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A SERIES OF CLINICAL CASES.

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SECONDARY GLAUCOMA FROM PARTIAL DISLOCATION OF THE LENS INTO THE ANTERIOR CHAMBER; REMOVAL OF LENS WITH IMMEDIATE CESSATION OF ALL PRESSURE SYMPTOMS: SUCCESSFUL OPERATION FOR CICATRICIAL ECTROPIUM IN THE SAME CASE.

BRIEF ACCOUNT OF THE OPERATIVE PROCEDURES PURSUED FOR THE RELIEF OF THE OCULAR CONDITIONS PRODUCED BY A TRAUMATIC SYMBLEPHARON.

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A SERIES OF CLINICAL CASES.

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Surgeon to the Hospital.

Removal of a Piece of Steel from an Iris by an Electro-Magnet, with Restoration of Vision to Normal.

T. H., a negro laborer of 29 years of age, came to my service at the hospital on December 5, 1894, with the assertion that about three hours previously he had been struck in the left eye by a piece of steel clipping from a sledge-hammer. He stated that the piece had cut its way through the upper lid, and had been removed from the "front of the eye" by a fellow-workman. He came on account of a sensation as though something were in the eye, and because the sight of the eye was becoming "misty."

Examination showed a linear wound extending through the tissues of the lid at the junction of its middle and inner thirds. On the cornea, at a point corresponding to the position of this wound, there was a minute whitish depression which was evidently the seat of a recent perforation. Just opposite this point, in a localized swelling in the extreme peripheral fibres of the iris, a bit of brilliantly shining steel could be plainly seen. The aqueous humor, though slightly turbid, was fully restored, and the anterior chamber presented its proper depth. The pupil was round and the play of the iris to ordinary light stimulus seemed but little, if at all, disturbed. With undilated pupil the lens was apparently clear. Vision was reduced to one-twentieth $\left(\frac{2}{40}\right)$.

Upon consultation it was agreed to immediately remove the foreign substance, but as the patient absolutely refused such a procedure atropine and a shade were ordered and he was strictly enjoined to temporarily discontinue his work.

Two days later the patient returned expressing his willingness to have the steel removed. The pupil was found to be dilated almost ad maximum, except at the point of the foreign body. The lens appeared clear. A rather broad flat needle was inserted just over the position of the steel, the pupil immediately contracting upon the escape of the aqueous humor. The fine tip of an electro-magnet, carrying the strength of twenty cells, was now introduced into the anterior chamber, and the foreign body was withdrawn. Atropine was reinstilled and a pressure-bandage was applied. Upon the third instillation of the drug, three hours later, the wound was found to be practically healed, the aqueous restored, and the pupil redilated.

In five days' time all irritation signs had ceased, and the iris had given away at the point of injury, showing a small localized area of capsular scar. Vision had risen to one-half $\left(\frac{5}{10}\right)$, the same as that of the fellow-eye.

At present writing, four months later, the eye is quiet and performs all of its functions properly.

This case is interesting, and is here reported just as the writer has two others of similar nature and result that he has seen in this service, as showing not only the quick subsidence of inflammation by immediate operative interference and careful after-treatment, but, as he has before had occasion to say, by "saving a delicate organ from almost certain destruction, and bringing its usefulness as an instrument of sensory precision to an equality with its fellow."

FIG. 1.

FIG. 2.

DESCRIPTION OF THE METHOD OF OPERATION EMPLOYED FOR THE REMOVAL OF AN EPITHELIOMA INVOLVING BOTH THE UPPER AND LOWER LIDS AT THE OUTER PALPEBRAL COMMISSURE.

On June 6, 1894, M. H., an apparently healthy woman of 52 years of age, applied at my service at the hospital with the assertion that six years previously she had struck herself with a stick just below the left eye. A slight scar remained at the point of injury until one year later, when a small growth appeared upon its site. This gradually enlarged until it attained the magnitude as very imperfectly shown in Fig. 1. She asserted that she had an occasional pricking sensation in the growth.

As can be seen, there was a broad inverted kite-shaped tumor occupying the outer portion of the lower lid and extending up into the palpebral commissure. This growth, which was bosselated and firmly attached to the underlying tissues, was occupied by numerous small and several large areas of apparent cystic degeneration. These, which in most instances were covered at points with ragged epithelium, were most marked at the upper outer portion of the mass. In this part of the mass there was a large degeneration area, which was evidently the site of an early hæmorrhage.

It will also be noticed that the outer portion of the upper lid was dragged slightly downward and inward, thus hiding the outer angle. The skin of both lids, just beyond the ciliary borders, was involved at the external angle. The disease did not appear to have invaded the conjunctival membrane. The eye itself was in good condition and performed all of its functions properly.

Three days later, while the patient was under the influence of ether, and with the assistance of Dr. George C. Harlan, I performed the following combined operation upon both the upper and the lower lids.

As can be seen by study of the accompanying outline drawing (Fig. 2), kindly made for me by Miss Margaretta

Washington, of this city, this was accomplished by first excising the growth included in a large triangular flap, A, which was so shaped at the outer angle of the eye as to include the entire outer commissure. The nasal border of the excised area, A, was next dissected sufficiently loose as to allow it some freedom and pliability. After this had been accomplished, the flap B was shaped, carefully undermined and slid over into the position of the previously excised area A, and fastened by a series of superficially placed sutures, a a′, b b′, c c′, d d′, and e e′, and a row of lateral ones along the superior border of the flap.

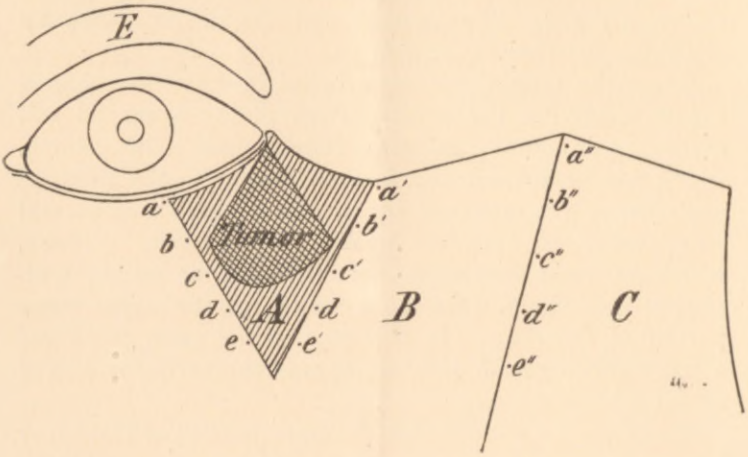

FIG. 3.

In order to prevent the flap B from having a raw edge at its outer portion, and to prevent irregular cicatrization near the epitheliomatous area, a second large flap was shaped at C. This was carried directly up to the temporal artery and given a broad base below by carrying the outer incision to the ramus of the jaw. After carefully dissecting the tissues beneath the base of the flap and the adjacent skin around the angle of the jaw, this large flap was slid up and over and fastened by a series of very superficial sutures, a′ a″, b′ b″, c′ c″, d′ d″, and e′ e″, and a row of lateral ones running along

the upper border of the flap from A′ to A″ into the position occupied by the flap B. The lower outer portion of the flap C was lifted up and fastened in position by three deep sutures, thus leaving but a small triangular granulating area just in front of the ear.

After the lower flaps had all been secured in proper position, the tongue-shaped flap E was carefully dissected loose and freed. The point P was then twisted down and out, and fastened by a strong deep suture to the point at the external commissure, and the flap was carefully stitched into its new situation by several superficial sutures. During the procedure there was profuse bleeding, which was arrested by heat and torsion of the bleeding vessels. Each flap was made as thin and as clean-edged as possible,—all adherent fat was carefully excised. The flaps were kept warm by hot sponges, and the exposed raw surfaces were carefully cleaned and freed from all blood-clots before the flaps were sutured into position. The entire operative field was dusted with powdered iodoform, and the whole external surface covered with antiseptic gauze and bandaged.

On the second day the dressings were removed and the flaps were found to be in excellent condition. The triangular free space in front of the ear was beginning to granulate.

Two days later the stitches in the upper lid and all the lateral stitches of the vertical rows of sutures were removed.

On the sixth day a small area at the inner part of the lower portion of the large outer flap appeared somewhat tumefied. This was immediately excised, giving egress to some pus. The cavity was carefully cleaned and allowed to heal by granulation. The upper stitches were all removed. The flaps were all thoroughly healed, and the granulating area in front of the ear was well filled in with healthy tissue. There was absolutely no cicatricial dragging around the lids themselves. The external commissure had become as well shaped as its normal fellow, and the lid movements were undisturbed in any way.

Two weeks after the operation the granulating area had

almost healed. One week later, but three weeks after the operative procedure, the patient was discharged cured. Figure 3 shows the condition of the flaps some four months after the operation. At present writing, five months still later, the scars are less visible, and, in fact, can barely be distinguished from the natural folds and creases of the skin.[1]

Examination of the growth with the microscope by Dr. Charles W. Burr, showed the characteristic form of epitheliomatous degeneration.

Secondary Glaucoma from Partial Dislocation of the Lens into the Anterior Chamber; Removal of Lens with Immediate Cessation of all Pressure Symptoms: Successful Operation for Cicatricial Ectropium in the same Case.

On the 11th of August, 1893, M. K., a 56-year-old laborer, residing at Chester, Pa., applied at my service with the history that a growth had appeared on the left cheek just below the lower eyelid. This, which was determined as of a cancerous nature, was removed the following year by some physician in Iowa. The same year the sight of the left eye failed. The lower eyelid has been dragged downward since the removal of the growth. There was no history of traumatism. The patient stated that he had worn glasses for near work with the right eye for four or five years.

At the time of the first examination, made by my assistant, Dr. William C. Posey, during my summer vacation, the cornea of the left eye was found to be clear. The anterior chamber was deep. Except in a small area to the nasal portion, the lens was densely cataractous. It was slightly luxated, and freely mobile with the various movements of the eye. The pupil was three millimetres in diameter and the iris reacted promptly to light stimulus.

[1] This and the two succeeding cases were all shown and the methods for operation described to the Fellows and guests of the Ophthalmic Section of the College of Physicians of Philadelphia.

Vision was reduced to a small central area of light perception, embracing about ten to fifteen degrees around the central light of fixation.

With the exception of a faint nuclear haze in the lens, the right eye was normal. Examination of the urine failed to give any evidence of abnormality.

The patient was told to report in three weeks for operation. This, however, he failed to do until the 25th of April, 1894, when he returned with the assertion that the left eye had remained perfectly quiet since his last visit, until ten days previously, when it was struck with a piece of kindling wood. Ever since the accident, the eye had been excessively painful. This pain he had endeavored to assuage by the use of the solution of boric acid which had been ordered for him when he first came to the clinic.

At this visit there were all the signs of a secondary glaucoma from lens pressure.

The lower half of a densely cataractous lens had pushed its way through the pupillary opening at an angle of about forty-five degrees, and had pressed the iris in this position far back behind it. The entire iris tissue itself was discolored. There was intense ciliary congestion and some ciliary tenderness. Intra-ocular tension was increased. There remained but the faintest evidences of light perception straight ahead when an intensely concentrated beam of artificial light stimulus was employed.

The patient was immediately admitted to the hospital. He was etherized, and with the assistance of Drs. William F. Norris and George C. Harlan I made a peripheral incision in the lower outer third of the cornea. This incision was lengthened at each end by a couple of snips with a pair of fine scissors. I then introduced a wire loop and extracted the lens without the loss of any vitreous, obtaining a perfectly clear and round pupil. A few drops of a weak solution of atropine were instilled into the conjunctival sac and a light pressure bandage was applied.

In two days' time, a slight striped keratitis could be seen. The corneal wound was healed. The ciliary congestion had

greatly lessened and the pupil was evenly and almost fully dilated. Situated down and out, there were a few faint marks of old iritis.

Three days later the ophthalmoscope revealed the evidences of numerous old vitreous opacities which were so dense as to prevent any view of the fundus. Intra-ocular tension had fallen to normal.

The eye remaining perfectly quiet, it was now decided to endeavor to remedy the ectropium. This was done on the 16th of May while the patient was under the anæsthetic effects of ether.

A modification of Dieffenbach's operation in which the excised area was sutured horizontally, as shown in the accompanying sketch (Fig. 4) by Miss Washington, was made.

After the area A B B′ C had been properly shaped and

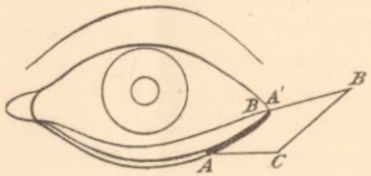

FIG. 4.

excised, the ciliary border of the lower lid, A A′, was carefully trimmed.

The external canthus was next divided. A stitch was then placed at A and fastened to A′, thus shortening the ciliary border of the lower lid whilst B was stitched to B′ correcting the deformity. The horizontal and irregular gap in the skin of the temple was fastened together by a series of obliquely-placed sutures, the redundancy of the skin of the lower border of the gap being very evenly distributed along the edges of the wound.

Seven days later, through an accident, the deep commissural stitch gave way and the lower lid fell back into place, allowing the tissues to granulate.

On the 29th of October of the same year the patient was

readmitted into the house and the same operation was repeated. In less than three weeks' time he was discharged cured, and has remained so since.

BRIEF ACCOUNT OF THE OPERATIVE PROCEDURES PURSUED FOR THE RELIEF OF THE OCULAR CONDITIONS PRODUCED BY A TRAUMATIC SYMBLEPHARON.

On October 11, 1893, E. B., an 18-year-old school-girl from Sullivan County, Pa., came to my clinic, stating that ten years previously she fell on a piece of broken dish, inflicting a perforating wound of the left eye to which the inner surface of the upper lid had become fastened. She came to see whether the lid could be loosened from the globe.

In the upper outer part of the lid, about six millimetres below the eyebrow, there was a small, irregular scar which ran parallel with the brow. The lid was drawn down and in by two broad cicatricial bands which extended from the conjunctival surface of the lid to a jagged scar in the upper outer corneo-scleral border of the globe. Just below this was another short, wide band of tissue that attached the outer corneal border of the eye to the lower outer conjunctival surfaces of the upper lid. At the bulbar extremity of this band there was a slight corneal scar. The palpebral fissure was so distorted and the eye was so dragged up and out beneath the upper lid that the cornea was almost invisible to ordinary inspection. The iris was distorted and the pupil was elongated into a narrow slit with its long axis situated at 160°. The cornea was somewhat hazy. The globe was properly shaped, though it was smaller than its fellow. Intra-ocular tension was normal. The eye was perfectly quiet and free from inflammation. There was no motion of the globe except in an extremely limited degree to the outside and down and up, each forced movement of the organ producing a distortion and dragging of the upper lid. Vision was reduced to finger counting at thirty centimetres and the field of light perception was normal.

The patient was admitted to the hospital. Two days

later, while she was under the anæsthetic influence of ether, the false attachments to the globe were detached and a series of incisions were made through the bulbar conjunctiva for about a centimetre's distance above and below so as to free the bands from the globe. The symblepharon mass was now inverted upon itself by two deep-seated sutures which, as in Arlt's operation, were brought out through the skin at the upper outer part of the upper lid and tied over little rolls of buckskin. After this had been accomplished, two large flaps of conjunctival tissue were dissected sufficiently loose to allow them to be stitched over the exposed scleral area. To get a full and loose covering it was found necessary to pass so far above and below the cornea to the nasal side of the globe that when the free borders of the flap united, the cornea was so covered with the conjunctival tissue that only the central and inner third of the membrane could be seen. The field of operation was cleansed and atropine was instilled into the conjunctival sac. All of the exposed surfaces were dusted with iodoform and a light antiseptic compress-bandage was applied.

In three days' time, both conjunctival flaps were adherent and but slightly swollen. The eyeball was freely mobile. The skin of the lid was perfectly free and the area around the buckskin rollers did not show any evidences of inflammatory reaction. There was not any pain.

Four days later the stitches were removed.

After a period of a month it was found that when the right eye was made to fix straight ahead, the left eye, though elevated so as to allow only the lower half of the cornea to be seen, was in its proper relative lateral position. In forced convergence the vertical meridian of the cornea moved inwards to almost one or two millimetres' distance beyond the position that it assumed when the right eye was made to gaze directly ahead. In right lateral deviation, the left eye followed until the nasal edge of the cornea reached the position of the lower canaliculus (*i.e.*, almost the same distance as in the second experiment). In left lateral deviation the left eye turned up and out. The

entire ciliary border of the lower lid itself was slightly stretched in an upward and outward direction.

Knowing the marked tendency to further cicatricial contraction in such cases, the patient was sent home for two months.

On January 3, 1894, she was readmitted to the hospital wards. Two days later she was etherized and a broad tongue-shaped flap of cicatricial band, extending from the outer and upper portion of the under surface of the lid to the conjunctival limbus of the globe, was freely dissected loose and turned in upon itself and sutured as before by deep stitches that came out upon the skin of the temple. At this point they were tied over a buckskin roller. Two broad and long conjunctival flaps, obtained from the areas in proximity to the upper and the lower limbus of the cornea, were sutured to one another so as to entirely cover the bared sclerotic. These flaps were so wide and of such a length that the corneal membrane was entirely hidden from view. Thorough irrigation, atropine, iodoform, and a light pressure-bandage completed the dressings. To prevent any reaction, ice-compresses were applied constantly for twenty-four hours.

In five days the conjunctival stitches were removed. The deep stitches were allowed to remain a week longer. The eye was now almost entirely free and enjoyed much greater movement than after the first operation.

On the 22d of the month, the cornea was lowered three millimetres, and almost on a line with the cornea of the fellow-eye, by a superior tenotomy. During the procedure, which consisted in a free and extensive division of all of the fibres, of the tendon of the superior rectus muscle, it was found that the insertion of the tendon of the muscle was much more oblique to the nasal side than is usual.

Six weeks later, so as to render the eyes as symmetrical in apparent size as possible, the refraction of the right eye, which was slightly hypermetropic and astigmatic, was carefully estimated and a corresponding lens ordered, while a convex lens of about six diopters' strength was placed in

the same frame before the left eye, which rendered the two organs almost identical in apparent size.

At present writing, over one year later, the conditions remain as when the operative procedures were completed.

This case is here given, as it is of interest in showing the perfect freedom in which free and extensive incisions can be made into the conjunctival membrane in order to secure sufficiently broad and loose flaps to entirely cover raw and open surfaces so as to prevent undesired union of cicatricial tissues. It also illustrates the importance of carefully performing radical measures and the necessity of allowing sufficient interval to take place between the various procedures and long enough time to elapse before any final report of the result is given.