KNAPP (A. H.)

Report of a case of orbital Cavernoma ×××

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REPORT OF A CASE OF ORBITAL CAVERNOMA REMOVED BY KRÖNLEIN'S METHOD, WITH PRESERVATION OF THE EYEBALL.

By Dr. ARNOLD H. KNAPP, New York.

Mrs. A. R., thirty-four years of age, noticed a protrusion of the right eye six or seven years ago. The exophthalmos has increased gradually, and was accompanied by failure of sight during the last two years. General health has always been good.

On **examination** the right eye appeared to be pushed straight forward. The exophthalmos measured about 12 *mm.* Motility of the eye was slightly restricted in all directions, especially upward. Palpation within the bony margin of the orbit was negative; any manipulation caused a luxation of the eyeball. V = $\frac{4}{200}$. Field normal. The ophthalmoscope showed a pronounced papillitis (elevation of the disc measured 5D). The nose and accessory cavities were normal.

Clinical Diagnosis: *Orbital tumor situated within the muscular cone, not directly involving the optic-nerve structures.* The patient consented to the operation with the understanding that the eye should be removed if found necessary.

Operation: August 1, 1899. Ether. A slightly curved vertical incision was made along the outer bony margin of the orbit, dividing the periosteum. The periosteum lining the inner side of the lateral wall of the orbit was retracted, together with the soft orbital contents, and the inferior orbital fissure localized. From the anterior end of this fissure the bony wall of the orbit was cut through with a chisel along two diverging lines: the one passing up and out to the external angular process of the frontal bone, practically in the suture between the great wing of the sphenoid and the malar bone; the other in a horizontal plane passing out and forward, appearing on the external surface of the malar bone, in a line directly above the insertion of the zygomatic arch. This wedge-

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shaped piece of bone, with its muscular and cutaneous attachments, was strongly forced backward, giving free access to the orbit. The periosteum was incised in a horizontal direction. Palpation revealed a firm round tumor situated behind the eyeball. The soft parts were divided below the external rectus down to the tumor. The tumor could then be freed from its attachments by the finger, and shelled out. The hemorrhage was very slight. Careful palpation of the walls and apex of the orbit and of the optic-nerve structures revealed no abnormity. The eyeball was pushed back, the osteoplastic flap replaced, and the wound closed with deep and superficial sutures.

Beyond a slight swelling of the right half of the face, the subsequent course was undisturbed and afebrile. The wound healed by primary union; the bone flap had remained in place, and the patient was discharged on the tenth day.

August 17th.—No deformity except cicatrix in skin. V with $+ 4.5 = \frac{20}{200}$. Pupil moderately dilated. Diplopia at limit of outer and of upper fields. Swelling of optic disc has gone down except below. Eye in normal position. Sensation normal.

November 12th.—V with $+ 4 = \frac{20}{70}$. Otherwise as before.

February 19, 1900.—V with $+ 4 = \frac{20}{60}$. Disc shows no swelling but slight choroidal atrophy below. Paresis of ext. rectus as before, causing diplopia on looking to right at about 60° from primary position. Abduction to the canthus. Diplopia also in extreme upper part of field of fixation. The diplopia has not increased, and is not troublesome. Pupil normal. No deformity whatever.

The **tumor** is smooth, oval, semisolid, bluish red, and measures 22 by 30 *mm.* Microscopically it presents the picture of cavernous tissue surrounded by a thin capsule. The open spaces are filled with blood cells and lined with endothelium.

Anatomical Diagnosis : *Cavernous angioma.*

Remarks.

In this case it was possible with the aid of Krönlein's operation to remove a tumor, 22 by 30 *mm.* in size, from the orbit, preserving the eye and restoring its vision. It is very questionable whether this tumor could have been removed in any other way without sacrificing the eye. Krönlein[1] described this method in 1887, and recommended it

[1] Krönlein, "Zur Pathologie und operativen Behandlung der Dermoidcysten der Orbita." *Beiträge zur klinischen Chirurgie*, 1889, vol. iv., pp. 149–163.

for the removal of deep-seated dermoid tumors in the orbit. The procedure did not become better known until Braunschweig's publication appeared in 1893.[1] Since then a steadily increasing number of cases have been published. Schlodtmann[2] was able to collect twenty-six cases where Krönlein's method had been employed; five of these were tumors of the optic nerve. Tumors involving the optic nerve require the removal of the nerve, and interference with the principal nutrient vessels of the globe is thereby unavoidable, hence the preservation of the eyeball in its normal shape is much more difficult than in the case of tumors not directly in connection with the optic nerve. The results, consequently, in these two classes of tumors cannot be compared, and our remarks will be limited to the latter class.

The other and older method of attacking the orbital tumor from in front, by entering between two recti muscles or by the temporary division of one or more of these muscles, with preservation of the eyeball, has been more or less successful in certain cases, though it is impossible to learn in how many cases the attempt was unsuccessful and the eyeball had to be sacrificed. The manipulations are necessarily difficult, the dissection has to be done at a depth, that is, in the dark; hemorrhage may be very disturbing, and the structures vital to the preservation of the eye are liable to injury; the luxated eyeball is jammed against the orbital margin during the entire operation, which may not be without danger, if the vision of the eye is to be restored or improved.

The resection of the outer wall of the orbit, which as in technic is not difficult, permits a thorough exploration of the entire orbit by gaining access to the part behind the eyeball, and the tumor can be freed from its surroundings in a much more careful manner. Whatever difficulties may arise from the size of the tumor or hemorrhage would occur in a more accentuated manner in the older method. If the attempt is unsuccessful, exenteration of the orbit can always

[1] Braunschweig, "Die primären Geschwülste des Sehnerven." *Archiv. of Ophthalmol.*, 1893, vol. xxxix., 4, p. 1.

[2] Schlodtmann, "Über die Extirpation retrobulbärer Tumoren," etc. *Festschrift f. A. v. Hippel.* Halle, 1900.

be done. The replacement of the fragment of bone and its retention in the normal position do not offer any difficulty. Sokolow[1] makes four holes in the resected bone and passes sutures through them to aid in holding the bone in place; a procedure which hardly seems necessary. Braunschweig[2] has practised the osteoplastic resection in the treatment of orbital cellulitis with success, and thinks that it is justifiable to try this procedure for exploratory purposes.

The one disadvantage of this method is a subsequent disturbance of motility in the eye. Schlodtmann found that in the twenty-six cases operated on after Krönlein, all suffered from a more or less complete loss of abduction, except in one case where the adduction was affected, and in one where normal motility resulted. It is clear that the abducting power is interfered with either by direct injury to the external rectus or its nervous supply, or by adhesions occurring during the process of repair. The degree of annoyance occasioned by this limited motility is of course proportionate to the amount of sight regained. In the case described in this paper the disturbance of motility was very slight and not progressive; the diplopia occurring only at the outer and upper limits of the field of fixation. The incision of the periosteum should therefore be made without invading the region of the external muscle, and the dissection subsequently should be done with as little traumatism of the surrounding parts as possible.

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[1] Sokolow, *Wratsch*, 1898, No. 33.

[2] Braunschweig, "Weitere Erfahrungen über die Krönleinsche Operation." *Ophthalmolog. Klinik*, 1897, No. 1, p. 4.