

# Surgical Repair of Descemet's Membrane Detachment

D. Pahor and B. Gračner

Teaching Hospital Maribor, Department of Ophthalmology, Maribor, Slovenia

## ABSTRACT

*The aim of the study was to demonstrate a successful repair of Descemet membrane detachment (DMD). A 73-year-old woman with pseudoexfoliative glaucoma underwent phacoemulsification with flexible posterior chamber intraocular lens implantation. Because of inadequate pupillary dilatation flexible iris retractors were used. Four days after cataract surgery, a large DMD was recognized. One day later, the patient underwent surgical repair. Three long full-thickness 10–0 nylon sutures were used to fixate DM to the cornea. The next day, DM was completely attached and the cornea was clear. Final best-corrected visual acuity was 0.9. Iris retractors may increase the risk of DMD because the iris is more anterior to the cornea. Bimanual manipulation is recommended to avoid accidental separation. No clinical case of DMD repair has been previously reported, associated with flexible iris retractors and phacoemulsification. To achieve good visual results in extensive DMD we recommend early surgical treatment.*

## Introduction

A Descemet membrane detachment (DMD) is not uncommon in cataract surgery. Previous reports on DMD were associated with extracapsular or intracapsular cataract extraction. The incidence is 2.6% and 0.5% for extracapsular and phacoemulsification surgery respectively<sup>1,2</sup>. It can be recognized intraoperatively or may go unrecognized during surgery and be discovered postoperatively. It can be localized, extensive, or total and can cause permanent corneal decompensation and require surgical treatment.

In 1992 Macsai reported the first case of a sight threatening DMD associated with phacoemulsification<sup>3</sup>. Only few cases of DMD associated with phacoemulsification were described later<sup>1,4–6</sup>. In most cases DMD remains localized to the area adjacent to the corneoscleral incision<sup>7–10</sup>. Management of DMD depends on the degree and location of the detachment<sup>11,12,16,21–23</sup>.

Air, viscoelastic, expansible gases, corneal sutures and rarely, penetrating keratoplasty have been reported to repair DMD<sup>12,14,17,24</sup>. Large DMD results in persistent corneal edema and decreased

visual acuity and requires surgical repair<sup>3,11–20</sup>. In some cases of extensive DMD and corneal haze ultrasound biomicroscope can be used to assist the surgical repair<sup>25</sup>. We present one case of a successful repair of a DMD after phacoemulsification.

### Patient and Method

A 73-year-old woman with pseudoexfoliative glaucoma underwent phacoemulsification with flexible posterior chamber intraocular lens implantation. Because of the inadequate pupillary dilatation, flexible iris retractors were used. No DMD was noticed during surgery.

On the first postoperative day, corneal edema and increased intraocular pressure (IOP) were noted. Corneal edema limited the examination of the anterior chamber, and made the diagnosis difficult. Two days after surgery IOP was normal and the cornea remained edematous. Increased IOP was mistakenly thought to be responsible for the clinical appearance. During the next two days, on slit-lamp examination a large DMF was noted in the superior two thirds of the cornea (about 40% of corneal area). One day after the DMD was noticed, the patient underwent surgical repair. Viscoelastic was injected through corneoscleral tunnel and through both paracentesis into the anterior chamber to press the DM against the stroma. The full reparation with viscoelastic was not possible. We decided to repair DMD by suture fixation. Three long full-thickness 10–0 nylon sutures were placed to hook the DM against the cornea, extending from the central part of the cornea perpendicular to the central part of the internal corneal incision of the corneoscleral tunnel. The knots were buried into the stroma. Internal corneal incision of corneoscleral tunnel was included in each suture. The corneoscleral tunnel was closed with run-

ning suture. One day after surgical repair, corneal edema decreased and DM was attached. Three months after surgical repair corneal sutures were removed. The cornea was clear, DM remained attached. Final best-corrected visual acuity was 0.9.

### Discussion

DMD was first described by Weve in 1927<sup>26</sup>. More than half of the described cases of DMD was detected during surgery<sup>5</sup>. Spontaneous reattachment of extensive DMD is rare<sup>4</sup>. Early recognition is necessary to prevent further complications. Time interval between the first surgery and Descemet membrane reattachment was up to one year<sup>5,6,24,25</sup>. In some cases, multiple attempts were necessary for adequate reposition. There are reported cases of large DMD successfully repaired by expansible gases, but the majority of surgical repositions were performed with air or viscoelastic<sup>5,13,24,25</sup>. Another way to reattach a DM is by descemetopexy using through-and-through 10–0 sutures with long bites that include the edge of the detached DM<sup>11,24</sup>. A penetrating keratoplasty should be the last choice. In our case, we performed suture fixation to repair DMD. Our first attempt to reposition the DM with viscoelastic was not successful. Thus, we decided to reattach a stripped DM by descemetopexy.

No predisposing factors have been found to influence the occurrence of DMD. To avoid this serious complication some precautions should be taken. The injection of solution or viscoelastic material into the anterior chamber through corneoscleral tunnel can detach DM. If possible bimanual manipulation for irrigation and aspiration and other maneuvers through the two-stab incisions should be performed to avoid accidental separation. Blunt keratome should not be

used for incision. The internal corneal incision should be equal or slightly greater than the external one to prevent dissection during insertion or removal of a phaco probe, irrigation or aspiration devices or IOL implantation.

In our case, we performed iris retractors for pupillary dilatation. Because of this, iris was displaced toward the cornea and the surgeon had to use force to introduce the instruments into the eye. We be-

lieve that this situation increased the risk of DMD. No clinical case of DMD associated with flexible iris retractors and phacoemulsification has been previously reported.

In conclusion, DMD should be concerned when using flexible iris retractors during phacoemulsification. In order to achieve good visual result we recommend the early surgical treatment of extensive DMD.

## REFERENCES

1. MULHERN, M., P. BARRY, P. CONDON, Br J Ophthalmol 80 (1996) 185. — 2. ANDERSON, C. J., J Cataract Refract Surg 19 (1993) 620. — 3. MACSAI, M. S., Am J Ophthalmol 114 (1992) 365. — 4. MINKOVITZ, J. B., K. C. SCHRENK, J. S. PEPOSE, Arch Ophthalmol 112 (1994) 551. — 5. MAHMOOD, M. A., K. D. TEICHMANN, K. F. TOMEY, D. AL-RASHED, J Cataract Refract Surg 24 (1998) 827. — 6. AMARAL, C. E., D. A. PALAY, Am J Ophthalmol 127 (1999) 88. — 7. FLAXEL, J. T., Arch Ophthalmol 83 (1970) 436. — 8. MONROE, W. M., South Med J 64 (1971) 1122. — 9. COGAN, D. G., T. KUWABARA, Trans Ophthalmol Soc UK 91 (1971) 875. — 10. JAFFE, N. S.: Cataract surgery and its complications. (MO, CV Mosby, 4<sup>th</sup> ed. St. Louis, 1984). — 11. SPARKS, G. M., Arch Ophthalmol 78 (1967) 31. — 12. DONZIS, P. B., Z. A. KARCIOGLU, M. S. INSLER, Ophthalmic Surg 17 (1986) 735. — 13. ZUSMAN, N. B., G. O. WARING III, L. V. NAJARIAN, L. A. WILSON, Am J Ophthalmol 104 (1987) 660 (correction 1988) 105: 565. — 14. MERRICK, C., Ophthalmic Surg 22 (1991) 753. — 15. HAGAN, J. C. III., Implants Ophthalmol 2 (1988) 208. — 16. WALLAND, M. J., J. D. STEVENS, A. D. STEELE, J Cataract Refract Surg 21 (1995) 250. — 17. ELLIS, D. R., K. L. COHEN, Cornea 14 (1995) 436. — 18. ASSIA, E. I., H. LEVKOVICH-VERBIN, M. BLUMENTHAL, J Cataract Refract Surg 21 (1995) 714. — 19. MAHMOOD, M. A., Ophthalmic Surg 23 (1992) 641. — 20. HAGAN, J. C. III., Ophthalmic Surg 23 (1992) 641. — 21. WYATT, H., J. GHOSH, Br J Ophthalmol 53 (1969) 267. — 22. MACKOOL, R. J., S. J. HOLTZ, Arch Ophthalmol 95 (1977) 459. — 23. VASTINE, D. W., R. S. WEINBERG, J. SUGAR, P. S. BINDER, Arch Ophthalmol 101 (1983) 1042. — 24. KREMER, I., H. STIEBEL, Y. YASSUR, J Cataract Refractive Surg 23 (1997) 1449. — 25. MORINELLI, E. N., R. D. NAJAC, M. G. SPEAKER, C. TELLO, J. F. LIEB-MANN, R. RITCH, Am J Ophthalmol 121 (1996) 718. — 26. WEVE, H., Nederl Tijdschr Geneesk 71 (1927) 398.

*D. Pahor*

*Teaching Hospital Maribor, Department of Ophthalmology, Ljubljanska 5, 2000 Maribor, Slovenia*

## **KIRURŠKO LIJEČENJE ODLJEPLJENJA DESCOMETOVE MEMBRANE**

### **S A Ž E T A K**

Cilj rada bio je prikazati uspješno liječenje odljepljenja Descemetove membrane (DM). Pacijentica stara 73 godine s pseudoeksfolijativnim glaukomom podvrgnuta je fakoemulzifikaciji uz implantaciju fleksibilne intraokularne leće u stražnju sobicu. Zbog neadekvatne dilatacije zjenice korišteni su fleksibilni iris retraktori. Četiri dana nakon operacije katarakte uočeno je veliko odljepljenje Descemetove membrane. Dan kasnije izvršena je kirurška korekcija. Primijenjena su tri 10–0 najlonska dugačka šava pune debljine da bi se Descemetova membrana fiksirala za rožnicu. Sljedećeg dana DM bila je u potpunosti priležeća, a rožnica prozirna. Konačna optimalna korigirana vidna oštrina bila je 0.9. Iris retraktori mogu povećati rizik odljepljenja DM jer iris dolazi u anteriorniji položaj u odnosu na rožnicu. Da bi se izbjeglo nehotično odljepljenje preporučuje se bimanualna manipulacija. Do sad nije opisan niti jedan klinički slučaj odljepljenja DM povezan s fleksibilnim iris retraktorima i fakoemulzifikacijom. Da bi se postigli dobri vidni rezultati u slučaju opsežnog odljepljenja DM preporučujemo rano kirurško liječenje.