

**Cataract operations ; Mules's operation illustrated by skiagraphs ; capsulotomy ; operation for pterygium : clinical lecture delivered at the Medico-Chirurgical College / by L. Webster Fox.**

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Illustrated by Skiagraphs; Capsulotomy;  
Operation for Pterygium.

CLINICAL LECTURE DELIVERED AT THE MEDICO-CHIRURGICAL COLLEGE

By L. WEBSTER FOX, A.M., M.D.,

Professor of Ophthalmology in the Medico-Chirurgical College, Philadelphia,  
Pennsylvania.

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# CATARACT OPERATIONS; MULES'S OPERATION ILLUSTRATED BY SKIAGRAPHS; CAPSULOTOMY; OPERATION FOR PTERYGIUM.

CLINICAL LECTURE DELIVERED AT THE MEDICO-CHIRURGICAL COLLEGE.

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GENTLEMEN,—CASE I.—This young girl is seventeen years old and is suffering from congenital cataract. She was brought from an institution for the blind to this hospital with the hope that an operation could be performed upon one or both eyes and vision given her. A careful test has been made with a lighted candle in the dark chamber of the ophthalmoscopic room, and it was found that she has good projection of light in both eyes, for had she not had the visual power to locate the glare from the candle it would have been useless to have attempted the operation. I have frequently called your attention to this test, as it will be useful in examining patients and in giving a favorable or unfavorable prognosis before an operation. As this patient has good projection of light in both eyes we may assume that the retina is in a good condition, and that if no inflammatory reaction follows the needle operation a favorable result may be anticipated.

Another test which may be applied to this patient is to see whether the irides respond promptly to light. This is done as follows: I cover both eyes with my hands. This places both eyes in a darkened chamber. The pupils dilate. One hand is suddenly removed from the eye, and the iris, which was dilated, now suddenly contracts, caused by the flood of light falling on the retina, and by reflex action contracts the pupil if the retina is in a normal condition.



The cataracts in this patient are somewhat different in consistency to those usually found in the congenital variety. Upon close inspection both lenses are shrunken and chalky. But what is very peculiar is that the equatorial diameter is about normal, while the antero-posterior has greatly shrunken, giving the lumen the appearance of white chalky scales suspended in the pupils. In the many cases that I have examined I have never seen anything like this before. The glistening bits of cholesterin crystals shining among the marble-like deposits of the lens make it a most unique picture.

*Operation.—Discission.*—A puncture is made with a Bowman's stop-needle in the lower and outer quadrant of the cornea, midway between the centre of the pupil and the corneo-scleral margin. Two sweeps of the point of the needle are made in the vertical and two in the horizontal directions, to lacerate the capsule of the lens. We follow this by stirring the central anterior portion of the lens. This causes rapid breaking down of the cataract and allows its particles, which become separated, to pass into the anterior chamber and later to become absorbed.

One thing I must repeat, and that is, be careful not to do too much in the stirring up of the lens. Absorption takes place in from three to nine weeks. Sometimes a secondary operation must be performed. It is not necessary for me to caution you about the sterilization of all instruments, atropine solution, and bandages used at the time of the operation and subsequently.

We are indebted to the late Dr. J. C. Saunders, the founder of Moorfields Eye Hospital, London, for having suggested the operation. He also invented the delicate needle with which he so successfully operated. Sir William Bowman many years afterwards modified the shape of this needle by having a shoulder placed on it. Nearly all ophthalmic surgeons use it, and it is now known as Bowman's stop-needle. I pass it round for inspection.

When the posterior capsule remains intact and obscures central vision a secondary operation must be performed,—capsulotomy. I prefer making an incision in the cornea with a broad needle through the capsule in the vertical direction, then passing de Wecker scissors through the corneal opening, allowing the blades to separate, one blade to pass behind the capsule, the second to the front horizontally, and with one snip cut the capsule in two. This operation is most



successful. The after-dressing in this operation is the same as that followed in senile cataract.

The only complication which may arise is the too rapid swelling of the lens. This pressure on the ciliary bodies may cause cyclitis. When it does, it may be necessary to remove part of the soft lens by Teal's method,—that is, make an incision into the anterior chamber and suck out part of the lens substance with a specially devised instrument.

CASES II. and III.—These two patients are subjects of the same malady, senile cataract. Both patients, one sixty and the other sixty-five years of age, are practically blind.

This disease of the crystalline lens occurs in individuals usually past the meridian of life. It was known to the ancients and was removed by an operation, evidence of which is shown by old writings. Eye specialists flourished in the city of Alexandria when that city was the centre of civilization. It was also known to the Chinese, and is probably one of the oldest operations of which we have authentic data. The ancient operation was known as the couching or reclining method. A needle was passed into the eyeball posterior to the ciliary bodies. The point of the needle passed forward to the lens, which is then dislocated backward and downward into the vitreous. It was not very successful. Secondary inflammations frequently followed, and the eye was lost.

To-day an incision is made in the cornea, part of the iris removed or not, according to the will of the operator, and the cataract pressed out through the corneal wound. There are many different methods, all more or less similar, and all having the same object in view. To Daviel, who in 1745 made the first corneal incision, are we indebted for the operation upon which all subsequent methods are based. I shall follow in part a method suggested by Professor Snellen,—that is, to make a semiflap incision in the cornea, inclining the cutting edge of the knife backward as I approach the apex of the cornea and make a large incision in the conjunctiva, which gives me a conjunctival flap. An iridectomy is also performed. In rupturing the capsule of the lens I use Jaeger's cystotome, it being less dangerous than the ordinary straight cystotome commonly used.

The delivery of the cataract is done by slight pressure upon the lower half of the cornea, tilting the lens forward, accentuating the



pressure with the Daviel spoon as the lens makes its appearance in the wound. Great care must be taken to see that all cortical matter is cleaned out of the anterior chamber and that the iris does not become incarcerated in the lips of the wound. The conjunctival flap is then stroked into its place and the eye bandaged. The after-dressing in cataract operations is a very important factor in its successful termination. Every ophthalmic surgeon has his own peculiar way of applying a dressing to an eyeball. The method adopted in this school is as follows: Immediately after the wound is closed a few drops of atropine solution are dropped into the eye, followed by mild irrigation of solution of hydrargyrum bichloride 1 to 2000. The eyelids are closed, and over this is placed two or three drachms of sterilized vaseline, and all closed with eye-pads held in place by adhesive plaster. I have used such a dressing for the past fifteen years most successfully. This dressing is replaced in twenty-four hours. The large number of cases dismissed from the hospital in nine or ten days proves that the method is a good one.

CASE IV.—*Staphyloma of the Cornea, a Sequela of Gonorrhœal Ophthalmia*.—This child, twelve years of age, through a very unfortunate infection, became the subject of gonorrhœal ophthalmia, in which the right eye was lost, although the most careful treatment had been instituted. As I told you in a former lecture when speaking on this subject, when you are dealing with an infection of this kind you have to do with a poison almost as deadly as nitric acid. It will destroy a cornea in three days. This case comes to you as a warning to notify all patients who have this terrible disease that they should be as careful as if they were handling the most deadly poison. The whole of the corneal tissue has been destroyed, and this large projection is called a staphyloma. It is a mass of cicatricial tissue, and possibly its bulging forward is the effect of intra-ocular tension, as the eyeball is very hard to the touch. In point of fact, we have as a complication glaucoma, and the abnormally high tension causing the great pain which is present day and night. As the eyeball is very much disfigured and painful, its removal has been advised. Instead of removing the eyeball I shall perform a Mules's operation. Dr. Mules has given the following table, which I will read to you, showing the advantage of this operation over that of enucleation:



ENUCLEATION	<i>versus</i>	MULES'S OPERATION.
1. Complete removal of globe and its contents.		1. Retention of the framework of the eye.
2. No stump, therefore sunken eye.		2. A firm, round globe forming perfect support for artificial eye.
3. Disturbance of all muscular relations and arrest of movement.		3. Perfect harmony of muscular movement retained.
4. A fixed staring eye attracting attention.		4. Fitted with selected eye defies detection.
5. Patient shuns society.		5. No qualms as to personal appearance.
6. Arrested development of orbit in case of children.		6. No interference with growth of orbit.

You have frequently seen me perform this operation, and while every operation is not successful, I must repeat what Mr. Carter, of London, says about it: "I am performing it with increasing pleasure on every available occasion."

In those cases which have not been successful I am sure something must have been amiss with my technique or the sterilization. I count those cases failures in which the stitches gave way and the glass ball came out. Even when this takes place, the clean sclerotic coat which closes up makes a better support for the artificial eye than a complete enucleation. Some ophthalmic surgeons are still unfavorably disposed towards this operation, but I predict that the day will come when it will be universally adopted. Mr. T. Herbert Bickerton, of Liverpool, always speaks and writes about it most eulogistically, and Mr. Brudenell Carter, of London, is quoted as saying, "I may say that I have totally abandoned enucleation, except for glioma in children for cases of injury in which sympathetic ophthalmia has actually commenced, or for cases of injury or of painful complete glaucoma in aged and feeble people, in whom appearance is comparatively unimportant. Except in these conditions, I regard enucleation as a slovenly and unjustifiable mutilation which no surgeon has a right to inflict upon a patient."

I will repeat the method of the operation. The eyelids are separated with the ophthalmostat. The conjunctiva is dissected off from its corneoscleral attachment back to about the equator of the eyeball, the muscles also being separated; then the cornea is excised. This is best done with a large Beer knife, as if performing a flap operation for cataract. The lower half of the cornea is removed with curved scissors, and the contents of the globe are taken out with a small scoop devised for the purpose.



Great care is necessary to remove the ciliary bodies and choroid and the head of the optic nerve, leaving a clean, white sclera. Mr. Carter has devised a rubber bulb which is inserted into the scleral cavity and inflated with air to produce pressure on the central artery to prevent hemorrhage. As this application has not been a success with me, I pack the scleral cavity with sterilized gauze. After waiting a few minutes this is removed, and the contents of the scleral cavity are again thoroughly irrigated with antiseptic fluid and again packed. A sterilized glass globe, which is best suited to the case, is then inserted with a specially devised instrument. The sclera is split vertically so that the edges may be drawn together and held by stitches of No. 4 black silk, using large needles, completely hiding the glass ball. The orbit is again thoroughly irrigated with the hot solution and the socket packed with sterilized gauze. The bandages are not disturbed for three days. During this time the patient may complain of considerable pain. It is better to control the pain with an opiate than to disturb the bandages. This constant pressure keeps down the conjunctival swelling which I formerly experienced, and was a factor, I believe, in causing the silk threads to cut their way out and ultimately to allow the glass or silver ball to escape.

As a rule, the conjunctival sutures are not removed under six or ten days. It is important that both eyes are kept bandaged for at least six days. By allowing the liberty of one too much rotation of the eye is permitted and, as a consequence, the antagonistic muscles of the operated eye pull apart, and there is great pressure brought against the sutures, which are liable to be torn out, a probable cause in several of my cases.

From the large number of operations now under observation, and no unfavorable ones reported, it may be considered a very safe one, and if we have in evisceration a method equally as safe as in enucleation, why not give the patient the advantage of the new method?

To confirm my experience I quote still further Mr. Carter, who says, "I have not seen a single instance in which there has been any evil consequences, or in which I have had occasion to wish that I had done something else. The fact that some injuries of the eye are followed by sympathetic ophthalmia in its fellow, and that this may entail total loss of sight, should never be absent from the



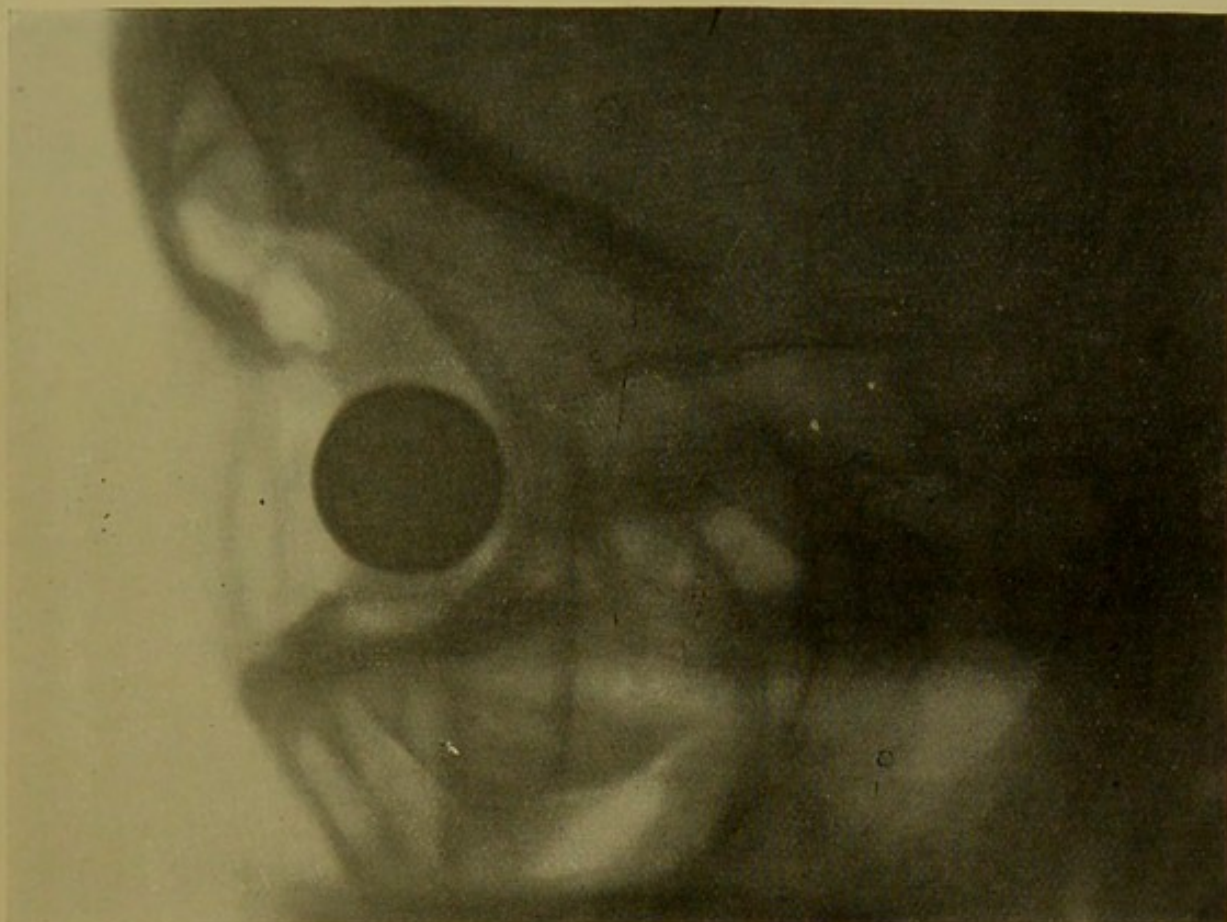


FIG. 1.—Skiagraph by direct rays, showing circular shadow of silver ball in Mules's operation.

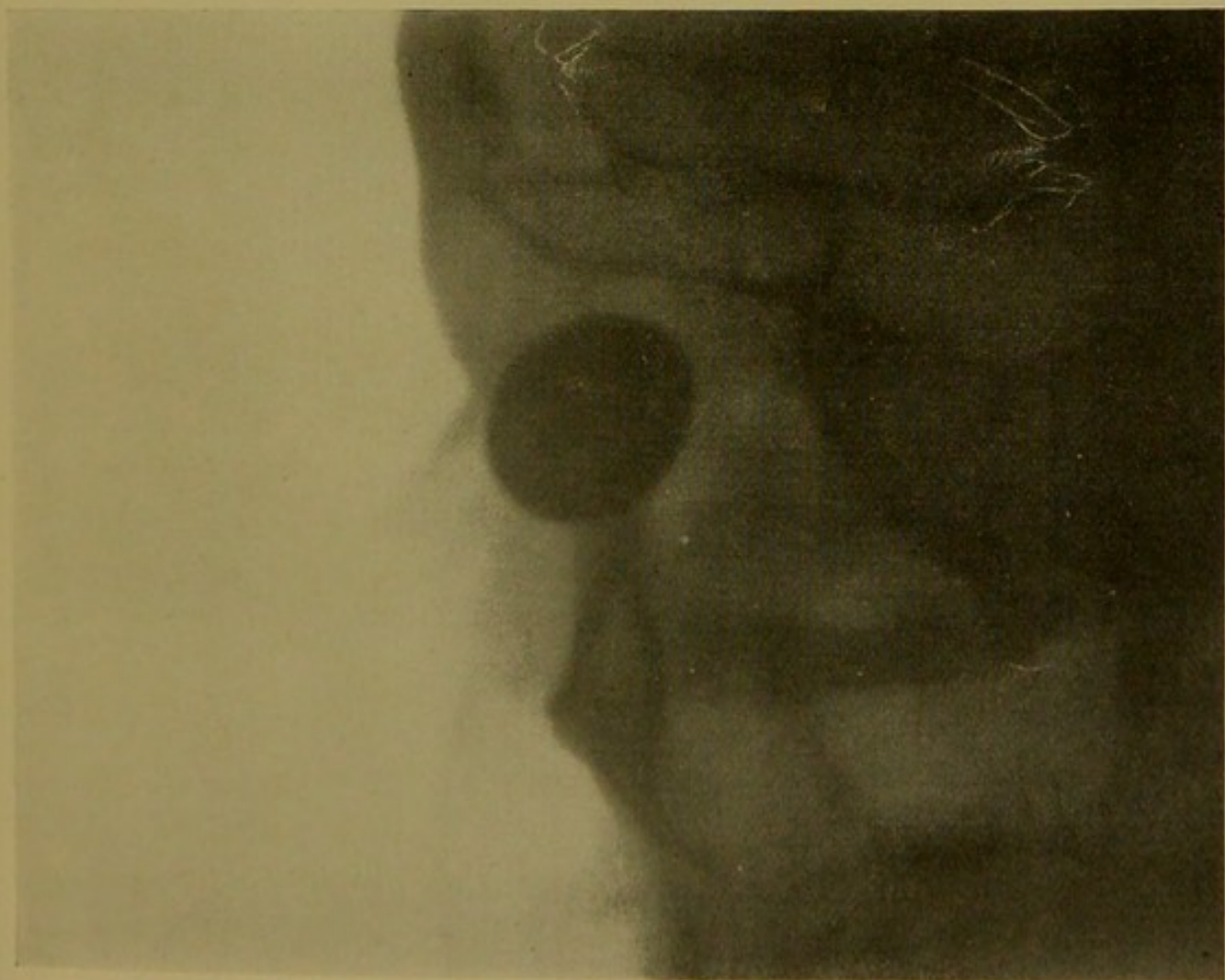


FIG. 2.—Skiagraph by oblique rays, showing elliptical shadow of silver ball in Mules's operation.









FIG. 3.—Skiagraph by direct rays, showing circular shadow of a glass ball in Mules's operation.







memory; but, at the same time, it affords no excuse for the sacrifice of eyes in circumstances in which the danger does not exist or in which it can be obviated or overcome. To indiscriminately remove injured or inflamed blind eyes can hardly be called either science or surgery, for it is clearly the duty of the surgeon to be as conservative as circumstances will permit, and to preserve as much of any organ or endowment as may be possible."

The skiagraphs which I show you were taken by Dr. Furbush, and they show you the location of the glass ball and silver balls in the orbit. No. 1 and No. 2 are silver balls; No. 3 is a glass ball. The operation in the case of No. 1 was performed October 12, 1897; the other two at a later date. The photographs show the artificial eyes in place. No one suspects that these patients are wearing artificial eyes, and further, that they never have a sensation of discomfort from them. Several of my old patients come to see me and they make the same report.

CASE V.—*Capsulotomy; Secondary Cataract*.—This patient was operated upon for senile cataract two years ago and was able to follow her ordinary household duties until quite recently, when she noticed that her vision was growing dim. Upon examination I found a gradual thickening of the posterior capsule which obstructed her vision. She now seeks surgical aid. I shall perform a capsulotomy. Many surgeons tear the capsule with a Bowman's stop-needle, but I prefer a different method. I take a broad needle, make a vertical incision on the outer side of the cornea, and pass the point of the blade through the capsule close to the pupillary margin of the iris, which has been dilated with atropine. I then insert a de Wecker's scissors and pass the one blade posterior to the capsule, and the second in front across the anterior chamber directly in the centre of the pupillary area, and then make the cut. The capsule separates, and usually leaves a very large clear pupil.

The usual cataract dressing is carried out, and at the end of a week the patient is sent home.

In all cases where an incision has been made in the cornea and capsule, the patient must be warned not to use his eye too much for close work until all evidence of irritation has disappeared. The vision will be corrected with the usual cataract glasses.

CASE VI.—*Pterygium*.—This man has had the growth which you see over his eye for some time, but it has only been for the last



few years that it has been of any annoyance. There is a constant irritation, burning and itching, as the patient expresses it. I shall remove it. There are several methods for its removal, but here the transplantation method will be followed, and when properly performed the growth does not return. This is done as follows: An incision is made in the conjunctiva above and below the growth, along its borders from the cornea to the caruncle. The conjunctiva slightly dissected above, but very extensively below the growth, making a pocket which extends to the insertion of the inferior rectus muscle. The pterygium is then separated from the eyeball with scissors, leaving, however, the corneal attachment intact, and then raised, and a needle (two needles are threaded on one strand of silk) is passed through the corneal end of the pterygium from the upper side downward; the second needle is passed in like manner, but brought out upward, leaving enough tissue between the two threads that will not cut through; with the strabismus hook the pterygium is separated from its corneal attachment (Prince), and is then turned downward into the cul-de-sac, the needles, one at a time, passed through the conjunctiva near to the insertion of the inferior rectus muscle, bringing the head of the growth almost in contact with the muscle, being held in place by the silk thread which is tied. This brings the raw surfaces of the pterygium against the raw surfaces of the eyeball. The edges of the conjunctiva are brought together over the pterygium by three strands, and while there is some puckering of tissue in the caruncular space, it usually disappears, making a successful operation.

The after-dressing will be the same as that followed in the ordinary conjunctival or strabismus operations. The stitches are removed after four or five days.





FIG. 4.—Right eye, Mules's operation.



FIG. 5.—Left eye, Mules's operation.











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