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## OPERATION FOR THE FORMATION OF ARTIFICIAL PUPIL.

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THE formation of an artificial pupil, under the most favorable circumstances, is not to be considered as an operation easily and safely executed: on the contrary it is acknowledged to be one of the most difficult in execution, and the most doubtful as regards the final result, in the range of ophthalmic surgery. "In some rare instances, in which the eye has not suffered much, in which the lens and capsule are entire, and not injured by the operation, perfect sight may be restored. But, generally speaking, the result of this proceeding is much less favorable than that of cataract operations. In many instances, the patient must be contented if he should be able to see large objects and to find his way alone."\*

The case detailed below, presented several obstacles to a successful issue; the chief of which, were the extreme flatness of the cornea and the extensive adhesions between that part and the iris. Whenever the capsule and crystalline lens retain their transparency, it is highly important that they should not be removed or injured in any way. For besides their importance to the due performance of the function of vision, in the event of a successful operation, it must be apparent that the laceration of the capsule will destroy the support anteriorly afforded by that membrane to the vitreous humor, and as in extraction of cataract, may and in many instances inevitably will be followed by the loss of a greater or smaller portion of that humor. When, then, the anterior chamber is abolished, by the cornea being flat (presenting a plane surface nearly) and the iris being adherent over a large extent and in close contact throughout the whole posterior face, it is a matter of no small difficulty to pass a sharp-pointed knife through the cornea, and of necessity through the iris also, without puncturing the capsule and lens. The loss of the lens, indeed, can afterwards be supplied by the use of convex glasses; and the evacuation of a large part or even the whole of the vitreous humor,† according to some writers, does not necessarily

\* Lawrence, page 366.

† In describing the operation of "extracting the cataract," says Benjamin Bell, in his *System of Surgery*, Vol. IV. page 232, "I have sometimes noticed the loss of a considerable part, or perhaps the whole of the vitreous humor. By this the eye becomes flat and instantly sinks within the orbit. But although it ought to be guarded against with the nicest attention, it does not always prevent the

induce blindness. But the perfection of the operation, which forms the subject of these remarks, imperatively demands that the integrity of all these parts should remain inviolate, provided, always, that they are in a sound state.

Before describing the case in hand, I beg permission to quote the practical deductions drawn by Scarpa, from a consideration of the different methods adopted by eminent surgeons for the formation of a *permanent* artificial pupil, premising that his objections to the employment of the hook and scissors for the purpose of extracting and excising a portion of the iris, as performed in certain cases by Beer and Gibson, are not, in my opinion, well founded. Scarpa, having relinquished his operation by detachment of the iris, gives the following indications. "The use of the scissors, for making an opening in the iris with exactness and certainty, rendering a division of the *cornea* indispensable, to do this in such a manner as to include as small a part of the circumference of that membrane as possible, and far less than is usual in the extraction of cataract; to divide the iris with the scissors in such a manner, that a small triangular flap may be formed in it, and as much as possible in its centre; and, lastly, that the new pupil, as far as practicable, may be in the centre of the iris, or at least at such a distance from the ciliary ligament and processes, that the latter may not be an obstacle to vision." To these rules, which he says apply to all cases, both simple and complicated, he allows there may be one exception. The exception occurs in those (not uncommon) cases of closure of the pupil, in which the pupillary margin of the iris has been drawn into the cicatrix of the cornea and remained adherent to it. The fibres of the iris being thereby put on the stretch, a transverse incision in the iris alone is at once the most simple and obvious proceeding. Accounts of this latter operation having been performed with much success, may be found in the works of Sir W. Adams, and in this country in Dr. Delafield's appendix to the American edition of Travers on the Eye. But the operation by incision (*Koretomia*) alone, is admissible, however, only when the capsule and lens are opaque, or after extraction, and not where these parts remain transparent and in situ, and I therefore employed the hook and scissors, adopting, more particularly in the second operation, the method pursued by Gibson,\* in such cases. In cases of this description, i. e., where there are extensive adhesions be-

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success of the operation. I have known, indeed, some instances of the eye remaining sunk and useless after this accident, but most frequently the globe begins soon to fill again, and in the course of two or three weeks it has commonly acquired its usual bulk, probably from a regeneration of the aqueous humor." He adds. "I have often observed as perfect a state of vision after this operation, where all the vitreous humor had been lost, as if none of it had been discharged; of which a remarkable instance occurred in a woman who some time ago had the operation performed on both eyes. The eyes were otherwise apparently sound. In one, the whole of the vitreous humor was forced out along with the cataract, and the eye sunk entirely to the bottom of the orbit; in the other, the operation was performed with much accuracy, the cataract was extracted and none of the vitreous escaped. In the course of three or four weeks, however, from the operation, both eyes were of the same bulk; their appearance was perfectly similar, and the patient discovered objects equally well with either of them." SCRIVENER—cited by Porterfield in his excellent *Treatise on the Eye and Phenomena of Vision*—by way of experiment, squeezed the whole of the humors out of the eyes of a goose, a cock and a hen, all of whom again recovered their sight without the assistance of any medicine. In reference to the subject of these extracts, I may observe that in a metrical essay recently published, upon the healing art, it has been recommended to inject the eyeball with lukewarm water, as a substitute for the natural contents, whenever, unfortunately, they have been evacuated by accident or during any surgical operation!

\* Practical Observations on the Formation of Artificial Pupil, by Benjamin Gibson, Manchester.

tween the iris and opaque cornea, which include the whole border of the pupil, or nearly so, before the hook or scissors can be used with advantage, Mr. Gibson observes, it becomes necessary to separate the adhesions as extensively as possible. For this purpose the point of the cornea-knife is to be passed through the cornea in the usual way, as in making the punctuation in extraction, and is to be directed to those adhesions, the division of which will most effectually tend to render the iris free, for the subsequent part of the operation. Great care must at the same time be taken to avoid undue pressure upon the eyeball, that the aqueous humor may not escape before that object is accomplished; for otherwise the cornea and adherent iris will become flaccid, and the adhesions be much more difficult to separate. To the permanent success of this operation, Mr. G. considers it of consequence that a portion of the iris should be *removed*.

CASE. B. M., 29 years of age. In the month of May, 1837, was attacked, in both eyes, with purulent ophthalmia, and this resulted in total blindness,\* from ulceration or sloughing of the cornea, the consequent prolapse of the irides and closure of the pupils. When first seen by me, nearly two thirds of the cornea of the right eye, and a rather smaller extent of the left, was occupied by a dense opacity of a pearly white color, in which were plainly visible several black points, indicating the places where the irides had protruded and had become inseparably united with the cicatrices left by the ulcers. In these cicatrices, the whole pupillary or free margin of the iris had become involved or included, and hence the occurrence of closure of the pupils, which was entire and irremediable except by an operation. The cornea of each eye, but especially that of the right, had lost its natural convexity, and had become extremely flattened. The irides were in close contact everywhere with the posterior face of the cornea, and of course the anterior chambers of the eye were completely abolished. Both eyes were affected with chronic inflammation, and the lining membrane of the upper lids was granulated. She had, however, a distinct perception of light, and could readily distinguish day from night, and even moderate variations in the degrees of light. During an attack of a violent inflammation of the eyes, about six months since, she experienced luminous spectra, or a morbid perception, as of flashes of blue or variegated light, accompanied with showers of sparks; this was attended with photophobia. As the inflammation subsided, these gradually disappeared, or rather gave place to the appearance of dark muscæ floating in the field of vision, which were apparent only in the day-time, and most so when the light was the most bright. Immediately after the operation they ceased to be visible, but again appeared, though much less numerous and distinct than before.

The first step was to bring the eyes into a more healthy condition, by moderate local depletion, and by making local applications to reduce the granulations of the lids. When, by these means, both eyes and lids were brought into a sounder state, I attempted to form an artificial pupil in the right eye. The patient having been cupped, and having

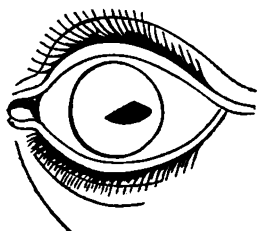
\* Blindness, so far that the patient could not find her way about alone.

taken a dose of sulphate of magnesia on the preceding day, an incision was made in the lower part of the cornea, as for extraction of cataract, but of less extent. From the extreme flatness of the cornea, and consequent abolition of the anterior chamber, it was very difficult to avoid puncturing the anterior capsule of the lens. This was followed by the escape of the crystalline and the loss of a considerable portion of the vitreous humor. A sufficient portion of the iris, however, was removed, and the eye was bandaged as after extraction. On the succeeding day, the eye had regained its usual fulness, and the inflammation was not at all severe. But the opacity resulting from the incision was so extensive as to render the operation of no avail.

*Sept. 7th.* Assisted by Dr. Palmer, and in the presence of Dr. Strong and Dr. Hopkins, an operation was performed on the opposite eye. The patient being placed on a bed, in a horizontal position and with the head slightly raised, with a cornea knife I made a simple puncture through the cornea near the external lateral margin. Having separated a part of the adhesions as freely as the flaccid and apparently thickened state of the iris would permit, the opening was somewhat enlarged in withdrawing the knife. A small quantity of aqueous humor flowed out, but the lens and capsule were untouched. A fine hook was now engaged in the central opening in the iris, and a portion of it being drawn out, was excised with the scissors. An immediate effusion of blood filled the new pupil and insinuated itself between the iris and cornea. Previously to the hæmorrhage, the patient plainly distinguished the window, but afterwards she could see light only, and that appeared to be of a red color. There ensued, soon after the operation, a violent throbbing sensation in the eye and head, for which she was cupped, the same day, with relief.

*Saturday.* The deposit of blood in the anterior chamber has been diminished by absorption; there is no pain, and but little redness of the eyeball. Warm applications are now more agreeable than the cold lotions which she at first preferred.

*Monday.* Yesterday, contrary to direct orders, the patient was allowed by the nurse to go down stairs. She had all day more or less pain in the eyeball, and an œdematous swelling of the eyelids, for which blood was taken, by cups, to the amount of eight ounces. There is now a coagulum of blood at the lower part of the anterior chamber and about the incision of the cornea, which has not yet perfectly united. The iris appears dull and discolored. The artificial pupil is of an elliptical figure; it is situated near the centre, but extends towards the external margin of the iris, as delineated in the marginal plate. Vision is improving, and the light seems less red than before. To be cupped, if pain returns; and to take every night one of the following pills. *R.* Hydrarg. submuratis, opii pulv., ãã gr. vi.; camph. pulv., gr. xii. Misce; in pil. no. vi. dividend. Also, to have the extract of stramonium applied around the eye, three times daily.



*Artificial pupil in left eye of B. M.*

*Tuesday.* Rested well; has no pain or uneasiness of the eye, but com-

plaints of soreness only ; the effusion of blood has nearly disappeared from the pupil, but still remains about the incision ; can now see sufficiently well to tell the number of fingers held before the eye. The inferior angle of the incision being very prominent, was touched with the solid nitrate of silver, reduced to a fine point ; the other remedies to be continued as already directed.

*Thursday, 7th day.* Vision improving daily ; no blood to be detected in the chambers of the eye ; the prominence at the inferior angle of the corneal incision has increased, and has assumed a vesicular appearance. To be touched with the caustic pencil daily.

*Saturday.* The patient reports that the eye feels as comfortable in all respects as it did before the operation. The protrusion has diminished in size. With respect to vision, she can distinguish readily small objects, such as a penknife, a spoon, &c. and colors most distinctly.

*Monday.* Appearance of eye the same ; state of vision improving. Soon after this she omitted the pills, her gums having become tender.

*Saturday, October 6th.* The protrusion has become less prominent, and is opaque and of firmer consistence, from the effusion of coagulable lymph ; the patient can readily distinguish small objects, such as pins, needles, &c., and can see distant buildings, and vessels sailing in the harbor.

There is one other circumstance to be noticed as a consequence of the operation ; viz., a change in the expression of the patient's countenance, from the vacant aspect of a blind person to the intelligence and animation which alone belong to those who see.

In conclusion, it is evident that closure of the pupil must occur in connection with very dissimilar conditions of the eye, and that therefore the same mode of operation cannot be applicable to every case. As opportunities occur, it is my intention to present to the profession some account of cases requiring other modes of operating for the formation of artificial pupil.

*No. 4 Winter Street, October, 1838.*

## HISTORY OF THE MEDICAL SCHOOL OF ALBANY, N. Y.

*To the Editor of the Boston Medical and Surgical Journal.*

DEAR SIR,—I noticed a call in your Journal for information in regard to the history and present condition of the medical institutions in the United States ; and in a more recent number, your request for an account of the origin of the "Albany Medical College," the principles on which it is founded, and its ultimate design.

It is my intention to comply with your request so far as the Albany Medical College is concerned, and I will endeavor to give you, in detail, the facts which have a bearing upon the subject.

Dr. Alden March is most intimately connected with every step in the progress of organization, as well as in the design of establishment, of the medical college in this city ; and to his untiring industry and unyielding perseverance for eighteen years, are we indebted for the noble ornament which now adorns our city.