

Posterior chamber toric intraocular lens implantation has been reported in several large series. Sun *et al*<sup>7</sup> describe 130 cases and Till *et al*<sup>8</sup> describe a further 100 procedures. These series were both of nongrafted eyes and corrected up to 4.75 D of astigmatism. In the first series, the uncorrected visual acuity (UCVA) was 6/12 or better in 84% postoperatively compared with a mean preop UCVA of 6/30–6/36. In the second series, UCVA postoperatively was 6/12 or better in 66% with no mention of the proportion of patients with this level of vision preoperatively. With respect to post-PKP astigmatism and toric pCIOL implantation, there are a few case reports and no large series.

Tehrani *et al*<sup>9</sup> describe a capsular bag implanted 30 D toric lens combined with a sulcus fixated spherical lens to correct 22 D of PKP astigmatism. Buchwald and Lang<sup>10</sup> reported three patients who were implanted with a posterior chamber toric silicone IOL, correcting up to 10 D. Frohn *et al*<sup>11</sup> present one case with PKP astigmatism of 12 D corrected with a posterior chamber PMMA lens. Viestenz *et al*<sup>12</sup> describe implantation of 11 tPCIOLs, to correct an average of 7 D of PKP astigmatism.

LASIK is another modality used to correct post-PKP astigmatism. A recent series of 57 eyes that underwent corrective LASIK following PKP was reported by Hardten *et al*.<sup>13</sup> Preoperatively, BCVA of 6/12 or better was noted in 74%. One year postoperatively, 75% achieved this level of vision with correction and 38% unaided. Mean astigmatism reduced from  $4.67 \pm 2.18$  to  $1.94 \pm 1.35$  D. Nine per cent required retreatment and 16% developed epithelial ingrowth. The level of astigmatism in our patient was more than this and LASIK would have been unlikely to achieve the desired effect.

Posterior chamber implantation of a toric intraocular lens can provide a very good refractive outcome in the context of post-PKP astigmatism. The requisite surgical intervention is safe with few side effects and is unlikely to have any significant impact on graft rejection or survival.

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## Sir, Inadvertent injection of triamcinolone into the crystalline lens

Intravitreal corticosteroid injection has rapidly acquired popularity as a treatment for intractable macular oedema.<sup>1–2</sup> Several complications have been observed such as cataract progression, raised intraocular pressure,

sterile and infectious endophthalmitis, and retinal detachment.<sup>3-5</sup> We describe a complication that has not been documented in the literature previously.

### Case report

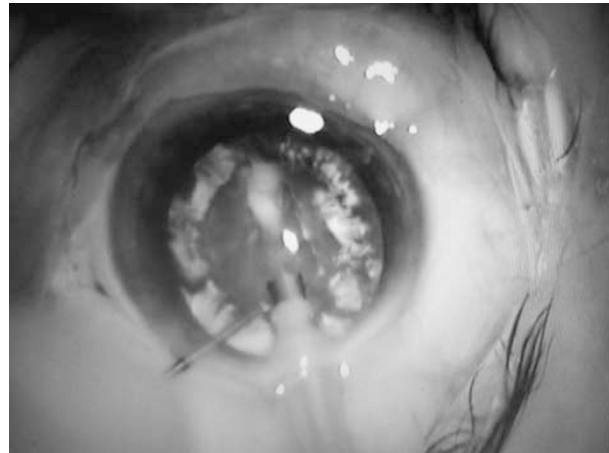
An 87-year-old man was under the care of the retinal service for age-related macular degeneration. Fundus fluorescein angiography had shown right macular subretinal neovascular membrane. Initial management entailed the use of photodynamic therapy. Subsequently, the patient elected to undergo a trial of intravitreal steroid to slow down the rate of progression of his macular degeneration.

Triamcinolone acetonide 40 mg/ml (Kenalog) suspension was left to sediment to reduce the solvent agent benzyl alcohol and obtain a viscous crystalline precipitate of the drug. A 0.1 ml volume of drug was then drawn up into a 1 ml insulin syringe. A 27-G needle was attached to the syringe. Topical anaesthesia (Benoxinate) was employed. The right eye was approached in the inferotemporal sector under the operating microscope. The needle was introduced 4 mm posterior to limbus in a perpendicular direction into the globe, with an aim towards the centre of the vitreous cavity. During injection, the surgeon realised that there was a white-coloured wave (comparable to the hydrodissection step in phacoemulsification) across the whole lens (Figure 1). This surgical sign was consistent with the injection of triamcinolone into the lens.

During review in clinic over 4 weeks, the anterior segment of the eye remained quiet and the intraocular pressure remained within normal limits. Fundus assessment was not possible as the lens remained



**Figure 1** Appearance following intralenticular injection of triamcinolone.



**Figure 2** Triamcinolone deposits on anterior lens surface following capsulorhexis.

opaque. Therefore, a decision was made to undertake phacoemulsification with IOL.

At this operation following capsulorhexis, it was found that on the lens substance there was a uniform film of white crystalline deposits that could be easily aspirated (Figure 2). After careful phacoemulsification without hydrodissection to avoid possible extension of a capsular tear, the posterior capsule was found to be intact and the lens implant fixated into the capsular bag without complication.

### Comment

This case illustrates a complication in a procedure that has now become commonplace in contemporary ophthalmic practice. In spite of measuring the requisite 4 mm from the limbus, the needle was inadvertently advanced into the lenticular plane. The explanation for this event is that the needle was not satisfactorily perpendicular to the scleral surface during its passage. Consequently, the needle tip superficially impaled the lens, so that the drug was injected into the interface between the lens substance and the capsule. This occurrence was seen as a triamcinolone hydrodissection wave across the lens and explains the operative finding of drug deposits on the very front surface of the lens noticed following capsulorhexis.

A breach of the lenticular capsule in this context could have resulted in an inflammatory response in the eye. Indeed, if such an outcome had followed a fulminant course, it could have progressed to phacoanaphylactic uveitis. However, as corticosteroid was introduced into the eye, the inflammatory response was suppressed. Although most of the drug was delivered into the

capsular bag, it is conceivable that a quantity was also necessarily left in the vitreous.

We elected to observe the eye to see whether the triamcinolone deposition would lessen over time. However, this strategy is questionable as the drug was in effect sequestered within the capsular bag, and the crystalline lens substance is not directly exposed to an aqueous or blood circulation that may serve as a clearance route.

Ocular perfusion must be checked after intravitreal injection. With this complication, there was the additional problem of an inability to visualise the fundus post-injection.

To minimise the potential for intralenticular corticosteroid injection, it is imperative that close attention is paid to three components of the technique. The distance from the limbus must be carefully measured. The trajectory of the needle should be towards the centre of the vitreous cavity, with utmost care taken to introduce the needle perpendicularly to the surface of the globe. Finally, the tip of the needle should be visualised within the pupil before injection.

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