuration of the ear, treated directly by the auditory canal, resists medical and surgical treatment, it is certain evidence that the disease has ex-

ceeded the limits of the tympanum, and operation is indicated.

With greater reason, if there exist cholesteatoma, mastoid fistula, or otorrhoeic complications, should one act as quickly as possible.

Method of Operating.

It is ordinarily impossible to say in advance what position the antrum occupies, its size, or its anatomic relations.

The two methods of operating reach the same result, but in a different way; the one (Stacke's,) by way of the tympanum enters the antrum, and the other (Schwartz's,) by way of the antrum reaches the tympanum. Doubtless the latter method is preferable in cases where the antrum occupies its normal position, as, being once opened, it allows the operator a large cavity through which he can easily advance through the aditus to the tympanum. In supurations with cholesteatoma and in young children, where constancy of the antrum is the rule, it is incontestably the preferable method. Accident to the sinus is relatively easily avoided.

The operation proceeding from the tympanum to the antrum exposes the facial to wounding more than the other.

It is possible that after deciding upon one method, it is found necessary to adopt the other; it is thus well not to be exclusive, the common object being the clearing out of the process.

The *spina supra meatum* will form the superior boundary of the opening made in the bone. In chiselling the bone, cut from behind forward so as to avoid the sinus, always expecting to find it.

The combined use of the gouge and the electric drill in operating on the bone is recommended.

If the space between the posterior canal wall and the lateral sinus is too small to permit of a search for the antrum (Schwartz's method), which may be difficult to find, then protect the sinus and employ Stacke's method, starting from the tympanum.

One should search with the probe, removing all unhealthy tissue, reaching with the curette healthy bone, white like ivory. If the process is cancellous, the cellules should all be united into one.

After uniting the antrum and tympanum, the latter should be thoroughly cleansed by removal of granulations and ossicles, and washed out with chloride of zinc solution, 1 to 10, which cleans the surface well and induces hemostasis, permitting the bared region to be quickly seen.

If the sinus is opened during an operation, the artificial orifice should be stopped with sterilized iodoform wax or gauze, to remain three to four days in place, and the operation continued.

Stacke's method has the advantage of avoiding the sinus, but it exposes the facial and the horizontal semi-circular canal if the assistant who holds the metallic protector does not exercise sufficient care.

After Treatment.

Moure's Personal Method.—The osseous wound is sprinkled with iodoform, and then packed with iodoform gauze. In Stacke's method, if a small antrum be found, it is unnecessary to maintain a mastoidal orifice and the wound is immediately sutured, and healing has been rapid. On the other hand, where the region is largely exposed, or when it is cholesteatomatous, a posterior opening may be left for observation. All methods of transplantation which make use of the cartilaginous canal are useless, because the strips do not always remain where first placed, are subject to inflammation, which contracts the lumen of the canal, at least temporarily, rendering further dressing difficult and often painful. Then, too, the wound often suppurates and the portion of the canal which adhered at first becomes detached and covers disagreeably the surface exposed by operation. Personally, Moure prefers the method which consists in removing the cartilaginous canal close to the concha and then suturing directly the auricle to the posterior lip of the mastoid wound. No ugly scar results and all dressings are made through the canal, which remains well open. Moure deems a permanent mastoid opening unnecessary, and experience alone can determine when this orifice may safely be closed. Where the mastoid is left open for years, the orifice may be successfully covered by auto-plastic operation.

It is best to abstain from injections if possible, and to dry out the wound with tampons of cotton saturated with alcohol and boric acid. Sometimes, in spite of all precautions, it will suppurate and granulate; rigid antisepsis is then necessary. In cases where there is no pus, weekly or semi-weekly dressings are sufficient. Cure takes place in from five weeks to five months. Do not allow the passage to close until the antrum is perfectly healed.

Hearing is often better than before the operation, and Moure has never known it to grow worse.

Out of 59 cases operated upon, only 1 death could be traced to the operation.