Lectures

ON

OPERATIVE OPHTHALMIC SURGERY.

Delivered at St. George's Hospital.

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LECTURE I.—PART I.

GENTLEMEN,—Apart altogether from the many questions of pathology and of therapeutics that have to be taken into account, the operative surgery of the eye is an art that demands, from any who would either understand or practise it, a careful and twofold study: first, the study of the mechanical acts that are to be accomplished by the surgeon, and of the various difficulties that may interfere with their accomplishment; next, the training of the hands to do the work to which they are to be put. In the operating theatre of the hospital you will have constant opportunities of seeing all the chief operations upon the eye performed with such skill as I can command; but I have nevertheless wished you to meet me here also, in order that I may explain many details which would there be tedious and out of place, and in order that, by the possession of certain *corpora vilia*, in the shape of the eyes of animals, I may be able to show you, in the first place, what ought to be done, and, in the next, what ought to be avoided. In the operating theatre one strives, of course, to limit teaching by example strictly to the former category; but here it will not only be permissible, but useful and advantageous, to exhibit the consequences that may follow from using instruments in an improper direction, or with an undue degree of force.

Notwithstanding, or possibly even on account of, the delicacy and complexity of its structure, the eye is extremely tolerant of surgical interference. I may illustrate this tolerance by our experience here during the past summer and autumn, commencing with the 1st of May. In twenty-six working weeks from that date, a period which my vacation carries down to the 15th of November, I performed 212 operations in the theatre upstairs. Six of these were cases of enucleation, which may be set aside; and only two of the remaining 206 were followed by consequences destructive to the eye. In one of them, an iridectomy, undertaken as a forlorn hope, and attended by great loss of vitreous humour, led to wasting of the globe; and, in another, the same operation was followed a few days after its performance, and when the incision had already healed, by destructive purulent ophthalmia, possibly in some unknown way dependent upon what had been done, but possibly the result of accidental inoculation by a vaginal discharge from which the patient was suffering at the time.

I have selected the 1st of May as the starting point for this enumeration, because from that date the records of operations have been kept upon a plan somewhat different from that which had been adopted previously. The number 212 is far too small, and the period of time included is both too short and too near to us for the results of these operations to have any bearing upon questions of general statistics, or any value as evidence either for or against the desirableness of any particular method of procedure. They will serve, however, to show with approximative correctness the relative frequency with which different procedures will be required. The operations represent a smaller number of patients, because in twenty-one persons both eyes were operated upon; and sixteen eyes were operated upon more than once; as in cases where the capsule of an immature hard cataract was lacerated a few days prior to extraction; or in which a soft cataract was broken up with a needle a few days prior to removal by suction; or in which residual shreds of capsule or false membrane required division or removal subsequently to any form of cataract operation. The operations

which involved penetration of the eyeball itself, or its removal, were 127; those on the conjunctiva, muscles, eyelids, or lacrymal apparatus were 85: each class composed as set forth in the following table:—

Extraction of cataract...	22
Dissection of cataract ...	2
Suction of cataract ...	9
Laceration of capsule to mature cataract .	3
Division of capsule ...	10
Extraction of capsule ...	1
Iridectomy ...	68
Corelysis... ..	4
Abscission of staphyloma ...	2
Enucleation of eyeball... ..	6
Cauterisation of nævus ...	1
Cauterisation of bulbs of cilia ...	1
Division of stricture of nasal duct ...	12
Division of external canthi... ..	8
Division of external recti muscles ...	5
Syndectomy ...	1
Operation for strabismus ...	33
„ „ trichiasis ...	18
„ „ ptosis ...	1
„ „ entropium ...	1
„ „ ectropium ...	3
„ „ symblepharon ...	1

To these figures we shall by-and-by return; but for the present they may be laid aside.

I have said that the time included in the return is both too short and too near for the results gained to be of value as evidence; and the reason of this is that the success of operations upon the eyeball requires to be measured by a twofold standard—first from a surgical, next from an optical point of view. We say that an operation is surgically successful when it is properly accomplished, when the operator does what he wishes to do and no more, when it is followed by no destructive or injurious inflammation, and when the incisions that are made heal naturally and kindly. All this may happen, and the surgical success may be complete; although as regards optical success the operation may be a manifest failure, or its results may be long undeclared. Thus I have seen a cataract successfully removed, and a perfectly bright and transparent pupil restored, where the visual power of the eye was so much impaired by disease of its deeper structures that no benefit was conferred on the patient; and I often perform iridectomy in cases of turbid cornea, as a means of slowly clearing that membrane by the more active circulation which a diminished tension of the eyeball induces. I send the patient out of hospital perhaps at the expiration of a week, recording the procedure as a surgical success; but I must wait for six months, or perhaps for a year, before I can know whether it will be an optical success also, and will be followed by the results which it was my object and desire to bring about.

It would be manifestly improper, therefore, in speaking of the practice of the hospital during only a few months, that I should take optical success at all into account. Those of you who see that practice will, I hope, often witness the complete attainment of optical success, and will often observe evidence that it is on the way to be attained. But I cannot now take any statistical or percentage account of it without risk of being inaccurate in one direction or the other. If I should have the privilege of addressing your successors in this place, ten years hence, it will then be my duty to bring what I have done in the interval to this ultimate test; but, for the present at least, I estimate the success of a procedure by its surgical results alone.

With this preface, and before proceeding to describe operations themselves in detail, I come next to the means by which the various manipulations of ophthalmic surgery are to be carried out—that is to say, to the instruments that are to be employed, and to the hands that are to employ them. Our surgical mechanicians have provided us with instruments in almost infinite variety; but the hands take precedence of them all, and require our earliest and most careful consideration. It was said, first I believe, by Beer, and has been said by many since his day, that an ophthalmic operator must spoil a hatful of eyes before he cures one. Now, as the instruments of any period are a fixed quantity, and as adequate knowledge concerning when and why to operate may be attained by attentively

observing the practice of others, it is manifest that the hatful of eyes must be a sacrifice offered up to the training of the hands. If we regard Beer's saying as a mere hyperbole (and I trust we may at least regard it as an exaggeration) repeated chiefly for its vivacity and its force, we cannot in like manner explain away the familiar maxim of political economy, that all learners spoil a portion of raw material. This maxim represents one of the necessary verities of life; and the surgeon who learns to operate upon the eye by primarily using the eyes of human beings to practise upon, and by thus in time gaining manual dexterity at haphazard—gaining by sheer practice the power to do those things well which he at first did badly, although he may eventually become skilful, obtains his skilfulness, I think, at an altogether unwarrantable cost. Instead of seeking such dearly bought experience, I would urge upon you first to consider carefully the nature of the mechanical acts which you are about to undertake, and to see how far, and by what means, the hands can be trained to the possession of the qualities required from them. There is, I believe, a contrivance, with a name in shop-keeper's Greek, by which persons learning to play on musical instruments may acquire strength and flexibility of finger without the production of sounds distressing to those in their vicinity; and on the same principle I think the hands of most persons may be so far educated, before an eye is ever touched, as to render the accidents which may result from sheer awkwardness unlikely, if not impossible. I say of most persons, because there are a few to whom the nature of their organisation denies the attainment of any kind of mechanical skill. Those cannot become ambidextrous who have been born ambi-sinistrous; and a want of power correctly to estimate nice differences in the degree and direction of exerted force seems to be, occasionally at least, the result of some structural peculiarity in the muscular or nervous system. I say peculiarity rather than defect, because this peculiarity constitutes, I think, one of the most marked organic differences between the sexes. It would be difficult to say how far it may be an accidental result of differences of habits and of employment; but no one who carefully watches the muscular acts of women will fail to perceive a tendency to do them with a sort of rush, with a superabundance and a sudden exertion of force, rather than by the gradual application of the precise amount by which the end in view can be secured. The same thing may be observed less frequently in men; and I would counsel any such, if they have so far mistaken their vocation as to become surgeons, to turn their energies into some channel other than the performance of delicate operations upon the human subject.

The qualities of hand that are necessary to an accomplished eye-operator may be summed up under the following heads:—

1. A high development of what has been called by physiologists "muscular sense"—the faculty by which we feel and estimate the degree of force we are exerting, either in pressure or traction.
2. The power of uniting the two hands in consentaneous movement, and of directing the intelligence to them simultaneously; so that they may work smoothly and harmoniously together as a single organ for the attainment of a common object, and may both at once be equally under the control and governance of the will.
3. The power to employ the left hand, indifferently with the right, for the use and guidance of cutting or other instruments.
4. Steadiness.

Each of these requirements demands a brief separate consideration.

It is by means of muscular sense that we are able to combine the precise degree of force that will accomplish our end, with the utmost gentleness in its application. There is a period in cataract extraction in which the operator may require important help from an assistant, and I confess that, unless my assistant is favourably known to me, I am always glad when this period is over. It is when an incision has been made into the anterior chamber, the aqueous humour has been evacuated, and the eyeball, rolled upwards by the reflex action of the superior rectus, must be drawn somewhat down before iridectomy can be performed. For this purpose, a pair of forceps should be made to close almost imperceptibly upon the

conjunctiva and its subjacent tissue, and traction should be applied so gently that the eye rolls quietly down as soon as the resistance is overcome. There is then no strain upon its coats, and no gaping of the wound, unless the action of the superior rectus be quite spasmodic, in which case a little more chloroform would be indicated. But if the assistant snatches the conjunctiva hastily, and drags upon it rudely, it may well happen that the wound shall gape and the vitreous humour prolapse. The necessary gentleness does not imply slowness; but it implies that the first exercise of force shall be less than the amount required, and that the deficiency shall be made up by gradually increasing effort. The same principle applies not only to all forms of forceps traction, but also to all incisions, which, in the eye, are primarily punctures. In making them we must place the point of the knife or needle upon the spot to be penetrated, and increase our pressure in proportion to the resistance, but so gently that the speed of movement of the instrument is not accelerated when the resistance is overcome. In the aged especially, and in eyes that have been long diseased, we often find the cornea soft, thin, and flaccid; and if we were to apply to such eyes a knife or needle, with the full pressure that would be necessary to penetrate a healthy cornea, we should incur much risk of driving the point of the instrument further than we intended it to go, while the shock or concussion to the eyeball would tend to expel the aqueous humour, which it is often most important to retain. These matters must be dwelt upon in greater detail by-and-by, and are now only adverted to for the sake of illustration.

The requirement of consentaneous movement of both hands arises in great measure from recent progress, partly from the frequent use of two instruments at once within the eye, and still more from the practice, now become almost universal, of fixing the globe with forceps. The forceps may be used either to steady the globe in some required position or to move it somewhat against the edge of the instrument; and in either case they should exert no undesigned pressure, and should never be forgotten by the consciousness. It is very easy for a young operator, when using a knife or needle in one hand, to bear heavily with the forceps in the other, and in this way to do mischief which a proper attention to, and governance of, the comparatively passive hand would have avoided.

The requirement of ambidexterity arises from the fact that, for most operations upon the eye, it is convenient for the operator to stand behind the recumbent patient, while, at the same time, the projection of the nose renders it necessary that nearly all punctures or incisions should be made from the temporal side. Many excellent operators have failed in attaining ambidexterity; and some of these have displayed sufficient human nature to condemn in others the accomplishment that was denied to themselves. By contrivances more or less awkward, by coming round in front of the patient for the left eye, and by committing fixation to an assistant, it is doubtless possible to do most ophthalmic operations with the right hand alone. I have heard of one surgeon who places his patient upon a chair, and then seats himself upon the patient's knees, in order to get at the left eye with the right hand. This is undeniably ingenious, but the ingenuity is somewhat perverted. Sufficient ambidexterity for the use of the knife in the left hand follows, as a matter of course, from the training required for the proper use of fixation forceps; and full ambidexterity may usually be attained with a very moderate degree of practice and trouble.

For good operating absolute steadiness is indispensable, because the commencement or the course of an incision should not deviate by the fraction of a line from the previously formed plan of the surgeon, and because it is often desired to introduce a small blunt instrument, such as a hook or a closed forceps, through an opening previously made for the purpose. In order to avoid, in such cases, premature loss of aqueous humour, as well as to avoid any bruising of neighbouring parts, the blunt instrument should be placed at once between the lips of the puncture prepared for its reception. Steadiness, as a mere physical attainment, is one of the results of training; but there is an unsteadiness produced by mental causes, by anxiety to do right, or by want of self-reliance, which can only be remedied by the gradual growth of confidence and the gradual influence of success.