EXTRACTION OF CATARACT IN THE CAPSULE.

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ONE is bound to admire Major Henry Smith's cataract work at Jullundur, the enormous amount of successful work done and the benefit conferred upon large numbers of people. His name should be permanently associated with the operation of extraction of the lens in its capsule, because of his having shown, first, the surprisingly low rate to which the escapes of vitreous may be reduced in this operation, secondly, the noteworthy freedom from iritis as a complication. Ophthalmic surgeons in general, who never perform extraction in the capsule as a routine operation, must admit that it is probably the correct procedure under the conditions obtaining in the Punjab. There the operator attains to an extraordinary degree of skill,* while the pressing demands upon his time and upon the hospital accommodation necessitate an operation which is quickly performed, and which is followed by rapid recovery, and which gives at once a final and satisfactory result. Now, however, the Jullundur practice is being followed apparently elsewhere in India by junior surgeons. One of the latter, Captain Oxley, writes in the *Indian Medical Gazette* for December 1905, recommending extraction in the capsule even to beginners, though Major Smith considers it "not an operation for the inexperienced." Under the circumstances it appears perhaps advisable to re-state and re-examine the fundamental objections to the operation as a routine method of treatment.

The operation violates the essential conservatism of correct surgery in that it introduces a risk unnecessarily, *i.e.*, for the sake of advantages which can be obtained without risk. We are told that escape of vitreous, which we all fear, occurs under skilled hands but slightly oftener than in ordinary extraction, and that the quantity lost is nearly always small, and that the accident is, therefore, negligible. Major Smith's percentage of escapes, between 6 and 7 per cent., given in 1903 and again in 1905, probably closely approximates to the lowest attainable by this method of operating. Captain Oxley's figures,—12 losses in 40 operations,—are perhaps a fair index of what the beginner must expect. How do these rates compare with those of ordinary extraction? At the Cowasjee Jehangir Ophthalmic Hospital, Bombay, in the year from December 1st, 1904, to November 30th, 1905, there were 609 extractions, excluding linears. Of these 35 were performed by downward section, in patients who could not fix their eyes steadily downwards. These are placed apart because I did not realise, till quite lately, the advisability of substituting a retractor for the lid-speculum in these operations (at least in all cases with the slightest retraction of fornices from scarring). Through using the speculum in the earlier operations, there was an extraordinary number of vitreous escapes occurring almost consecutively. Altogether there were six losses in the 35 operations. Among the remaining 574 extractions there were 15 escapes, *i.e.*, 2·6 per cent. I think this is about the usual percentage obtained by experienced operators. Six of the fifteen accidents occurred in cases where the lens was expelled in its capsule, either squeezed out by spasm of the orbicularis, or extracted thus because of early escape of vitreous or because of the lens becoming depressed (once, in a diseased eye, with pupillary membrane and very shallow anterior chamber). From five other eyes during the year the lens was intentionally expressed in its (more or less opaque) capsule, without any accident with vitreous. From ten eyes opaque capsule was removed immediately after expulsion of the lens, giving two escapes of vitreous, and once opaque posterior capsule was punctured without accident. There remain but seven vitreous losses, distributed among 552 operations where the capsule was left behind. One of these mishaps was in extracting a lens already dislocated into the anterior chamber. Another occurred in a glaucomatous eye. Two losses are noted as being due to a blunt cystotome pulling tough opaque capsule about instead of cutting it. (Our cystotomes become much blunted through constant sterilizing in the flame of a spirit lamp). These explanations are given, not with a view of excusing our faults, but with the object of showing what practical benefit may reasonably be expected from the attempt to maintain intact the supporting diaphragm of capsule and zonule. It is thus evident that the lowest attainable percentage of vitreous accident in ordinary extraction, is very distinctly lower than in the "complete" operation. In comparing the two operations in inexperienced hands, the difference is likely to be greatly accentuated, judging from Captain Oxley's figures and from my own experience. Not only this, I believe that both the frequency and quantity of loss of vitreous are apt to be a little under-estimated in operations where the capsule is removed. Expulsion of vitreous by spasm of the orbicularis may possibly begin or continue or recur after the eyelids have been closed and after the bandage has been applied, without our knowing of the complication. I can recall two cases in my own practice of late incarceration of firm vitreous in the wound, and one example of the distortion of pupil which is produced by large loss of vitreous.

In examining the visual results of the total 22 eyes from which vitreous was lost, it is

* Obviously the question of loss of vitreous depends largely on the behaviour of the patient also. Do the Punjabis exhibit an unusual degree of self-control?

noteworthy that three patients were only able to see moving bodies afterwards. Two of these three almost certainly had detachment of the retina;* the eyes had a satisfactory appearance, but were useless. It is a matter of common observation that this result is to be expected, either at the time or later, in a proportion of the cases where any considerable quantity of vitreous lost.† The absence of any mention of loss of sight from this cause in the Jullundur reports, certainly would appear to weaken the whole of the statistics of results, necessarily based mainly upon hospital assistant's tests and records.

In our Bombay operations there is a definite percentage of poor and moderate results, due to no fault in the operations, but to pre-existing conditions, such as corneal opacity, occluded pupil, glaucoma, or fundus disease.‡ It is sometimes very difficult to decide to what extent previous disease of the eye is responsible for a poor result. Under the circumstances anything approaching 99·27 per cent. "first class results," as obtained with simple spherical lenses at Jullundur, is absolutely impossible. And classification by visual result alone without qualification becomes meaningless and possibly misleading. The visual acuteness obtained at the C. J. Ophthalmic Hospital from extraction of lens and capsule (either the lens in its capsule or the lens and opaque capsule separately) without loss of vitreous, has never been appreciably better than that of the general average of ordinary extractions, as tested at the time of discharge from hospital, usually nine or ten days after operation. Simple spherical lenses are used, and test-dots corresponding with Snellen's types. The patient's pupils at the time are always more or less dilated from the atropin used in the routine after-treatment. The last fifty cases gave these results—

2 cases $\frac{6}{20}$, 5 cases $\frac{6}{30}$, 14 cases $\frac{6}{40}$, 16 cases $\frac{6}{60}$, 12 cases fingers at various distances, one case moving bodies (a glaucomatous eye). The surprisingly low average vision is presumably attributable to astigmatism and dilated pupils Either the average degree of astigmatism produced by this operation must be greater than in ordinary extraction, thus counterbalancing the benefit of the clear pupil, or the effect of early after-cataract upon visual acuteness must be remarkably slight. It goes without saying that the visual field must be often much blurred after ordinary extraction, by opaque capsule, cortex, blood-dot and lymph, but this is a matter of quite secondary importance. The superiority of the perfectly clear pupils, as regards visual acuteness, would be doubtless more evident in comparing later results. This is the main justification of the Jullundur practice. So exceptional is it throughout India for patients to return after discharge from hospital, that even in Bombay we have to deal with after-cataract quickly or not at all. Patients whose vision appears to be definitely impaired by after-cataract, apart from purely temporary defects due to blood-clot or cortex, are "needled" ten or eleven days after operation and kept in hospital two or three days longer. When properly safeguarded this appears to be a proceeding quite devoid of risk. A fairly long single cut is made in the opaque membrane by means of a sharp and very narrow old Graefe's knife introduced through the sclerotic close to the cornea. The scleral puncture is made sub-conjunctival by sliding the moveable ocular conjunctiva, caught on the point of the knife.

My small experience of extraction of the lens and capsule supports Major Smith's statement with regard to the absence of ordinary iritis after this operation. But really troublesome iritis, iritis which defies treatment, is due almost exclusively to infection, and in this respect we are possibly better off in the ordinary operation. It is well recognized that many of the bad results from operations for after-cataract have been attributable to infective organisms which gained entrance through vitreous incarcerated in the corneal wound. Does infection never enter the eye in this way after cataract extraction? In the last Jullundur series of cases there were nine suppurations, three of which apparently occurred among the nine cases reported of large loss of vitreous.

In the Bombay hospital both suppurations and severe iritis are extremely rare complications. I formerly reported* 1,172 extractions with only one suppuration, and no iritis or irido-cyclitis "severe enough to have resisted energetic treatment." Since returning from leave I have performed over 800 additional extractions, with the result of no suppuration and only one closed pupil from iritis.

To sum up, not a scrap of evidence has been advanced, or is ever likely to be advanced, sufficient to justify removal of transparent capsule, except under very pressing circumstances. The case as regards the average operator remains precisely as it was heretofore, in spite of Major Smith's excellent work. By ordinary extraction, followed if necessary by needling, quite as good results can be got, with distinctly less risk, and at the cost merely of a little more troublesome and more protracted after-treatment.

* Possibly all three had retinal displacement. Opacity of vitreous very frequently obscures the view of the fundus in these cases.

† We have certainly seen detachment follow operation, though rarely, where no vitreous had been lost, in eyes neither myopic nor obviously unsound previously. We are not prepared, therefore, to assume that small losses of vitreous are invariably harmless.

‡ One has no right to refuse operation where there appears to be a chance of restoring moderate vision, *e.g.*, in cases where projection of light is impaired, but not greatly so.

* Practical Details of Cataract Extraction, 2nd Edition, 1903.