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Sir,

Retained fragments in the anterior segment following phacoemulsification surgery

Eye (2002) **16**, 94–95. DOI: 10.1038/sj/EYE/6700041

Phacoemulsification is the procedure of choice for most surgeons performing cataract surgery in the United Kingdom. The sequelae and management of retained nuclear fragments in the vitreous following cataract surgery have been well described in the literature.^{1–3} However, retention of material in the anterior segment is less well documented. We report a case of a retained fragment in the anterior segment following routine phacoemulsification surgery.

Case report

An 88-year-old patient with nuclear sclerosis underwent routine phacoemulsification under local anaesthetic. The phaco priming and tuning had proceeded uneventfully. As soon as phacoemulsification commenced, a shower of small white particles was noticed in the anterior chamber. These appeared to be emanating from the lower end of the sleeve. The instrument was immediately withdrawn from the anterior chamber. The anterior segment was examined under the microscope where numerous small white particles were seen on the iris and floating in the anterior chamber. The sleeve was then removed from the phacoemulsification needle and inspected under the microscope. The sleeve lining did not appear to be completely smooth and was lined with small white fragments which appeared to be floating away from the sleeve. No abnormalities of the phacoemulsification tip were noted nor of the irrigating fluid or tubing. Both the sleeve and tip were changed, the machine was reset and surgery then proceeded uneventfully.

At the time of surgery all visible particles were washed out of the anterior chamber. However on the first day postoperatively, a small white particle was seen on the surface of the iris at about the 12 o'clock position (Figure 1). The eye was otherwise quiet with a clear cornea, only the occasional cell in the anterior chamber and no flare. The patient had an unaided visual acuity of 6/9. In view of these findings it was decided to start the routine postoperative drops used by our department, ie G. Dexamethasone q.i.d. and G. Chloramphenicol q.i.d. and to observe the patient closely for any adverse effects of the retained foreign body in the anterior segment.

The patient's postoperative course was completely uneventful and her drops were tailed off and stopped after 4 weeks. Her visual acuity throughout was 6/9 unaided in the operated eye. There were no abnormal particles in the vitreous and the fundus showed no abnormality apart from retinal pigment epithelial changes at the macula which predated the surgery.

It is now one year post surgery, the white fragment is still visible in the same position on the iris and the patient has not experienced any adverse effects from its presence in her eye. The eye remains quiet with unaided visual acuity of 6/9.

Comment

There have been several reports of retained foreign bodies in the anterior chamber following cataract surgery. These have mainly concerned lens fragments^{4,5} or metallic foreign bodies.^{6,8}

Our case is unusual in that the source of the foreign bodies was the inner lining of the sleeve, which covered the phacoemulsification tip. On close

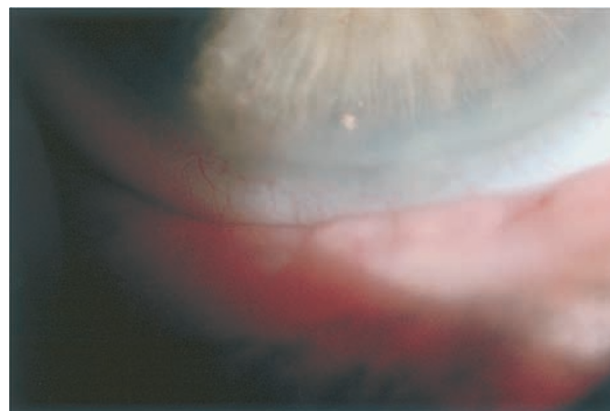


Figure 1 Small white particle on the surface of the iris.

examination the lining looked irregular and there were small white particles which appeared to be floating away from the sleeve. There was no sign of any irregularities 'downstream' from the tip, either in the irrigation fluid and tubing or in the phacoemulsification handpiece.

We concluded that these particles had originated from the phacoemulsification tip sleeve which had had a manufacturing defect. The inert nature of the retained particle would be in keeping with the presumption that it was a silicone fragment. The sleeve and fluid from the phacoemulsification cassette were sent to the manufacturer for analysis but were lost in transit.

We would recommend the routine inspection of the sleeve to look for any manufacturing abnormalities.

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Sir,

Plasmin-assisted vitrectomy eliminates cortical vitreous remnants

Eye (2002) **16**, 95–97. DOI: 10.1038/sj/EYE/6700064

Plasmin, a non-specific serine protease mediating fibrinolysis, has properties to hydrolyze a variety of glycoproteins, including laminin and fibronectin.¹ By degrading the links between these components of the vitreoretinal interface and the inner limiting membrane (ILM), therapeutic posterior vitreous detachment (PVD) has become possible.^{2,3} In controlled experiments in postmortem porcine eyes, enzymatic action alone is sufficient to induce PVD.² However, there are remnants of cortical vitreous remaining adherent to the ILM depending on the dose and exposure time of plasmin.²

Enzymatic vitrectomy is envisaged to augment or even replace conventional vitrectomy by proposed means of less surgical risks, less surgeon time, lower costs, and a transition to office-based vitreoretinal procedures. However, there are few data concerning the effect of plasmin at the vitreoretinal interface of human eyes.⁴ Especially the impact of plasmin as an enzymatic adjunct to vitrectomy has not been studied and published as yet. Therefore, we compared the ultrastructure of the vitreoretinal interface of human postmortem eyes, which had undergone conventional vitrectomy or plasmin-assisted vitrectomy.

Methods and results

Five human postmortem eyes were injected with one unit (1U) of plasmin (Sigma®, Germany) into the center of the vitreous cavity. The fellow eyes received calcium and magnesium free phosphate buffered saline and served as controls. Eyes were obtained from the local eye bank 6–14 h after death. Due to the lack of blood testing, the corneas were not excised. The donors' age ranged from 55 to 69 years. After 30 min of incubation time at 37°C, all eyes underwent a standard three port pars plana vitrectomy. Induction of PVD was initiated by suction with the vitrectomy probe at the posterior pole and then extended peripherally. The vitreous base was not excised. No attempt of peeling of the posterior hyaloid was made. The globes were placed in a solution of 4% paraformaldehyde, and the vitreoretinal interface was investigated by two observers independently using scanning electron microscopy.

Intraoperatively, all plasmin-treated eyes and three control eyes showed an attached vitreous. In two