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British Journal of Ophthalmology

Editorials

Surgical management of HIV related retinal detachment

The appearance of a new disease entity, such as HIV related viral retinitis and retinal detachment, presents novel vitreoretinal surgical challenges. Sporadic cases of cytomegalovirus retinitis and retinal detachment had previously been reported in immunosuppressed patients^{1 2} but it is only since the HIV epidemic that this unique form of retinal disease has become a common clinical problem.

Various surgical approaches have been used in the treatment of HIV related retinal detachment. Prophylactic laser demarcation around areas of virus infected retina and retinal detachment has generally produced disappointing results³⁻⁵ with subretinal fluid accumulation continuing across the laser demarcation line. Likewise, the results of external scleral buckling (even when applied to eyes with isolated peripheral retinal breaks) are often unsatisfactory.⁴⁻⁷ The failure of these techniques is accounted for by the unique nature of retinal detachment secondary to viral retinitis. Retinal breaks are often multiple, posterior, and difficult to locate preoperatively in areas of necrotic and atrophic retina through hazy vitreous. Progressive formation of new retinal breaks following surgical repair is common; laser/cryotherapy of atrophic retina may fail to produce an adequate chorioretinal adhesion and indeed may result in retinal break formation. Furthermore, posterior vitreous separation may be incomplete and significant epiretinal membrane formation may be present.^{5 6 8-11} This clinical picture has made vitrectomy and silicone oil tamponade the treatment of choice for the majority of patients with viral retinitis related retinal detachment. Silicone oil provides long term tamponade of multiple retinal breaks without the need for widespread laser photocoagulation and will also tamponade breaks occurring after surgery. It has been shown to be effective in the management of the epiretinal proliferation associated with proliferative vitreoretinopathy.^{12 13} Since AIDS patients undergoing surgery for viral retinitis related retinal detachment have a limited life expectancy^{3 5 6 9 10 14} the long term sequelae of intraocular silicone oil¹⁵ are less likely to be encountered. The rationale for the use of silicone oil in this setting is therefore fundamentally different from its more general use in vitreoretinal surgery as a temporary (albeit long term in some cases) tamponading agent allowing time for adequate chorioretinal adhesion and the abatement of intraocular proliferation. In HIV related retinal detachment anatomical reattachment rates following vitrectomy and silicone oil have been encouraging.^{3-11 16-18} Many of the AIDS patients undergoing vitreoretinal

surgery are severely debilitated and the use of silicone oil rather than intraocular gas as the tamponading agent has the additional advantage that prolonged face down positioning is not required and visual rehabilitation is relatively rapid.

Experience has allowed refinements in the surgical technique used in these cases—for example, attention to the avoidance of pressure spikes during surgery which, together with the poor retinal vascular perfusion of many eyes undergoing surgery, has been proposed as a potential mechanism of immediate postoperative visual loss noted in some patients.⁹ It has also been demonstrated that additional scleral buckling is unnecessary.¹⁴

The current study by Irvine and colleagues (p 180) provides valuable information in addressing a central question: which eyes to operate on and when? Patient survival following surgery is clearly of importance to this decision and a median survival of 6 months, with 20% of patients surviving beyond 1 year, indicates that surgery has potential benefit in selected AIDS patients. However, it is notable that 25% of patients died within 2 months of surgery. Other series demonstrate mean or median survivals ranging from 17 to 37 weeks.^{3 5 6 9 11 14 18} Visual results are also fundamental to our surgical decision making. A best postoperative visual acuity of 20/100 or better was achieved in over 60% of patients, usually 1 to 2 months postoperatively. Although this result is encouraging the later loss of visual acuity found in half the patients in this visual range (owing to progressive retinitis, retinal detachment, optic atrophy, and cataract) is disappointing and is in accordance with the findings in other longitudinal studies.^{3 5 6 9 11} The demonstration that the visual results of surgery were not affected by short term macular detachment is also supported by other studies^{5 18} and indicates that a conservative approach to the timing of surgical intervention can be justified. Another valuable finding of the current series of Irvine *et al* is that although an operated eye may become the better seeing eye if the fellow eye has evidence of retinitis at the time of surgery, none of the 25 operated eyes with uninvolved fellow eyes eventually became the better eye. We can therefore advise AIDS patients with viral retinitis and retinal detachment that (a) while the macula remains attached surgery is less urgent than in other forms of retinal detachment, (b) a high initial success rate can be expected using vitrectomy and silicone oil tamponade, (c) later visual deterioration is a significant possibility and may be untreatable, and (d) if their fellow

eye is uninjured the operated eye is very unlikely to become their better seeing eye.

The growing literature on the management of HIV related retinal detachment provides other useful insights into the disease process and also the surgical use of silicone oil. Published series have varied in their reported incidence of proliferative vitreoretinopathy.^{3 5 6 8-11} There is, however, a consensus that epiretinal membrane formation does occur in these cases and a high incidence has been observed in some series.^{6 9} This is notable in relation to the pathogenesis of proliferative vitreoretinopathy since T lymphocytes have been observed in the periretinal proliferation in this condition and it has been suggested that they may play a role in its progression.^{19 20} It would appear, at least in the setting of an inflammatory viral retinitis, that despite profoundly abnormal T cell function (in particular CD4+ T cells, known to be involved in fibrogenesis and wound healing²¹) there remains a fibrogenic stimulus sufficient to result in epiretinal membrane formation.

The initial impression of a low incidence of cataract formation in HIV related retinal detachment eyes treated with silicone oil⁸ was attributed to the protective effect of an intact anterior hyaloid face and the lack of multiple interventions. It is clear, however, from the current study by Irvine and colleagues and other recent series,^{11 18} that with relatively longer survival of patients undergoing surgery progressive cataract formation does occur in many eyes and may be visually significant. The incidence of corneal opacification, raised intraocular pressure, hypotony, and oil emulsification appears to be low.¹¹

Several issues remain unresolved in the management of AIDS patients with necrotising retinitis and retinal detachment. The role of laser photocoagulation at the time of surgery is still uncertain and the possible role of inferior retinectomy in eyes with significant epiretinal membrane formation may also justify investigation. Late cataract extraction and silicone oil removal must also be considered in a minority of patients. Advances in antiviral chemotherapy and the availability of drug delivery by intraocular depot systems provide hope of treating the late visual loss in AIDS patients with necrotising retinitis although the interaction of such treatments with intraocular silicone oil is as yet unknown.

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Deep lamellar keratoplasty—an alternative to penetrating keratoplasty

Penetrating keratoplasty is at present the accepted mode of treatment for patients with corneal endothelial damage resulting in corneal oedema. Where the corneal endothelium remains healthy, such as in keratoconus, corneal stromal dystrophies, and stromal scarring, the case for penetrating keratoplasty becomes unclear, and the debate as when to perform lamellar keratoplasty or penetrating keratoplasty continues.

The techniques of corneal grafting were first reported in the ophthalmic literature in 1824 by Reisinger,¹ with experiments in rabbits. Kissam seems to be the first to have operated on humans using a pig cornea as the donor, but

with little success. Von Hippel, in 1877-8, was the first to show an improvement in vision using his standardised technique² which forms the basis of modern corneal transplantation. Zirm³ in 1906 is credited for the first corneal transplant to retain a moderate degree of transparency. Castroviejo gives a detailed review of the literature in his paper.⁴

Since then much work has gone into perfecting this operation, not only by modifications in the techniques, but also by the introduction of the operating microscope and associated improvements in microsurgical instruments and suture materials. Much work and progress has also been



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Br J Ophthalmol 1997 81: 177-178

doi: 10.1136/bjo.81.3.177

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