A NEW INSTRUMENT AND METHOD FOR WASHING AND DRAINING THE NASAL SINUSES: PRELIM- INARY REPORT.

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In order to make clear the mechanical and anatomical principles on which this new instrument is based, I shall first briefly review the anatomy of the os maxillare and the infundibulum.

The infundibulum is a cavity situated in the middle meatus of the nose. It is a funnel-like depression, flattened from side to side, its channel practically vertical and the wide end above. The outer side from below backward is formed by the bulla ethmoidalis, the infundibulus groove of the ethmoid, and the uncinate process of the ethmoid. The inner side, from before backward, is formed by the lachrymal process of the inferior turbinate, the body of the inferior turbinate, and the ethmoidal process of the inferior turbinate. The upper boundaries of the infundibulum form a narrow slit-like opening leading to the middle meatus, known as the "hiatus semilunaris"; the lower, a round opening known as the "os maxillare," leading into the antrum. The hiatus semilunaris is about three-fourths of an inch long by one-eighth to one-fourth of an inch wide. The infundibulum is about one-eighth of an inch in diameter. The following diagram illustrates the shape and relation of the parts.

The infundibulum may therefore be properly called the antro-nasal canal. The upper (front) end of the hiatus semilunaris frequently is connected with a groove leading to the fronto-nasal canal. The antro-nasal canal (or infundibulum) being practically vertical, it can readily be seen that in order to put an instrument into the nose and then into the antrum it will be necessary to reverse the direction of the instrument when it is brought opposite the hiatus semilunaris. This is what is accomplished by the new instrument to be described. Plate 4 illustrates the relation of the antro-nasal canal to the antrum and nasal cavity.

As illustrated on Plate 1, the instrument consists of a tube, split lengthwise and bent into a semicircle at one end. When the two halves are together and the lumen of the tube is complete, a rubber catheter pushed in through the lower end will be deflected by the curve at the upper end and will emerge bent at an acute angle, as shown in Fig. C, Plate 1.

The method employed is as follows: A rubber catheter is inserted into the instrument (which may be called an antrum intubator) until its tip shows at the beak of the tube. With the beak up, the intubator is then introduced into the nose until the opening is opposite the hiatus semilunaris. This position is illustrated in Plate 2. The intubator is then turned sideways for 45° until the opening

A. Probe to locate hiatus semilunaris. B. Antrum intubator closed, containing catheter. C. Halves of antrum intubator taken apart.

looks down into the hiatus semilunaris, the end of the beak touching the outer nasal wall. The intubator being held firmly in position with one hand, the rubber catheter is pushed through with the other for a distance of 2 inches. The tip of the catheter, as it comes out through the upper end of the intubator, will be deflected downward by the outer wall of the infundibulum and enter the antrum. This

Second position of antrum intubator, showing catheter introduced into antro-nasal canal.

Head of cadaver, with tubes in both antra, through ostea maxillaria.

position is illustrated in Plate 3. After the catheter has been pushed in far enough, the two halves of the intubator are separated and removed, leaving the catheter in situ. The antrum can now be

Case 3. Front view, showing tube in antrum, introduced through natural opening.

washed through the latter, or the tube may be cut off inside the nose and the inner part left for continuous drainage and ventilation of the antrum, to be removed and replaced as often as indicated. The washing fluid comes out alongside the tube. The drainage takes

place by capillarity and by the suction exerted by the respiratory movement of the air on the end of the tube that projects from the antrum.

The indication for the use of this method is any condition that requires washing and drainage of the antrum. Washing by this method is much simpler than by puncturing the antrum wall in the inferior meatus, because it can often be done without cocaine and even without adrenalin. The drainage is constant and adequate, and therefore the kind needed in purulent inflammation of the antrum. The belief that one or several washings will cure a sinusitis is not supported by experience in treatment of abscesses elsewhere. An empyema of the pleura or an otitis media must be constantly drained—so must a purulent maxillary sinusitis.

This method of entering the antrum can be used in about 50 per cent of the cases. In the other cases, a high position of the "hiatus semilunaris" or a hypertrophied middle turbinate prevent its employment. Work is now being done to develop a method of dealing with these conditions.

One case may be cited to illustrate the usefulness of this method. L. F., a female, aged 22, single, suffered for many years with a profuse purulent rhinorrhea. About a year ago her right middle turbinate was removed, and six months later a Caldwell-Luc operation was done on the right antrum. The openings were maintained with difficulty for about two months, when they closed. About that time the ethmoid cells were cleared out. The discharge continued unabated.

Washing and drainage of the antrum was begun by the method just described. Her right frontal sinus was treated the same way with a drainage tube through its natural opening, and the discharge from her nose has almost ceased.