FURTHER EXPERIENCE WITH INTRACAPSULAR CATARACT EXTRACTION BY APPLICATION OF LOW TEMPERATURE*

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CATARACT extraction by application of low temperature has now been practised by us for nearly 2 years. The technical details of this method have been described in earlier papers, with reference to intumescent cataract (Krwawicz, 1961a,b). The application of the refrigerated cryoextractor to the cataractous lens produces an instantaneous freezing of the capsule and of the underlying mass, which attach themselves to the instrument firmly enough to assure the easy extraction of the lens. We now use a slightly modified instrument, in which the conical end is divided into one or two steps, and we feel that this adds to the handiness of the cryoextractor. Since minor variations in the shape and size do not influence the performance of the cryoextractor, the exact dimensions need not be given in detail, but the actual size is shown in Fig. 1.

FIG. 1.—Cryoextractor, recent form (actual size).

Our method had been devised as a safeguard against accidents which force the operator to end the planned intracapsular operation by the extracapsular method, with the risk of leaving fragments of the capsule or cortical masses in the anterior chamber. We have found that the method can be used in the extraction of all types of cataract, even the complicated ones, and we now use the cryoextractor routinely in all extraction operations.

The total number of extractions carried out by means of the cryoextractor has now reached 660; this includes 452 intumescent cataracts and 208 other types. The operations were performed by several surgeons and were often used for instruction and demonstration. It may be of some interest to

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discuss here the capsular complications encountered in the group of intumescent cataracts, in which the fragility of the capsule often leads to difficulties.

Out of 452 operations for intumescent cataract, a successful intracapsular extraction, free from capsular complications, was obtained in 443 cases. In the remaining nine patients (1.97 per cent.), the capsule ruptured, usually in its lower part near the equator, and this was sometimes accompanied by an escape of the cataractous substance. In all cases, however, the capsule was removed as a whole, and never detached itself from the cryoextractor. The possible cause of the rupture of the capsule was excessive shrinking at the site of application of cryoextractor, which made it unable to withstand the pressure of the usually liquid cataractous masses. It is also possible that too narrow corneoscleral section was a causative factor. In two of these nine cases the rupture was preceded by injury to the capsule during iridotomy.

In the group of 208 other types of cataract, including 48 cases of complicated cataract, rupture of the capsule occurred in six cases (2.88 per cent.). Two were operated on for traumatic cataract, and one for complicated cataract associated with glaucoma, and in the remaining three patients a hard cataract was present. It should be noted that no capsular complication occurred in a group of seventeen patients in whom immature cataract was complicated by myopia. Fig. 2 shows the final stage of the extraction in one of these patients.

FIG. 2.—Extraction of immature complicated cataract, final stage.

The total number of ruptured capsules in the series of 660 was fifteen (2.28 per cent.). In eight cases cortical masses escaped into the anterior chamber; in four cases these were removed in the further course of the

operation, the pupil remained black, and no remnants were observed post-operatively, but in the other four some lens debris persisted, usually at the periphery of the pupil or behind the iris.

In 36 cases in this series enzymatic zonulolysis was used. These were patients aged between 30 and 60 years, in whom an increased resistance of the zonule fibres was to be expected. In all these cases the operation progressed smoothly, and there were no capsular complications.

Of other operative complications, vitreous loss should be mentioned; it occurred more often in the earlier period of the clinical application of our method, when hyaluronidase was not added to the retrobulbar injections. In the last 292 operations, which included cases of complicated, intumescent, or immature cataract, retrobulbar akinesia with hyaluronidase was applied, and there were only five cases of vitreous loss. In two of these patients the vitreous loss was probably due to an injury inflicted on the anterior surface of the vitreous with an iris retractor. In one case of immature cataract vitreous loss occurred quite unexpectedly after the lens had been delivered.

In the communication already referred to (Krzawicz, 1961a) the possibility was mentioned that the iris or cornea might accidentally be touched by the refrigerated cryoextractor. This actually happened twice, but it was promptly remedied by separating the tissue from the instrument with a spatula, and had no ill-effects.

Though this series of cases is not large enough to offer an unconditional proof, it is our opinion that intracapsular cataract extraction by means of the cryoextractor can eliminate the risk of incomplete removal of the capsule. There is less risk in grasping the capsule, and the intended intracapsular extraction is carried out without difficulty. The rupture of the capsule is a very infrequent and comparatively harmless complication which has little effect on the outcome of the operation.

Summary

The results are reported of 660 intracapsular cataract extractions of all types, using the cryoextractor. This instrument eliminated the risk of incomplete removal of the lens capsule.

REFERENCES

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