Broken intraocular lens during cataract surgery

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Abstract

A case of planned routine extracapsular cataract extraction is described where surgery was complicated peroperatively by fracture of the posterior chamber lens implant. The technique of lens implantation is discussed.

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Posterior chamber lenses are used preferentially in routine extracapsular cataract surgery in this department. Many complications may occur during or after implantation and have been reviewed in detail elsewhere.^{1,2} We describe a case where breakage of the intraocular lens occurred during surgery.

Case report

A 64-year-old man with age-related cataract was admitted for routine cataract surgery to the right eye. Visual acuity was 6/36 (right eye) and 6/9 (left eye).

Under general anaesthesia a corneal section, can opener capsulotomy, nucleus expression, and cortical soft lens matter aspiration was performed. Under air a one-piece PMMA 7 mm optic posterior chamber implant (Iolab) was inserted. Despite good mydriasis and the use of a viscoelastic agent there was some difficulty in placing the lens into position using a Sinsky dialling hook. After approximately 7 clock hours of dialling the haptic was still in the anterior chamber and the dialling hook had become stuck in the dialling hole at the base of the haptic. A gentle rolling action of the dialling hook resulted in fracture of the lens across the dialling hole so

that the haptic became detached. The two broken pieces were removed (Fig 1) and a second intraocular lens (three-piece PMMA, 6 mm optic) was inserted with ease.

The postoperative phase was uneventful and the patient achieved 6/6 vision with spectacle correction.

Discussion

No previous cases of fracture of the intraocular lens during surgery have been reported. Fractures of anterior chamber implants of one-piece and three-piece design have been reported postoperatively in cases which do not necessarily have a history of trauma.^{3,4}

The cause of the fracture in this case is most likely to be due the application of a shearing force across the dialling hole by the dialling hook. The rolling action of the hook resulted in compression of the PMMA material alongside the dialling hole which was sufficient to cause fracture. The dimension of the dialling hole in this lens is 0.3 mm diameter which is somewhat smaller than that found in the three-piece lens used more frequently in this department (0.4 mm diameter). A smaller dialling hole is more likely to lead to the impaction of the dialling hook which was encountered here. There was no indication at the time of surgery that the dialling hook had any imperfection which might encourage difficult release from the dialling hole. Similarly there was no sign of pre-existing lens imperfection macroscopically.

PMMA is a relatively brittle material. The results of scanning electron microscopy on the broken lens show a sharp cleavage plane which is characteristic of the material. It has been suggested that this property may increase after the passage of time or manipulation.¹

The use of forceps implantation rather than dialling would avoid the complication described above for lens implantation. A Rycroft cannula or a silicone rubber tipped instrument may permit lens positioning without use of the dialling hole. Finally it is suggested that the positioning of dialling holes as an integral part of the haptic base may result in shearing forces which were not taken into account at the time of lens manufacture. Repositioning of the dialling holes in intraocular lenses may avoid the complications described above.

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Figure 1 (left) Scanning electron micrograph of intraocular lens showing fracture across haptic base; (top right) magnified view of optic showing smooth plane of fracture; (bottom right) broken haptic with adherent debris.