

## LETTERS TO THE EDITOR

**A case of Descemet's membrane detachment during phacoemulsification surgery**

EDITOR,—Descemet's membrane detachment (DMD) was first described by Weve in 1927. DMD can be classified as planar or non-planar, the former being less than 1 mm separation of Descemet's membrane from the stroma, the latter being greater than 1 mm separation from the stroma. Further description of each of the above is possible into a 'peripheral' type and a 'peripheral with central' involvement type – that is, for the latter, peripherally and centrally there is DMD (see Table 1).

*Table 1 Classification of Descemet's membrane detachment*

Planar (<1 mm separation from the stroma)
● Peripheral detachment only
● Combined peripheral and central detachment
Non-planar (>1 mm separation from the stroma)
● Peripheral detachment only
● Combined peripheral and central detachment

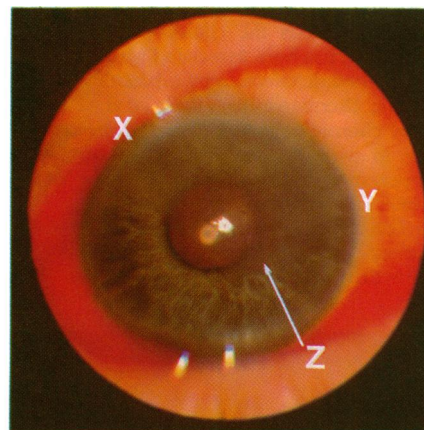
DMD can be caused by any factor which is responsible for a break in Descemet's membrane, be it surgical (cataract extraction, iridectomy, cyclodialysis, penetrating keratoplasty), or the result of tears caused by congenital glaucoma, keratoconus, keratoglobus, or trauma. In particular relation to phacoemulsification surgery, superficial scleral tunnels which enter high on the cornea may be associated with an increased incidence of DMD.<sup>1</sup> Additionally, there may be an anatomical predisposition, as there have been reports of bilateral DMD after cataract extraction.<sup>2</sup>

DMD is not uncommon in cataract surgery. The incidence is reported as 2–6% and 0–5% for extracapsular and phacoemulsification surgery respectively.<sup>3</sup> There are, however, no statistics available for the incidence of sight threatening DMD. Previous reports of visually disabling DMD were associated with extracapsular or intracapsular cataract extraction, peripheral iridectomy, and holmium laser thermal sclerostomy.<sup>4</sup> In 1992 Macsai<sup>5</sup> reported the first case of a sight threatening DMD associated with phacoemulsification; this was only noted clinically on the first postoperative day. Minkovitz *et al*<sup>6</sup> subsequently described a DMD occurring 1 month after phacoemulsification surgery. We describe a case of DMD, made complicated further by severe tearing of the fragment, which occurred during phacoemulsification surgery, and discuss the difficult intraoperative decisions posed by this combination.

**CASE REPORT**

An 80-year-old woman presented with a gradual loss of vision in the left eye. Examination of the left eye revealed 6/60 corrected visual acuity, the presence of pseudoexfoliation, and a cataract with grade 2 nuclear sclerosis and a dense posterior sub-capsular lens opacity. The patient was scheduled for routine phacoemulsification surgery. Surgery was uneventful until the irrigation/aspiration stage when a capsular or membranous entity was suddenly noted.

Initially this was thought to be an anterior capsular capsulorhexis remnant. When aspiration of this membrane was attempted, the size of the membrane was seen to increase, the reflux facility was engaged, and it was then realised that this was not a capsulorhexis remnant, but Descemet's membrane. The membrane was unrolled with the help of air. Unfortunately, owing to the previous engagement of the fragment in the aspiration port, a tear had occurred nasally and temporally in Descemet's membrane, therefore leaving almost 40% of Descemet's membrane detached from the stroma; and torn from the part of Descemet's membrane still attached to the cornea (see Fig 1). Attempts were made to reposition the DMD with Healon. Owing to the large size of the fragment, and the small size of its residual attachment to the stroma, repositioning of the DMD against the stroma with air or Healon proved impossible. The other option considered was to try to reattach the DMD to the cornea at the sites of the nasal and temporal tears and in the vicinity of the corneal entrance to the scleral tunnel, where the detachment had originally commenced. This was considered unfeasible given the number of sutures required, the fact that the tear and detachment of Descemet's membrane extended right across the visual axis, and finally given the sheer size of the detachment (almost 40% of the corneal area). The fragment was excised with capsulotomy scissors, care being taken not to increase the detachment size during the excision of the fragment. Surgery was completed in the normal way, with endocapsular insertion of an intraocular lens and sutureless closure of the 5.1 mm scleral tunnel. On the first postoperative day the patient was noted to have a geographic distribution of corneal oedema, extending from the corneal entrance of the scleral tunnel to the central cornea (see Fig 1) – that is, it coincided with the location where the DMD (and excision of same) had



*Figure 1 Geographic distribution of corneal oedema on the first postoperative day, the location of which corresponds to the site of the Descemet's membrane detachment. Clear and hazy corneal areas are more highly contrasted if the reader focuses on the clarity of the iris details. X=scleral tunnel location; Z=the apical area where the detachment remained attached to the stroma, and to the intact part of Descemet's membrane; XY=location of the nasal tear in Descemet's membrane; YX=location of the temporal tear in Descemet's membrane; area XYZ represents the total area of the detachment.*

occurred. Subsequently the patient underwent penetrating keratoplasty, and currently she has a corrected visual acuity of 6/12.

**COMMENT**

There are only two cases describing visually disabling DMD associated with phacoemulsification in the literature<sup>5 6</sup>; in both cases the DMD was noted only postoperatively. The first case combined the use of a small 4 mm scleral tunnel, and an intraocular lens injector delivery device; however, as in our case, penetrating keratoplasty was necessary. Details relating to the operative procedure in the second case were not recounted by the author. This latter case was unusual for two reasons: (1) the DMD did not occur until 1 month after operation; (2) it had an initially progressive detachment which then spontaneously resolved without intervention.

A rationale for surgical intervention was suggested by Vastine<sup>7</sup> for DMD associated with extracapsular surgery. Small planar detachments are best observed, as many will resolve spontaneously, whereas large planar, and non-planar or scrolled detachments, require surgical intervention. The DMD can be unrolled and tamponaded against the cornea with air, sulphur hexafluoride gas, or viscoelastic; the DMD can then be secured by a reverse through and through suture technique.<sup>7</sup>

Our (intraoperative) case was particularly complex, as the DMD was complicated by two linear converging tears (lines XZ and YZ in Fig 1) which only failed to meet because of an intervening small apical area of residual attachment (at location Z in Fig 1). Moreover, given the type of detachment (combined non-planar), spontaneous reattachment was not considered likely. We elected, therefore, to excise the fragment in order to facilitate subsequent penetrating keratoplasty.

Apart from severe visual loss resulting from DMD, other complications can ensue. Irregular astigmatism may result owing to the formation of wrinkles in Descemet's membrane. Repair of DMD can result in raised intraocular pressure from the use of viscoelastic; endothelial fallout may occur due to increased instrumentation associated with descemetopexy; and an increase in suture induced astigmatism is likely if a repair with sutures is undertaken. Furthermore, despite successful reattachment, a horizontal opacity, or Descemet's membrane haze may remain at the location of the original detachment.<sup>8</sup>

We feel that several factors should be borne in mind to help to minimise the risk of DMD: (1) instrumentation should be gentle and minimal, (2) blunt reusable keratomes increase the risk of DMD, (3) early intraoperative detection is imperative to avoid rapid progression, (4) the incision's inner corneal aspect should be equal to, or slightly greater than, the incision's outer scleral aspect to prevent undue trauma (as probably occurred in our case) during insertion and removal of phaco probes or irrigation/aspiration devices with irrigating sleeves.

In conclusion DMD is of concern to any surgeon who enters the eye with a surgical instrument, and it is a remediable but potentially blinding cause of postoperative corneal oedema.

M MULHERN  
P BARRY  
Department of Ophthalmology,  
St Vincent's Hospital,  
Dublin, Ireland

P CONDON  
Department of Ophthalmology,  
Waterford Regional Hospital,  
Waterford, Ireland

Correspondence to: Mr M Mulhern.

Accepted for publication 17 October 1995

- John ME, Noblitt RI, Boleyn KL, Raanan MG, De Luca BS. Effect of superficial and deep scleral pocket incisions on the incidence of hyphema. *J Cataract Refract Surg* 1992; 18: 495-9.
- Sparks GM. Descemetopexy. Surgical reattachment of stripped Descemet's membrane. *Arch Ophthalmol* 1967; 78: 31-4.
- Anderson CJ. Gonioscopy in no-stitch cataract incisions. *J Cataract Refract Surg* 1993; 19: 620-1.
- Wong VK, Koenig SB, Fogel ES, Freedman MI. Late detachment of Descemet's membrane after subconjunctival THC:YAG (holmium) laser thermal sclerostomy (ab externo). *Am J Ophthalmol* 1993; 116: 514-5.
- Macasai MS. Total detachment of Descemet's membrane after small incision cataract extraction. *Am J Ophthalmol* 1992; 114: 365-6.
- Minkovitz JB, Schrenk LC, Pepose JS. Spontaneous resolution of an extensive detachment of Descemet's membrane following phacoemulsification. *Arch Ophthalmol* 1994; 112: 551-2.
- Vastine DW, Weinberg RS, Sugar J, Binder PS. Stripping of Descemet's membrane associated with intraocular lens implantation. *Arch Ophthalmol* 1983; 101: 1042-5.
- Mackool RJ, Holtz SJ. Descemet's membrane detachment. *Arch Ophthalmol* 1977; 95: 459-63.

### Acute posterior multifocal placoid pigment epitheliopathy associated with pulmonary tuberculosis

EDITOR.—The hallmark of acute posterior multifocal placoid pigment epitheliopathy (APMPPE) is the appearance of multiple discrete cream-coloured lesions with ill defined margins concentrated in the posterior pole and deep within the retina. The condition has recently been reviewed<sup>1</sup> and has been associated with a wide range of disorders. These include adenovirus type 5 infection,<sup>2</sup> vaccination for swine flu,<sup>3</sup> cerebral vasculitis,<sup>4</sup> Lyme disease,<sup>5</sup> sarcoidosis,<sup>6</sup> photic damage to the retina,<sup>7</sup> and lead toxicity.<sup>8</sup> We report a patient presenting with a clinical picture of APMPPE in whom asymptomatic lung infection by tuberculosis was also identified.

#### CASE REPORT

A 34-year-old woman reported to an ophthalmic casualty department with a history of progressive blurring of vision of the left eye over the previous 24 hours. Systemic inquiry was otherwise negative. There were no respiratory symptoms. She was married with an 8-month-old child, and had never smoked cigarettes. General physical examination was normal. Visual acuities were 6/60 left eye and 6/5 right eye. Multifocal lesions of pale yellow appearance with indistinct margins were found on retinal examination of the left eye (Fig 1). These lesions were positioned within the vascular arcades with other smaller peripheral lesions. Fluorescein angiography showed early masking with late fluorescence.

The chest radiograph exhibited a round 2 cm lesion in the right middle third of the lung field. Subsequent computerised tomography showed the lesion to be in the right lower lobe. It was clearly defined with no evident calcification. The mediastinum was normal.

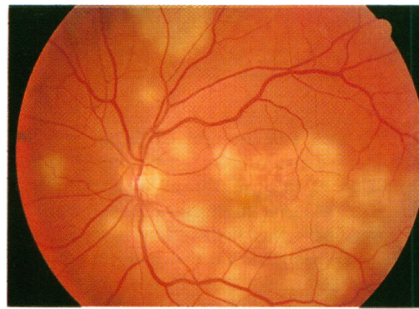


Figure 1 Left fundus appearance on presentation showing multifocal pale yellow lesions with indistinct margins.

A tuberculin test (1/1000) produced 25 mm induration. There was no scar on any of the usual vaccination sites to suggest previous BCG. Haemoglobin was 14.8 g/dl, white cell count  $6.2 \times 10^9/l$  with normal differential count, erythrocyte sedimentation rate was 18 mm in the first hour. Serum electrolytes, creatinine, calcium, phosphate, glucose, liver function tests, albumin, and urate were normal as were serum angiotensin, antinuclear factor, rheumatoid factor, and syphilis serology.

Pulmonary tuberculosis was suspected and treated with isoniazid, rifampicin, and pyrazinamide. One month later she developed a productive cough. Numerous acid and alcohol fast bacilli were seen on direct microscopy of the sputum but these did not grow on culture medium during 16 weeks of incubation. The non-viability of these organisms presumably resulted from antituberculous treatment. Her lung shadow subsequently cleared in a manner typical of early tuberculosis which fully resolves with appropriate therapy.

From the respiratory aspect, her health remains excellent and she successfully completed her planned 6 month course of antituberculous therapy. Progressive pigmentation of the fundal lesions took place (Fig 2) and in this case there has been no significant improvement in vision.

#### COMMENT

We are not aware of any previous case published in which the clinical appearance of APMPPE has been associated with otherwise asymptomatic infection by tuberculosis.

The alternative diagnostic label of multifocal choroiditis could, of course, be applied but in the case described it was a clinical appearance indistinguishable from APMPPE which led to the systemic diagnosis.

The clinical features on presentation of our patient accord with those typical of APMPPE.<sup>9</sup> Our patient was young. Her

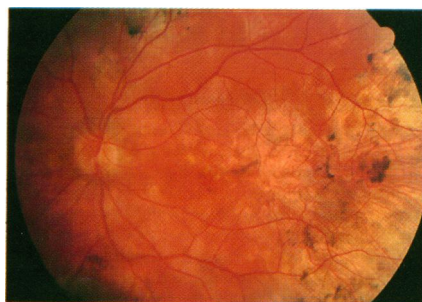


Figure 2 Left fundus appearance following resolution of acute lesions. Extensive areas of retinal pigment epithelial atrophy and pigment clumping are seen.

visual symptoms were of rapid onset and she developed 'multiple postequatorial, circumscribed, flat, grey-white, subretinal lesions involving the RPE'<sup>9</sup> on examination by biomicroscopy and fluorescein angiography. The late features of the disorder in our patient accord with those described for APMPPE<sup>9</sup> but also resemble those of other white spot syndromes<sup>10</sup> in which the spots are of larger size and tend to coalesce.

It is of interest that in the original description of APMPPE by Gass,<sup>11</sup> of the four cases described, two had a positive tuberculin skin test and one a family history of TB although none had overt tuberculosis. This patient's case (which has now been formally notified on the TB register) highlights that patients with the clinical appearance of APMPPE warrant careful investigation for underlying tuberculosis.

K ANDERSON  
K R PATEL  
Department of Respiratory Medicine,  
Western Infirmary, Glasgow

L WEBB  
G N DUTTON  
Department of Ophthalmology,  
Western Infirmary, Glasgow

Correspondence to: Dr L A Webb, Department of Ophthalmology, Western Infirmary, Dumbarton Road, Glasgow G11 6NT.

Accepted for publication 20 September 1995

- Jones NP. Acute posterior multifocal placoid pigment epitheliopathy. *Br J Ophthalmol* 1995; 79: 384-9.
- Azar P Jr, Gohd RS, Waltman D, Gitter KA. Acute posterior multifocal placoid pigment epitheliopathy associated with an adenovirus type 5 infection. *Am J Ophthalmol* 1975; 80: 1003-5.
- Hector RE. Acute posterior multifocal placoid pigment epitheliopathy. *Am J Ophthalmol* 1978; 86: 424-5.
- Sigelman J, Behrens M, Hilal S. Acute posterior multifocal placoid pigment epitheliopathy associated with cerebral vasculitis and homonymous hemianopia. *Am J Ophthalmol* 1979; 88: 919-24.
- Bodine SR, Marino J, Camisa TJ, Salvate AJ. Multifocal choroiditis with evidence of Lyme disease. *Ann Ophthalmol* 1992; 24: 169-73.
- Dick DJ, Newman PK, Richardson J, Wilkinson R, Morley AR. Acute posterior multifocal placoid pigment epitheliopathy and sarcoidosis. *Br J Ophthalmol* 1988; 72: 74-7.
- Henkes HE. Photic injury to the retina and the manifestation of acute posterior multifocal placoid pigment epitheliopathy. *Doc Ophthalmol* 1977; 44: 113-20.
- Schubert HD, Lucier AC, Bosley TM. Pigmentary epitheliopathy, disc edema, and lead intoxication. *Retina* 1988; 8: 154-7.
- Gass JDM. *Stereoscopic atlas of macular disease, diagnosis and treatment*. 3rd ed. St Louis: CV Mosby, 1987.
- Ben Ezra D, Forrester JV. Fundal white dots: the spectrum of a similar pathological process. *Br J Ophthalmol* 1995; 79: 856-60.
- Gass JDM. Acute posterior multifocal placoid pigment epitheliopathy. *Arch Ophthalmol* 1968; 80: 177-85.

### Disappearance of opticiliary shunt vessels after optic nerve sheath decompression

EDITOR.—Optociliary shunt vessels were described by Salzman in 1893 and have been reported in association with many ophthalmic conditions including central retinal vein occlusion, optic nerve sheath meningioma, and chronic papilloedema. The common mechanism appears to be obstruction to blood outflow in the central retinal vein which results in shunts between retinal and choroidal veins, usually at the edge of the optic disc. We report a patient with otitic hydrocephalus causing chronic papilloedema associated with opticiliary shunts which resolved after optic nerve