SENN (N.)

Treatment of Chronic Empyema

# TREATMENT OF CHRONIC EMPYEMA OF THE ANTRUM OF HIGHMORE

## BY TEMPORARY OSTEO-PLASTIC RESECTION OF THE ANTERIOR ANTRAL WALL.

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Very little improvement has been made in these days of aggressive surgery in the treatment of chronic empyema of the antrum of Highmore. Every surgeon knows how obstinately chronic suppuration of this cavity resists the customary operative treatment described in our text-books of to-day. The operation usually resorted to is the one devised by John Hunter; it consists in opening the antrum through the socket of one of the molars, usually the second, with some kind of a bone drill.

Christopher Heath recommends puncture of the antrum above the alveolus. Mikulicz devised a curved stilet with which he opens the antrum from the nasal side, puncturing the septum below the inferior turbinated, and by following the operation by prolonged drainage, aims to establish a free communication between the nasal passage and the affected antrum. All of these procedures have their legitimate place in the treatment of suppurating antral disease, but they fail in effecting a cure in all cases in which permanent pathological conditions maintain the suppuration, and which cannot be removed or corrected through such a small opening as is advised and made in all of these operations. The inflammation of the mucous membrane which lines the antrum in chronic antral disease frequently results in partial, and in some cases in complete, closure of the narrow communicating opening between the antrum and the nasal passage, which in time causes retention of the products of the

suppurative inflammation in the diseased antrum. The inner wall of the antrum or base presents, in the disarticulated bone, a large, irregular aperture which communicates with the nasal fossa. "The margins of the aperture are thin and rugged, and the aperture itself is much contracted by its articulation with the ethmoid above, the inferior turbinated below, and the palate bone behind. In the articulated skull this cavity communicates with the middle meatus of the nasal fossæ, generally by two small apertures left between the above-mentioned bones. In the recent state usually one small opening exists, near the upper part of the cavity, sufficiently large to admit the end of a probe. the other being closed by the lining membrane of the sinus." It is not difficult to conceive that chronic inflammation of the nasal or antral mucous membrane would frequently result in so much narrowing of this small opening as to become, frequently, a permanent obstruction, and that in some cases the opening would become completely obliterated. Drilling through or above one of the molar sockets would prove of no value in re-establishing the normal communication between the antrum and the nose; hence, the perforation made must be kept permanently open for the escape of the purulent discharge or secretion of the antrum. Prolonged or permanent drainage from the side of the mouth is also objectionable owing to the entrance from the mouth through the artificial opening of particles of food and infectious material.

Nasal drainage, as advised by Mikulicz, is free from such objections, but the opening made cannot be utilized to advantage in removing from the antrum foreign bodies, and permanent sources of irritation and infection which maintain the suppuration. Drainage tubes and strips of gauze used in keeping the artificial opening patent, have occasionally been lost in the antrum, and have been the sole cause of indefinitely prolonging the suppuration. In a case that recently came under the observation of the writer, the antrum had been opened by drilling through the socket of the second molar tooth, and the opening was plugged daily with a strip of iodoform gauze, after washing out the cavity. This treatment was continued for months without effecting any improvement. A profuse and very offensive discharge led to the belief that a sequestrum in the antrum was the cause of the continuation of the symptoms for which the operation had been performed. The antrum was now

opened by making a temporary resection of its anterior wall, when a number of strips of gauze were removed.

In chronic cases that have resisted the ordinary treatment, the writer has resorted, for a number of years, to temporary osteoplastic resection of the anterior antral wall, for the purpose of detecting and removing the cause of the chronic suppuration. After performing what is entitled to be called a radical operation, a free communication is established between the antrum and the nasal passage, either by dilating the normal opening or by making a new one from the antrum into the inferior meatus, by perforating the thin, bony septum with a curved forceps. Disinfection of the cavity and thorough tubular drainage, complete the operation.

The operation is performed under partial general anæsthesia. The cheek and lips must be well retracted, when a ⊔-shaped incision is made through the mucous membrane and the periosteum down to the bone, in such a way that the anterior vertical incision falls just behind the eminence of the root of the canine tooth; the second vertical incision about three-quarters of an inch behind the first, and the connecting transverse incision at a point above the alveolus, on a level with the floor of the antrum. With a thin carver's chisel, three-quarters of an inch in width, the anterior antral wall is cut in the same directions, and the bone at the base of the square quadrangular flap is fractured by inserting an elevator into the antrum through the transverse cut, and using it as a lever. The flap, composed of mucous membrane, periosteum and bone, is now turned upward, and through the opening the antrum is explored carefully by inserting the little finger.

Projecting roots of carious teeth, caries of the inner surface of the antral walls, sequestra, fungous granulations, and the presence of foreign bodies, are the conditions most frequently found as permanent causes of suppuration. The use of the sharp spoon is indispensable in effecting mechanical removal of infected tissues or loose foreign substances.

With a sharply curved forceps an adequate opening is made from the antrum into the nose at one of the points indicated above, and with the same instrument, or with a probe armed with a loop of strong silk thread, a fenestrated tube the size of a lead pencil is drawn through the antrum into the mouth and cut short near the opening in the antrum. With a rongeur

forceps a small semicircular defect is made in the lower margin of the deflected quadrangular bone flap to furnish space for the drainage tube, when the flap is brought into position and sutured in place with two catgut sutures, which include only the mucous membrane and the periosteum. The two ends of the rubber tube are connected with a silk thread. The cavity is flushed daily with a saturated solution of boric acid or Thiersch's solution, and if the discharge is fetid or profuse, the irrigation is preceded by an injection of peroxide of hydrogen. As soon as suppuration ceases, the silk thread is cut and the rubber drain drawn into the antrum; the same local treatment being continued. The opening in the antrum on the side of the mouth closes in a short time, with little or no defect of the bony wall of the antrum. The nasal drainage should be continued for several weeks, long enough for the opening to become permanent and lined with mucous membrane.

If further local treatment is found necessary after the drain has been removed, this can be done through an antral catheter, in the use of which the patient must be instructed, and which he soon learns to manipulate safely and with great dexterity.

The radical treatment of chronic suppuration of the antrum, in the manner described above, has yielded ideal results in the hands of the writer in more than ten consecutive cases, and as the result of this favorable experience, he earnestly recommends it to the attention of his colleagues.