Anterior segment optical coherence tomography of silicone oil keratopathy

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DESCRIPTION

A 77-year-old woman underwent pars plana vitrectomy for recurrent retinal detachment with silicone oil injection 10 years before presentation. Also the patient was placed on antiglaucoma medications. The patient had a history of recurrent corneal ulcerations in both eyes due to severe dry eyes. Examination revealed no light perception with a disfiguring central opaque corneal bulge in the left eye (*figure 1*). Anterior segment optical coherence tomography (OCT) revealed a marked thickening of the stroma with diffuse round empty spaces between stromal fibres corresponding to intrastromal silicone oil droplets (*figure 2*). No treatment was offered because of poor prognosis.

Silicone oil is used frequently as adjunct to modern vitreoretinal surgery because of transparency, minimal retinal toxicity and good intraocular tamponade. Complications include cataract formation, glaucoma and oil keratopathy. Silicone oil keratopathy manifests as corneal oedema, bullous keratopathy and rarely white cornea. The corneal endothelial damage stems from glaucoma and silicone oil touch of the endothelium. When the endothelium fails, silicone oil can penetrate into the stroma. Few histopathological studies have been reported in eyes undergoing penetrating keratoplasty for severe silicone oil keratopathy.¹⁻³ Ardjomand *et al*¹ demonstrated in one corneal button that silicone oil traverses the cornea through defects in the Descemet membrane. Sekundo *et al*² noted the presence of a posterior collagenous layer above a severely attenuated endothelium in eight corneal buttons. OCT allows in vivo examination of the stroma and showed diffuse silicone oil droplets in between stromal fibres. This whitish colour of the cornea is similar to the colour of emulsified silicone oil.

Figure 1 Anterior segment photograph of the left eye showing a white bulge occupying most of the cornea.

Learning points

- ▶ Silicone oil can penetrate the corneal stroma through defects in the Descemet membrane or when the endothelium is severely damaged.
- ▶ Optical coherence tomography like histopathological sections show intrastromal silicone oil droplets.
- ▶ The white colour in silicone oil keratopathy stems from the white colour of the emulsified oil.

Figure 2 Anterior segment optical coherence tomography central horizontal scan showing diffusely scattered intrastromal silicone oil droplets throughout the stroma (arrowheads).

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