SURGICAL TREATMENT OF CHRONIC SINUSITIS

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Chronic sinusitis is an affection the therapy of which is long and gives uncertain results. We believe that this statement is valid not only for medical treatment, but also for surgical treatment; so much so that many authors abstain from any extensive surgical manoeuvre and even state that surgery is a usuless treatment. Our experience has shown us that although the surgical treatment of the paranasal sinuses is not free from failure, it may and should be prescribed when it is indicated. The results obtained on our last hundred patients operated upon confirm this judgment. Two-thirds of the patients were cured or underwent a substantial improvement.

One of the most important problems presented by this affection is the frequency with which the operated sinuses may be re-infected, causing the treatment to fail.

We believe that there are several factors which may intervene:

(1) The covering tissue of a sinus cavity which has been operated upon is a cicatricial tissue that is a conjunctive tissue rich in fibres without mobile ciliated elements and therefore unable to contribute to the draining of the sinuses.

(2) The closure of the nasal sinus aperture.

(3) The persistence of an infected cell in the ethmoid or of another nidus.

(4) The existence of a general or local factor, difficult to demonstrate but indisputable, that appears to be associated with allergy and which makes the paranasal cavities predisposed to disease.

(5) Poor ventilation of the meati, especially the middle meatus.

If we do our surgery with these factors in mind, I believe we shall be able to obtain better and more lasting results.

Although it is true that, surgically speaking, we can do little or nothing to restore a functionally normal epithelium to a sinus that has been operated on and that likewise we shall not be able to do anything with our scalpel to the predisposing factor, whether of a general or a local type, it is certain that in many cases we can act upon the three remaining factors, 2, 3, and 5.

Our procedure is as follows: In order to prevent closure of the nasal-sinus counter opening of the maxillary sinus, we believe that the technical modifications proposed by Abelló-Vila to be of great utility. The purpose of these modifications is to prevent the soft tissues of the cheek from entering the operated antrum. Invasion by these soft tissues may create recesses and

blockages especially in the region of the antero-inferior aspect of the sinus and close the contra-aperture. Therefore, Abelló imagined the "osseous operculum". This consists of preserving an osseous flap to close the orifice of the sinus trepanation. The procedure is as follows: when the gingival-labial incision has been made, the soft tissues are elevated from the periostium of the canine fossa leaving the latter adherent to the bone. This elevation made between the soft tissues and the periosticum without following an anatomic plane produces slightly greater bleeding than does the classical technique, but it is never severe. Once this phase of the operation has been carried out, the bone is cut in the form of a semi-circle with a chisel or, better still, a cylindrical mill; this semi-circle of bone must be left uncut in the area situated immediately below the infra-orbital foramen. Then, with a narrow flat instrument, lift the cut portion of bone like an operculum or valve of a shellfish, thus making the sinal cavity visible.

When the operation is finished we replace the operculum, closing the aperture of the sinus trepanation and thus preventing the entry of the soft tissues of the cheek into the cavity. Perhaps the greatest objection to this procedure is widespread sinal pathology or occasions when a trans-antral etmoidectomy is to be performed according to the technic of Ermiro de Lima. In such instances the operculum must be very large in order to give the necessary exposure to the sinus. Attempts to enlarge the operculum during the operation will endanger its preservation. We recommend this modification of the Caldwell-Luc technique highly both for the surgical exploration of the maxillary sinus and for the treatment of polypoid or cystic sinusitis. In cases where the ethmoid must be treated we don't find it always possible to preserve an operculum.

When there are difficulties in properly carrying out the above technic, Abelló-Vila has devised the so called "hinge" procedure. The E.C. hinge is made in the area of the counter-opening. When the osteotomy of the internasal osseus wall of the maxillary sinus is carried out at the level of the lower meatus, the pituitary mucosa of this meatus must first be elevated and cut in the form of a flap attached anteriorly. The osteotomy is made as extensive as possible especially in the antero-posterior direction. In this way its rear edge may be moved forwards and upwards to be sutured to the soft tissues of the face. This manoeuvre is greatly helped if the trepanation of the front wall of the sinus is large especially in its medial extent by lowering it until it reaches the antero-internal edge of the sinus. With this manoeuvre the same effect is obtained as with the operculum since the piece of pituitary membrane keeps the osteotomy permeable in the lower meatus and prevents the entry of the soft tissues of the cheek which could block the naso-antral-aperture of the sinus.

The closing of the surgical fronto-nasal-aperture sinus is also one of the causes of failure in surgery of the frontal sinus. Frontal sinusitis occurs less frequently than maxillary sinusitis and, according to the majority of authors, is usually associated with an ethmoidal sinusitis. Therefore on many occasions a good cleaning out of the ethmoid especially the anterior cells is sufficient to achieve a clinical cure. If one considers that the fronto-nasal orifice of the frontal sinus is situated at its sharp medio-anterior angle it may be understood

that opening up and widening the nasal frontal duct in addition to the good cleaning out of the ethmoid will be sufficient to give the sinal secretions an easy outlet if simple anterior ethmoidectomy does not produce a cure.

We carry out the exenteration of the ethmoid systematically in cases of polysinusitis. In frontal sinusitis the ethmoid is the key to the situation. Whether it is the primary affection, which in our opinion is most frequently the case being the point of departure for the inflammation and infection of the other sinuses, or whether the ethmoiditis is secondary to involvement of the frontal, the fact in that when the sinusitis is severe and extensive the ethmoid must receive attention.

We usually do a trans-antral ethmoidectomy. Often we complete it with an intra-nasal procedure carried out through the middle meatus in order to make the ethmoidal drainage as extensive as we can.

We consider it satisfactory when we have managed to make the fovea frontalis accessible to the touch and the frontal and sphenoid sinuses open to visual inspection.

It is evident that thorough exenteration of the ethmoid provides better ventilation of the sinuses.

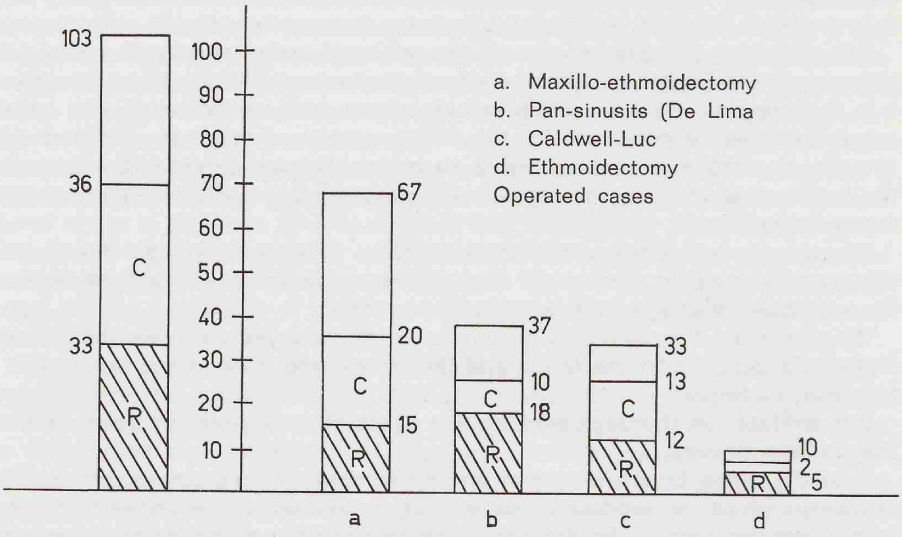
If at the same time we correct any anatomical irregularities or structural processes which can produce nasal respiratory obstruction, we shall contribute to a better drainage of the sinuses which should have a favourable influence on their pathalogical alterations. Much has been said in text books of the effect of large middle turbinals, of irregularities or closures of the meatus by cicatrices, of an overprominent "bulla ethmoidalis" etc. as factors which would favour infection because they make ventilation, and above all, drainage, through the middle meatus difficult.

According to the report of a series of investigators, it must be concluded that the draining of the maxillary sinus solely by changes of pressure (the Bernoulli effect) is practically negligible since it is impossible for this mechanism alone to draw the secretions to the sinus osteum. However, it may act more efficiently in sinuses which have their drainage orifices in a sloping position as happens in the case of the frontal sinus. For this it is necessary that the ventilation of the meatus, and consequently the nasal respiration, is normal. I believe that it is not sufficient to keep the middle meatus free but that it is also absolutely necessary to correct the deformations of the septum and remove its thicker portions and crest which may deflect the air flow. Following along this same line, I believe that it is also necessary to correct deformities of those anatomical elements which play a part in normal nasal resistance especially lesions of the nasal valve.

The statistics of patients operated upon in the O.R.L. Service of the Hospital of the Holy Cross and St. Paul in Barcelona, where I am Director of the Rhinology Department, give the following figures: of 103 patients operated on for different forms of chronic sinusitis, two-thirds were cured or underwent some alleviation; 47 of these underwent bilateral surgical treatment which makes a total of 150 operations.

The Operculum technique has been followed in the Caldwell-Luc operations whilst the "hinge" has been practised almost systematically in the maxilla-ethmoidectomies and in the technic of Ermiro the Lina.

Fig. 1



It is curious to note that the best results have been obtained with the procedure of Ermiro de Lima, whilst the poorest have been obtained in the Maxilla-ethmoidectomies. At first sight it seems paradoxical that in maxillo-ethmoidectomies carried out on patients with less diffuse lesions than those who were operated upon for pan-sinusitis, the results should be markedly inferior. On reviewing the case histories we found that the ethmoidectomies carried out on patients with pan-sinusitis were more extensive and that in them the structural alterations of the septum had been treated systematically. In seven cases partial resection of the septum was performed in the same operation, with excellent results. This has caused me in recent months to correct other deformities which may interfere with nasal respiration and to combine functional rhynoplasty with the surgical treatments of chronic sinusitis. In view of the short time that has elapsed since these operations were done, they are not included in the above statistics.

In our opinion the use of techniques which keep the sinus counter-apertures permeable, especially the one corresponding to the maxillary sinus and the performance of an extensive conscientious drainage of the whole of the ethmoid together with the treatment of lesions of those anatomical structures which interfere with nasal respiratory physiology not limiting ourselves to the turbinates and the septum but extending our field of action to the valve as advised by Cottle-opinion may increase the number of surgical cures of chronic sinusitis.

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