Sir,

Calcification of Rayner hydrophilic acrylic intra-ocular lenses after Descemet's stripping automated endothelial keratoplasty

Calcification of an intra-ocular lens (IOL) is an infrequent but clinically significant event. We report four cases of late calcification of Rayner (Hove, UK) hydrophilic acrylic intra-ocular lenses (HA-IOLs) after Descemet's stripping automated endothelial keratoplasty (DSAEK).

Case details are outlined in Table 1. All patients were pseudophakic with clear IOLs before DSAEK surgery. Opacification over the centre of the optic occurred between 7 and 26 months post DSAEK, necessitating IOL exchange. Ultrastuctural analysis on three explanted lenses with Alizarin red staining, X-ray spectroscopy, and scanning electron microscopy confirmed calcification as the cause (Figure 1).

Our case series adds to the growing body of evidence that HA-IOLs in general are at risk of calcification post DSAEK. Besides Rayner, reports have recently implicated Akreos Adapt[1] (Bausch and Lomb Inc., Rochester, NY, USA), Memory Lens[2] (Ciba Vision, Duluth, GA, USA), EasyCare600[2] (Tekia Inc., Irvine, CA, USA), 47c[2] (Acrimed, now Oculentis, Berlin, Germany), and CF Acrylic lenses[2] (Humanoptics, Erlangen, Germany) in post-DSAEK calcification.

All of our patients required repeat injection of intra-cameral air to achieve graft attachment ('re-bubbling'), which is a consistent risk factor across these reports. Isolated cases of HA-IOL calcification in non-DSAEK patients where intra-cameral gas was used for other indications—such as C_3F_8 and SF_6 for a Descemet's tear[3] and SF_6 for ocular hypotony[1]—support the role of intra-cameral gas in the pathogenesis of HA-IOL calcification.

We propose that the trauma of repeat surgery involved in re-bubbling may disrupt the blood–aqueous barrier, increasing the concentration of calcium ions. The consistent finding of calcification restricted to the central part of the optic not protected by iris, suggests that the gas bubble in physical contact with the IOL surface is an important biochemical trigger for calcification.

We have never encountered HA-IOL calcification in patients after routine cataract surgery or after DSAEK

Table 1 Details of four cases with intra-ocular lens calcification

#	*Age, years*	*Ind*	*PMHx*	*Ocular comor*	*IOL*	*DSEK*	*Re-bub*	*Other events*	*Summary pre-haze*	*Outcome*
1	92	FED	T2DM, IHD	None	Superflex 620H Aug 2007 Routine phaco	DSEK Feb 2011	Yes 18 days	No	Graft re-bubbled ×1. Haze at 7 months post DSEK	IOL exchange with anterior vitrectomy and ACIOL (16 months post DSEK, May 2012). VA improved from 6/18 before exchange to 6/12 at last review (25 months post DSEK, March 2013)
2	82	FED	HTN	None	Centerflex 570H Apr 2002 Routine phaco	DSEK Nov 2009	Yes 19 days	Rejection	Graft re-bubbled ×1. Graft rejection. IOL haze noted at 20 months post DSEK	IOL exchange with anterior vitrectomy and ACIOL (32 months post DSEK, July 2012). Post-operative graft failure. Graft re-done as a penetrating keratoplasty (39 months post DSEK, March 2013). Last VA 6/36 in June 2013
3	79	FED	HTN, Breast cancer	None	C-flex 970C Dec 2011 Routine phaco	DSEK Apr 2012	Yes 10 days	No	Graft re-bubbled ×1. Haze at 5 months post DSEK	IOL exchange with anterior vitrectomy and ACIOL (10 months post DSEK, Feb 2013). Post-operative graft failure, graft re-done as a penetrating keratoplasty (15 months post DSEK, July 2013). Last VA 6/60 in July 2013
4	78	FED	Parkinson's	RD repair	Superflex 620H Mar 2009 Routine phaco	DSEK Aug 2009	Yes 0 day and 4 days	Redid DSEK	First DSEK re-bubbled ×2. DSEK repeated Oct 2010. Haze 12 months after second DSEK (26 months after first DSEK)	IOL exchange with anterior vitrectomy and ACIOL (17 months after second DSEK, March 2012). VA improved from 6/18 with haze to 6/6 unaided at last review (28 months after second DSEK, Feb 2013)

Abbreviations: ACIOL, anterior chamber intra-ocular lens; DSEK, Descemet's stripping endothelial keratoplasty; FED, Fuchs' endothelial dystrophy; HTN, hypertension; IHD, ischaemic heart disease; IOL, intra-ocular lens; Ind, indication; ocular comor, ocular co-morbidity of operated eye; PMHx, past medical history; re-bub, re-bubbled; T2DM, type 2 diabetes mellitus; VA, visual acuity.

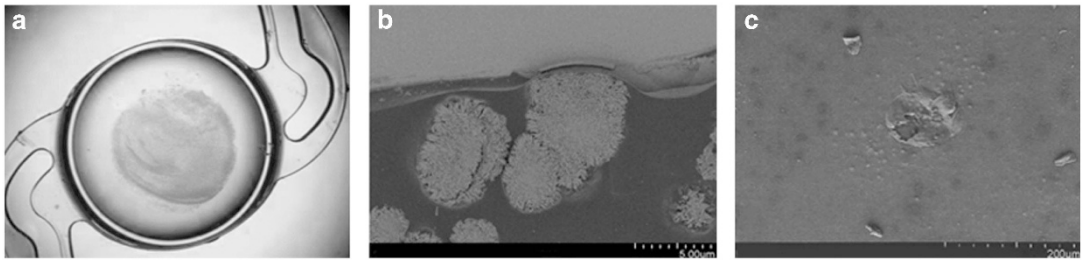

Figure 1 (a) Opacification of the IOL optic in Case 1, (b) scanning electron microscopy (SEM) cross-section demonstrating calcium crystals within the IOL optic just below the surface and (c) SEM of the IOL surface showing discrete elevations associated with sub-surface deposition of crystals leading to focal disruption of the anterior lens surface in places.

with only one bubble of air. However, an institutional audit identified 10 patients with a Rayner HA-IOL who required a re-bubble after DSAEK. That four of these (all described in this report) developed subsequent lens calcification suggests a significant risk. We now use hydrophobic IOLs in patients with corneal pathology who may require DSAEK in future, given that IOLs with lower water content are less prone to calcification.[4,5]

Conflict of interest

The authors declare no conflict of interest.

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Sir,
Urrets – Zavalia syndrome as a complication of ocular hypotonia due to intravenous cidofovir treatment

We read the article written by Orssaud *et al*[1] published in your valuable journal.They reported a case of Urrets–Zavalia syndrome (UZS) after receiving intravenous cidofovir treatment for laryngotracheal papillomatosis. They reported that anterior uveitis was observed in both eyes and the authors prescribed topical steroid and topical atropine 1% twice a day. Despite discontinuation of topical atropine therapy, she developed UZS in the left eye. They related the fixed dilated pupil to ocular hypotonia. However, they used atropine for the treatment of anterior uveitis and the iatrogenic mydriasis is a more common reason for the UZS as described by Mocan *et al*[2] (although the other eye did not develop UZS). As they proposed, iris ischemia precipitated by iris dilation and strangulation of iris vessel and iatrogenic damage to the radial nerve fibers of the iris could result in UZS.

Conflict of interest

The authors declare no conflict of interest.

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