Epithelial corneal cyst / by J. Herbert Claiborne.

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NEW YORK, N. Y.

[*Reprinted from American Ophthalmological Transactions, 1905.*]

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EPITHELIAL CORNEAL CYST.

By J. HERBERT CLAIBORNE, M.D.,
New York, N. Y.

A. C., aged 13, was struck in the left eye with a jagged stone three years ago. He remained in a darkened room for six months, when the eye became sufficiently tolerant of light and use to permit of his going to school.

Status Presens. The eyeball is somewhat prominent and macrophthalmic. The cornea has a vertical scar running down the median vertical plane to the lower sclero-corneal margin, and branching above about 2 or 3 mm. from the natural position of the corneal margin into a fork. The iris is firmly attached on either side of the vertical scar to the posterior surface of the cornea, the latter structure being stippled on the nasal side of said scar; on the temporal side the cornea is not stippled, but the iris can be clearly seen in a state of tension from above downward. Springing from about the position of the fork are two translucent cysts, the one smaller than the other, — one lying toward the nose and vertically upward, the other much larger and inclined upward and outward. Between the two there is a slight sulcus, as if the walls of each at this point are merged together and attached to

the underlying tissue. Just below and underneath this point is an oval-shaped opening, apparently through the sclera, from which no reflex can be obtained. The sclera can be clearly seen through the larger cyst, and only partly and imperfectly through the smaller, in which the dark aperture, just mentioned, largely lies. Both cysts have small blood vessels running over them, and one large vessel runs straight down the central scar to the lower edge of the cornea. The larger cyst extends about 8 mm. over the sclera, and the measurement of the two in a horizontal plane was 12 mm.; the measurement of the lesser cyst was therefore about 4 mm., but the exact measurement of this could not with accuracy be obtained, since it slightly ruptured and collapsed when the attempt was made to measure it. There was no reflex from fundus. T. — 2, — light perception, no pain except on studying, no lachrymation, no photophobia, no signs of phthisis bulbi; slight congestion on sclera above the cysts, which increased on use of the eyes. The smaller cyst had been twice punctured with a needle by a physician, but it refilled each time.

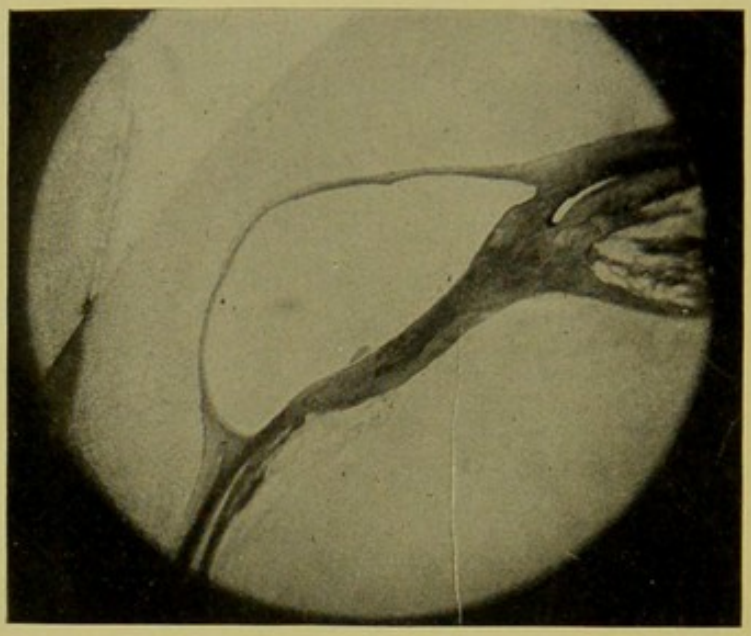
The right eye was normal in the matter of sight; there was no irritation of any sort; a slight degree of H. existed, and the fundus was normal.

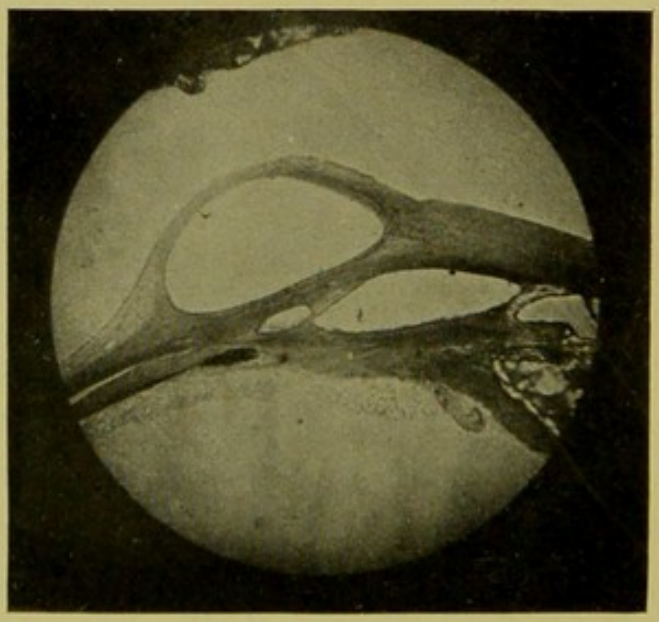
In view of the fact that light perception alone existed, and that the eye was somewhat irritable on use, I advised enucleation, and this was done without rupturing either of the cysts.

The examination of the eye was made by Dr. E. B. Coburn, and the following is his report:

Examination of the eye of A. C.

Macroscopic. The cornea is somewhat flattened and shows a linear scar extending from the lower corneo-scleral margin to the upper, terminating in a double staphyloma, one at each side of the upper end of the scar, which seems to form a septum between the protuberances. This double staphyloma, considered as a whole, is oval in shape and measures horizontally 9 mm. and vertically 7 mm., of which 3 mm. lies in the cornea, the rest being formed from scleral tissue. On bisecting the eye, the lens appears to be absent. The anterior chamber is shallow, the iris and what





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appears to be a cyclitic membrane being drawn forward by anterior synæchiæ. The staphyloma is now seen to be a cavity in the cornea and sclera and as sections were made, the ciliary body was seen to form a portion of the inner wall of the cavity. While, in another part, the inner wall was apparently lacking, the cavity of the staphyloma opening directly into the vitreous chamber. The cavity of one staphyloma which was examined, — the other being reserved for macroscopic demonstration, — is irregularly oval, having various diverticula, so that some sections appear to contain three or more cysts.

Microscopic. The anterior wall of the cyst is thin, contains a small patch of pigment, probably from the prolapsed iris, and is in part formed by corneal tissue and in part by scleral tissue, over which the conjunctiva is quite adherent. The lateral walls of the cyst are formed respectively of cornea and sclera, while the posterior wall is composed in part of these structures, in part by ciliary body and organized cyclitic membrane, and part by irregular spaces which open directly into the vitreous chamber. The cyst is lined on its posterior surface with epithelium, similar to the corneal epithelium, consisting of a cylindrical layer of cells on which are several layers of irregularly-shaped cells, and these in turn, are covered by a layer of flat cells. The intermediate layers decrease in number toward the sides of the cyst, and gradually diminish until only one layer is left, the layer of flat cells which lines nearly the whole anterior surface of the cyst. The various diverticula, which appear like separate cysts in different section are observed to be similarly lined. What was taken for the anterior chamber is really the posterior chamber, as the atrophied iris lies against and is adherent to the posterior surface of the cornea. What appeared to be the iris, are the extended ciliary processes drawn toward the opposite side by the suspensory ligament which is still adherent to the lens capsule. A small portion of the lens is still present contained in a mass composed of the iris, ciliary body, and cyclitic membrane.

Anatomical Diagnosis. Implantation epithelial cyst of the cornea and sclera.

EDWARD B. COBURN, M.D.

When I first saw the eye I made the clinical diagnosis of corneal cyst, and thought it probably the epithelial variety on account of the exceedingly thin cyst walls, and the extensive projection of the cysts on to the sclera. The microscopical examination confirmed the diagnosis. Dr. Coburn does not think it possible to state definitely whether they originate from the cornea or conjunctiva from the sections he has made, and considers it necessary to make sections of the entire eye to decide this point. Of course, until the origin of the cysts can be definitely proved, something will be lacking in the definition of the case. But, after all, the main point is clearly shown, and that is, that the cysts are of the epithelial variety.

Epithelial cysts are so called when their inner walls are lined with epithelium whether the epithelium comes from the cornea or conjunctiva, and the histories of most of such cases apparently show that the conjunctiva is the source of the epithelium. When a wound occurs in the cornea, there is an active proliferation of the epithelium and thus the wound is lined. When the wound heals normally the cavity heals like all normally healing wounds, from the bottom, and the epithelium is gradually pushed up and out. But at times, the wound heals at the top and then the epithelium in the depth is cut off from the surface, and so the cavity is lined with epithelium by proliferation.

When the wound is purely corneal, of course, the epithelium must come from the cornea, but it is when both the sclera and conjunctiva are involved in the wound that the latter plays an important rôle.

In my case, the wound evidently extended into the sclera, as was shown by a scleral cicatrix clearly seen under the larger cyst. The probability is that when the sclera is wounded and the conjunctiva along with it, there is more active proliferation of the conjunctival cells than of the corneal, on account of the greater blood supply in the former than in the latter; and yet, the cornea must furnish its quota likewise when it is wounded, — so that it would seem reasonable to say that epithelial cysts, which exists when cornea, scleral conjunctiva, and sclera are all wounded, are

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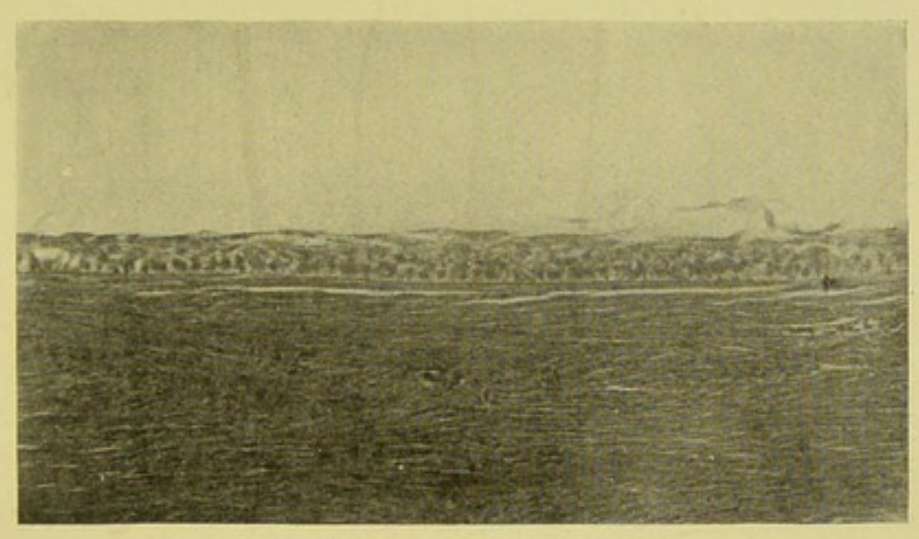

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lined by both conjunctival and corneal epithelium, but that epithelial cysts, arising from corneal wounds alone, are lined by corneal epithelium alone.

Treacher Collins has found epithelial cells in a cornea wounded by gunshot. There were several groups of epithelial cells, some of which were continuous with the surface epithelium.

In another case he found a large cyst in the center of a degenerated cornea, the result of a knife wound.

From these cases he suggests that epithelium may be transplanted into the substance of the cornea by mechanical means, for example, by shot in the first case just mentioned, by the knife-blade in the second. While this is obviously possible, the explanation heretofore given is certainly the more reasonable, and, therefore, the more likely.

Oatman holds this view.

This observer, in the *Archiv. of Ophthal.*, Vol. xxxiii, No. 31, 1904, has described a case of cyst of the cornea of the lymphatic variety. In these cysts the cavity is lined with endothelium, the natural lining of a serous cavity, and the conclusions he draws in regard to the formation of this variety of cyst is strongly at variance with the heretofore accepted views.

The prevailing view is that endothelial corneal cysts are caused by obstruction to the lymph currents, that this causes the canals to dilate and the consequent pressure on the lamellæ causes them to atrophy. In this manner, a cavity is formed. He maintains that the structure of the cornea is sufficiently dense to prevent any great distension of the lymph spaces from obstruction; that the drainage system of the corneal lymph spaces obviates or relieves any local obstruction; that atrophy of the lamellæ always precedes cystic dilatation of the spaces, and that this atrophy is caused by a vitiated lymph produced by pathological changes in the circumcorneal capillary system.

He likewise holds that the irritation of the altered lymph on the connective tissue of the lamellæ probably produces a proliferation of endothelial cells. He holds that cyst formation is there-

fore rare; degenerated and ectatic corneæ with dilated lymph channels lined with endothelium are more common.

The observation of Oatman, as to the density of the cornea and its consequent ability to resist or prevent dilatation of the lymph spaces, is satisfactory and sound. The rest leaves something to be wished for.

The two principal forms of corneal cysts have been called epithelial and lymphatic. It may be said that the true differential diagnosis lies in the character of the lining of the inner walls, and since the term, "epithelial cyst" has been used to define one, I suggest that the term "endothelial cyst" be used to define the other, instead of the term "lymphatic cyst."

The nomenclature would thus be based upon the histological character of the inner walls of the cyst.

The literature of this subject has been collated by Oatman.