

Sequential Descemet's membrane detachments and intraocular lens haze secondary to SF₆ or C₃F₈

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PURPOSE. *To report an unusual complication of treatment in the case of a Descemet's membrane detachment.*

METHODS. *Observational case report.*

RESULTS. *A 79-year-old woman presented for elective cataract surgery. Ocular risk factors identified preoperatively included moderately shallow anterior chambers bilaterally, previously treated with bilateral YAG peripheral iridotomies. After a clear corneal section during phacoemulsification, large Descemet's tears on introducing the micro finger and phaco probe were noticed. Conversion to an extracapsular technique was necessary because of poor view. Similar peroperative Descemet's detachments were noticed in the contralateral eye during phacoemulsification by a senior surgeon a year later. Postoperatively, the Descemet's detachments were managed by intracameral SF₆ and later C₃F₈ gas. A few weeks later, a fine haze was noticed under the anterior surface of the intraocular lens (IOL). Corneal edema persisted and corneal decompensation ensued. Both eyes needed penetrating keratoplasties. The right eye needed an IOL exchange due to IOL haze.*

CONCLUSIONS. *In this case the SF₆ or C₃F₈ gas may have produced the unexpected effect of an anterior IOL haze. The mechanism of this phenomenon is unknown. To the knowledge of the authors, this effect has not been observed previously with SF₆ or C₃F₈ gas. This haze was visually significant and required an IOL exchange. To the knowledge of the authors this is the first report of this nature. The authors advise caution when using intracameral SF₆ or C₃F₈ gas for repair of Descemet's membrane detachment with this type of IOL. (Eur J Ophthalmol 2006; 16: 756-60)*

KEY WORDS. *Cataract, Complication, Descemet's membrane, Intraocular lens, SF₆, Perfluoropropane*

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INTRODUCTION

Limited and small Descemet's membrane detachments may be encountered during small incision cataract surgery. Special circumstances may arise when a patient is prone to detachment of the Descemet's membrane. Cataract surgery in these patients demands careful tissue handling. We present a case when measures to manage this complication had unexpected adverse effects.

Case report

A 79-year-old woman presented for elective cataract surgery. Ocular risk factors identified at pre-assessment included moderately shallow anterior chambers bilaterally, previously treated with bilateral YAG peripheral iridotomies. Left phacoemulsification with a superior clear corneal tunnel was started. Healon™ was used as viscoelastic.

Large Descemet's tears on introducing micro finger

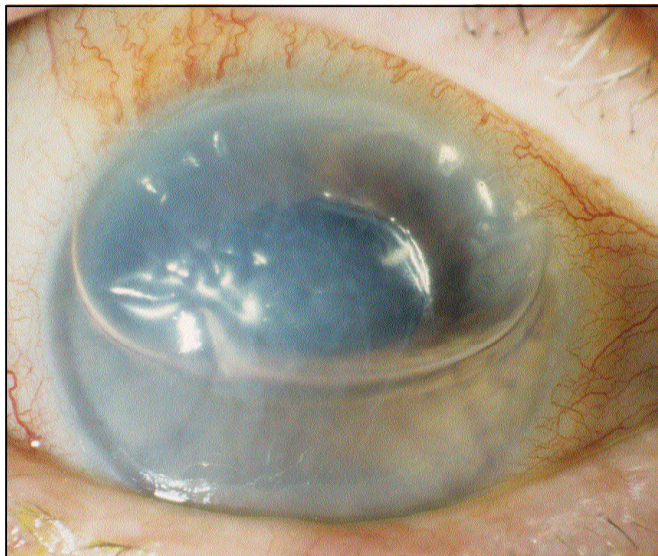


Fig. 1 - Descemet's detachment treated with intracameral SF₆. Central corneal haze and early lenticular (IOL) haze is seen.

and phaco probe were noted. The procedure was converted to extracapsular cataract extraction and intraocular lens (IOL) insertion because of poor visibility. Visual acuity in left eye was counting fingers at 1 and 3 monthly reviews but improved to 6/36 by 6 months.

The Descemet's detachment failed to resolve with conservative management. Corneal decompensation was treated with a penetrating keratoplasty after which visual acuity recovered to 6/9 (aided).

The right eye underwent cataract surgery by an experienced surgeon. Similar Descemet's detachments were noted during surgery despite careful technique and adequate use of viscoelastic (Healon™). Phacoemulsification of the cataract was completed and an acrylic lens (Rayner 570H) was implanted in the capsular bag. Postoperatively, the Descemet's detachment in the right eye was treated by injecting sulfur hexafluoride (20% SF₆ gas mixed with air) in the anterior chamber. This failed to resolve the corneal pathology and a total Descemet's detachment was noted after the gas bubble disappeared. Perfluoropropane gas (14% C₃F₈) was injected into the anterior chamber to flatten the Descemet's detachment (Fig. 1). A few weeks later, a fine haze was noticed under the anterior surface of the IOL at the slit-lamp examination.

Corneal edema persisted and corneal decompensation ensued. The IOL haze was noticed by multiple observers, which did not resolve. The right eye eventually needed a penetrating keratoplasty, IOL exchange,

anterior vitrectomy, peripheral iridectomy, and anterior chamber IOL implant.

Last recorded visual acuities were 6/18 in the right eye and 6/9 in the left (aided).

DISCUSSION

Descemet's detachment is an uncommon complication in cataract surgery. It can be expected during difficult surgery and by inexperienced surgeons. These can be small, limited, and often spontaneously resolve. However, predisposition to this phenomenon may lead to extensive Descemet's detachments, which may be encountered bilaterally during surgery as in our case (1). This complication may be managed by observation, medically with topical steroid and hypertonic saline, transcorneal suturing, intracameral injection of air, SF₆, or C₃F₈ (2, 3). As the SF₆ and C₃F₈ gases are known to expand, intraocular pressure problems may be expected. These phenomena are known to occur when these gases are used in vitreoretinal procedures and may be managed by topical or systemic aqueous suppressants (4, 5).

Lincoff et al suggested a higher intraocular retention time of perfluoropropane (C₃F₈) when compared to sulfur hexafluoride (SF₆) (more than four times) and air (nine times) (6). This may be an advantage when prolonged tamponade is required.

These gases in surgical use are normally known to be inert. The authors could find only one report of SF₆ gas reacting with an organometallic compound (7). In our case the SF₆ or C₃F₈ in the anterior chamber may have produced the unexpected effect of an anterior intraocular lens haze. The mechanism of this phenomenon is unknown. To our knowledge, this effect has not been observed previously with SF₆ or C₃F₈ gas. This haze was visually significant and required an IOL exchange.

Late postoperative opacification of the IOL is recognized to occur in certain known lens types (8-10). However, IOL opacification has not been a reported complication of this particular lens.

In the absence of other factors, we presume the SF₆ or C₃F₈ gas may have a role in this phenomenon. To our knowledge, this is the first report of this nature. We advise caution when using intracameral SF₆ or C₃F₈ gas for repair of Descemet's membrane detachment with this type of IOL.

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