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Contributors

Knapp, Arnold Herman, 1869-1956.
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Publication/Creation

[Rochester, Minn] : [published for the American Ophthalmological Society by the Whiting Press], [1908]

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The Surgical Treatment of Orbital Complications in Disease of the Nasal Accessory Sinuses.



ARNOLD KNAPP, M.D.
NEW YORK.

*Reprinted from The Journal of the American Medical Association,
July 25, 1908, Vol. LI, pp. 299-301.*

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AMERICAN MEDICAL ASSOCIATION.
ONE HUNDRED AND THREE DEARBORN AVENUE.
CHICAGO.



THE SURGICAL TREATMENT OF ORBITAL COMPLICATIONS IN DISEASE OF THE NASAL ACCESSORY SINUSES.*

ARNOLD KNAPP, M.D.

NEW YORK.

The orbital complication referred to in this paper is the subperiosteal abscess. When disease of the nasal accessory sinuses extends to the orbit, the infection passes through the os planum of the ethmoid or through the floor of the frontal sinus. Two clinical pictures will be present, depending on whether the perforation occurs suddenly or gradually—acute or chronic. In the former, the local symptoms are those of an acute abscess with cellulitis. The orbital manifestation may disappear with intranasal treatment or the pus works its way to the surface and discharges spontaneously. The acute symptoms may then abate, the fistula closes or remains open and a purulent sinus persists which leads into the frontal or ethmoidal cavities. In the second variety there is a greater or less defect in the orbital bony wall of the frontal and ethmoidal sinuses, and with the orbital periosteum a large abscess cavity is formed, causing marked exophthalmos which usually brings the patient to the eye clinic.

In children, the acute perforation takes place through the ethmoidal plate. A curved incision is made along the inner and upper orbital margin, the orbital periosteum and contents are retracted and the opening in the os planum can then be seen. This should be enlarged, and the adjoining cells curetted according to the amount of disease found present.

* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

In the chronic cases with exophthalmos and in the other cases with acute perforation which do not improve on the restoration of intranasal drainage, the method of operating is as follows: It is a distinct advantage to remove the anterior half of the middle turbinate a day or two before the external operation, though this procedure is condemned by some; thus Killian claims that the virulence of the infection is thereby increased. I have never seen any ill effects from this preliminary operation.

Under morphin-ether narcosis, the external excision is made (Fig. 1) along the upper orbital border midway between the eyebrow and the bony orbital margin,

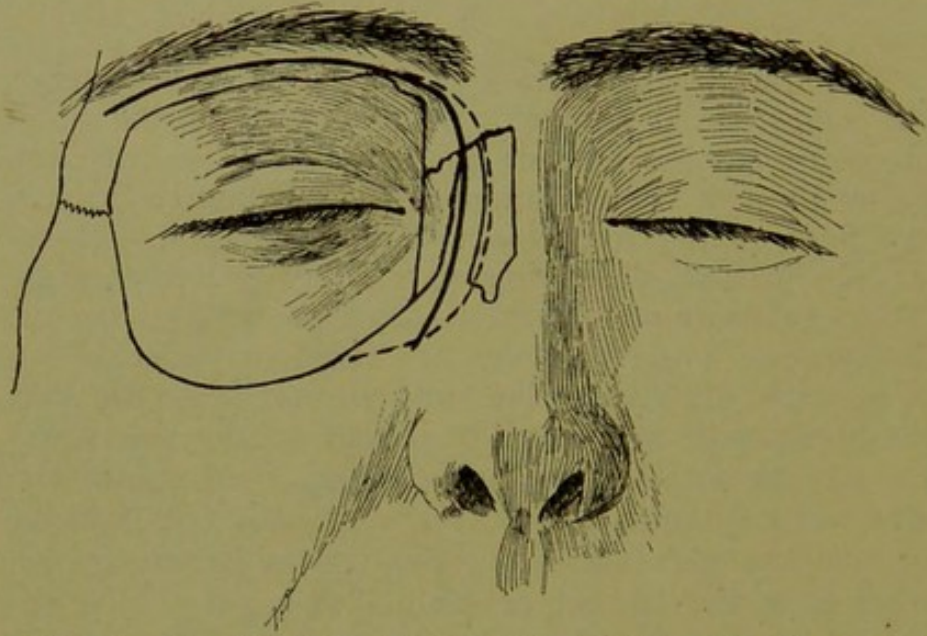


Fig. 1.—Showing line of cutaneous incision and (interrupted line) the resection of bone.

then down along the inner wall and the side of the nose to the floor of the orbit. This incision in my opinion is preferable to the incision through the eyebrow (Killian) as it permits external drainage of the frontal sinus if this be found necessary without making another incision. I have not found that packing the nose with gauze or insertion of a postnasal plug is necessary. The periosteum is divided just at the orbital margin above and in line with the cutaneous incision along the nose. The periosteum is retracted with a rather sharp elevator. After the firm adhesion of the periosteum to the orbital margin is separated, the soft parts with the orbital contents and the lachrymal sac are gently detached and free

access is given to the roof and to the inner wall of the orbit (Fig. 2).

The pulley of the superior oblique is carefully detached from the trochlear fossa. It is important not to disturb the relation between the tendinous ring through which the tendon passes and the periosteum to which it is adherent; the periosteum later becomes attached in its normal position by the healing process and interference with the superior oblique muscle is avoided. This important relation can best be preserved by dislodging the pulley from the trochlear fossa by a blunt periosteotome working from behind forward. An examination of one hundred skulls has shown me that in four out of five

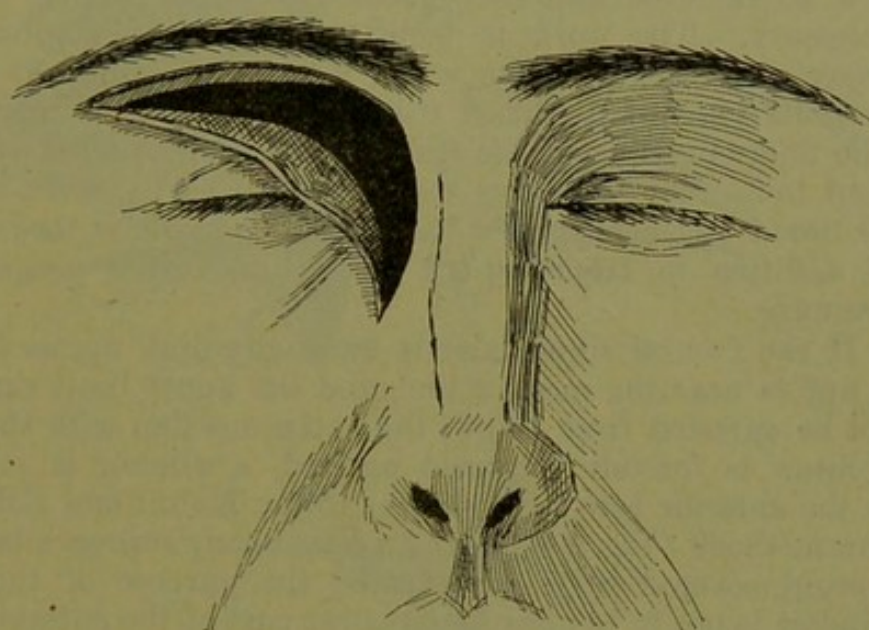


Fig. 2.—Complete detachment of the orbital contents and removal of floor of frontal sinus and of internal orbital wall.

the pulley is attached to merely a slight depression in the bone; in the remainder a well-developed spine directed straight down and occasionally slightly forward, was present just posterior to this fossa. It is evident that in the cases in which a spine is present the periosteum with the pulley can only be sparingly detached by following the above-described procedure.

The entire floor of the frontal sinus is then easily removed with the chisel and hammer, the diseased mucous membrane is curetted and the bony septa in the frontal sinus are carefully eradicated. A portion of the orbital margin can be removed without causing any deformity if the normal curve be preserved. The nasal process of

the superior maxillary, the lachrymal bone and the ethmoidal os planum are then resected, giving broad access to the middle meatus of the nose and to the ethmoidal labyrinth. Work in this region is facilitated by suitable retractors for the orbital soft parts. The two which I use are a curved, shovel-shaped retractor and one shaped like a tongue depressor. The ethmoidal labyrinth is completely removed with the curette, Jansen's forceps or Hartmann's conchotome, remembering that the anterior ethmoidal foramen, which is a constant landmark, indicates the base of the skull and that as one proceeds back the ethmoid becomes broader laterally. The remaining part of the middle turbinate may now be removed and the sphenoidal cavity entered if necessary. The work is facilitated by introducing a finger well into the nose which serves as a guide and prevents some of the blood from running into the nose. The final curetting of the ethmoid is best done with the head low down and when the patient is partly revived. As broad an opening into the nose as possible is made, in addition to removing all disease, to insure proper drainage.

If the frontal sinus extends unusually high up, as it is apt to near the median line, and the upper limit can not be curetted from below, the cutaneous flap with the eyebrow is forcibly retracted upward, a window is cut in the anterior bony wall similar to the Kuhnt and Kilian methods (Fig. 3), leaving a broad bony supraorbital margin covered with periosteum; the purpose of this window is not to remove the greatest part of the anterior bony wall but should be only large enough to treat properly the upper parts of the cavity under direct inspection. Marked subsequent sinking in of the forehead can thus be prevented. The cutaneous wound is not sutured, the soft parts approximate of themselves, a single wick of gauze is passed from without at the nasal angle into the frontal sinus. There is drainage not only into the nose but externally. Slight packing is introduced through the nose to the ethmoid region, if bleeding demands it; this is removed after twenty-four hours.

The patient occupies a partly upright position in bed. The external wound usually closes primarily; the small opening for the drain is left at the inner orbital angle for from seven to ten days. The nasal cavities

are left undisturbed. In some cases diplopia was noted for a few days. This always disappeared and all patients were carefully examined for diplopia with a colored glass and a candle, especially in the lower part of the field.

I have performed twenty-two operations according to this method which can be described as a modified combination of the Jansen and Kuhnt methods. In recent years, Killian's method has become deservedly popular. It has seemed to me, however, that the Killian operation has certain objections, at least for this class of cases.



Fig. 3.—Partial resection of anterior wall in the cases in which the sinus extends high up.

Thus it can be simplified if the trochlea be systematically dislodged. The entire floor of the frontal sinus can then be easily removed from below. In the healing process it is also of advantage if the entire bony floor is removed for then the cavity, especially at its outer part, has a better chance to obliterate. In many patients with a broad access from below a window resection of the anterior bony wall of the frontal sinus is not necessary unless the sinus is an unusually high one. This window does not need to include most of the anterior

bony wall, but should be sufficiently large to permit thorough curetting of the uppermost limit of the frontal sinus. This is an improvement cosmetically. Complete removal of the ethmoidal structures is also facilitated when the orbital contents can be well retracted.

The elements of success in operations of this kind depend upon the use of a proper light (either with mirror or electric forehead reflector), the control of hemorrhage and a knowledge of anatomy. These should surely not deter the ophthalmic surgeon from continuing in the development of this important field where the first advances were made by members of our specialty.

26 West Fortieth Street.