

Long term results of pars plana vitrectomy in the management of complicated uveitis

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Abstract

This retrospective study evaluates the long term efficacy of pars plana vitrectomy on the preservation of vision in complicated chronic uveitis, including endogenous intermediate uveitis and other entities. Combined vitrectomy-lensectomy was performed in 10 eyes with complicated cataracts, and 18 vitrectomies were done without lensectomies. The mean follow up was 45 months. Additional retinal surgery (for example, scleral buckling) was performed in five eyes. Visual acuity improved in 23 eyes (82.8%) following surgery, with 16 eyes (57%) achieving a vision better than 6/24. The main causes for vision less than 6/24 were persistent cystoid macular oedema (three eyes), macular puckers (one eye), retinal vascular obliterations (four eyes), optic atrophy (five eyes), and chorioretinal scars (seven eyes). Postoperative complications were cataract formation (seven eyes), cystoid macular oedema (one eye), and tractional retinal detachments (three eyes). The surgical intervention resulted in a remarkable reduction of the severity of inflammation or frequency of exacerbations, and allowed significant tapering (11 eyes) or withdrawal (11 eyes) of the topical steroids, or oral corticosteroids (10 cases). Pre-existing cystoid macular oedema resolved in three eyes. Pars plana vitrectomy, eventually combined with lensectomy, may visually rehabilitate eyes with chronic uveitis and media opacities, and may reduce the activity of disease postoperatively.

(*Br J Ophthalmol* 1994; 78: 549-554)

The natural course of endogenous uveitis is variable, ranging from a self limiting disease to an unrelenting, possibly blinding disease with multiple remissions and exacerbations.¹ Progression often results in cataract formation, synechiae, vitreous flare and haemorrhage, cystoid macular oedema, epiretinal membrane formation, secondary glaucoma, vasoproliferative changes, tractional and rhegmatogenous retinal detachment, hypotony, and eventually phthisis.

The therapeutic approach is dependent on the individual course of the disease. In cases with severe inflammatory infiltration and decreased vision, a combination of non-steroidal anti-inflammatory drugs and corticosteroids may be the treatment of choice. Immunosuppressive medication must be handled with great respect because of its side effects, particularly in young patients, but undoubtedly it has favourable effects in selected cases. The application of cryocoagulation in uveitic eyes is controversial, and may be particularly helpful in cases which

are resistant to corticosteroids and develop active neovascularisation.²

Traditional indications for a surgical intervention in chronic uveitis have been the presence of complicated cataracts and advanced posterior synechiae with secondary glaucoma.³ The surgical removal of cataracts in uveitis via a limbal approach is complicated by operative difficulties caused by iris atrophy, pupillary sphincter sclerosis, posterior synechiae, haemorrhage from abnormal iris vasculature, and intense postoperative inflammation.⁴ Based on the pioneering work of Diamond and Kaplan⁵ more recent approaches to the surgical treatment of chronic uveitis consisted of a pars plana approach not only to remove the cataract but also the inflammatory masses in the vitreous. Further indications for a pars plana access include vitreous haemorrhages and epiretinal membrane formation with subsequent tractional retinal detachment. Recent experimental data suggest that the persistence of the vitreous is associated with the reactivation of a secondary immune response.^{6,7} Consequently, the removal of the vitreous may have a favourable influence on the subsequent course of the basic inflammatory process.

The purpose of this retrospective study is to evaluate the results of a surgical pars plana vitrectomy in chronic uveitis complicated by dense vitreous flare and vitreous infiltration, or cataract formation, and to help in establishing indications for such an approach in these patients.

Materials and methods

PATIENTS

We reviewed the records of 22 consecutive patients (28 eyes) with complicated uveitis who underwent pars plana vitrectomy at the University Eye Hospital, Essen from 1981 to 1990.

The main indication for a surgical intervention in these patients was reduced visual acuity. In 10 cases this was caused by complicated cataract formation. All patients had developed dense vitreous debris and infiltration, and the latter had not been responsive to appropriate anti-inflammatory drugs. Most of the patients had multiple recurrent exacerbations of chronic uveitis.

When there were dense vitreous haemorrhages secondary to neovascularisation, vitrectomy appeared to be the useful first step in clearing the media and enabling the laser therapy or cryotherapy to be performed.

Cases complicated by pre-existing retinal detachment requiring combined scleral buckle procedure and vitrectomy, or previous cataract

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Accepted for publication
15 March 1994

extractions from anterior approach, were also included into this study.

The follow up period ranged from 6 to 110 months (mean 45 months). The series consisted of seven women and 15 men. Their age ranged from 6 to 66 years, mean 32.5 years. There were five right eyes and two left eyes diseased, and in 21 cases both eyes were involved. Uveitis existed for an average of 45 months (2–216). A detailed medical and laboratory evaluation was performed in collaboration with our medical centre.

The clinical diagnoses in our patients were endogenous intermediate uveitis (16 eyes), Behçet's disease (three eyes), sarcoidosis (one eye), systemic lupus erythematosus (two eyes), vasculitis of unknown entity (one eye), sympathetic ophthalmia (one eye), idiopathic chorioretinitis (two eyes), and Vogt-Koyanagi-Harada syndrome (VKH) (two eyes).

The vitreous haze was graded as moderate in eight cases and dense in 10 cases, depending on the visibility of the retinal vessels. A grading of the vitreous haze and infiltration was impossible in 10 cases with advanced cataract formation. The preoperative evaluation included ultrasound in all cases with impaired visualisation of the fundus secondary to dense opacifications in lens or in vitreous. In these cases visually evoked response – and electroretinogram examinations permitted the evaluation of the function of retina and optic nerve; surgery was not done in cases with flicker visually evoked responses less than 10 Hz. Optic atrophy, cystoid macular oedema, and amblyopia could not be excluded reliably preoperatively because of the dense media opacities.

The preoperative and postoperative courses' inflammatory activity were graded for cells and flare in the anterior chamber, cells in the vitreous body, and for retinal vasculitis or retinitis. Vitreous debris, usually pigmented and larger than inflammatory cells, was differentiated from cellular vitreous infiltration. The number of cells was graded on a scale from 0 to 4+, using a 1 by 1 mm slit. The inflammatory activity of vasculitis and retinitis was graded for the number of vessels and the area involved; it was graded as more severe when found adjacent to the posterior pole of the eye. Furthermore, we assessed the number of acute exacerbations per year, and the number of months per year that inflammatory activity was significant during the preoperative and postoperative period. Information on the interval history was requested from the patients' physicians with questionnaires about the course of the inflammation. The surgery was performed as soon as inflammation was suppressed to a minimum by anti-inflammatory drugs as necessary.

SURGICAL PROCEDURE

Surgery was performed by two of us (NB, MHF) under general anaesthesia using a standard three port access to the vitreous cavity with sclerotomies 3.5 mm posterior to the limbus. A combined lensectomy-vitreotomy procedure was performed in 10 eyes. Pars plana lensectomy was done either by phacoemulsification or with a vitreous cutter. During lensectomy a second infusion line was used with a bent cannula

inserted through one of the superior sclerotomies into the lens. Special care was taken to remove all lens material including the capsule, which was facilitated by scleral indentation and extraction of the complete lens capsule with a special forceps. The use of α chymotrypsin, as advocated by others,⁸ was not necessary in our cases. Cyclitic membranes were removed in two eyes following previous intracapsular cataract extraction (ICCE) and extracapsular cataract extraction (ECCE). In 18 eyes, pars plana vitrectomy was done without lensectomy. The complete removal of the vitreous was intended. Scleral indentation allowed removal of remnants of the vitreous base, with dissection of the glial proliferation, or meticulous peeling of membranes adherent to the ciliary body processes when prominent. In 13 eyes, posterior vitreous detachment, present in all eyes with a vitreous haemorrhage, facilitated the surgical procedure.

Posterior iris synechiae were released with a Sautter cannula or Sato knife in four eyes in combination with the lensectomy. For this purpose, the instruments were inserted into the eye through one of the superior sclerotomies, whereas a limbal incision was preferred in two eyes where lensectomies were not intended.

Membrane peeling was done to eliminate traction on the retina and ciliary body when present. Pars plana membranectomy was performed in 15 eyes; macular puckers were removed in 10 eyes.

Encircling scleral buckle procedures were performed in four eyes. In six eyes, sulphur hexafluoride (SF₆) gas mixture was injected to achieve an internal tamponade. In two eyes, liquid silicone was used for retinal reattachment.

Endolaser photocoagulation was done in nine eyes with either vasoproliferative changes, minor disruptions of retinal vessels or small retinal tears. In seven eyes, cryocoagulations were applied when active neovascularisations of the vitreous base or retinal tears were visible.

Peripheral iridectomies were performed in three eyes. In two eyes, an inferior iridectomy was done because of silicone oil injection into aphakic eyes.

The postoperative management included topical and periocular corticosteroids. Anti-inflammatory drugs, including systemic corticosteroids and chemotherapeutic regimens, were adjusted pre- and postoperatively to achieve quiescence.

Results

The ocular characteristics of the 28 eyes undergoing pars plana vitrectomy and lensectomy included cataract formation (13 eyes), ICCE (three eyes), or ECCE aphakia (one eye), retrolental cyclitic membranes (two eyes), vitreous haemorrhage (nine eyes), macular puckers (14 eyes), neovascularisation (17 eyes), tractional (nine eyes) or exudative (two eyes) retinal detachment, and retinal tears (one eye). The long term topical treatment with steroids had induced glaucoma in one case and cataract in another. Two patients had complications from systemic steroid medication including diabetes and arterial hypertension in one patient, and obesity and arterial hypertension in another.

Glaucoma was detected in four eyes preoperatively. These eyes were normotensive postoperatively. Postoperatively, two eyes developed a glaucoma responsive to topical treatment, and rubeosis iridis progressed in one.

In two eyes with Vogt-Koyanagi-Harada syndrome, pre- and postoperative hypotony occurred. In one eye with a preoperative retinal detachment, retraction of the ciliary body by a tractional membrane, and hypotony the intraocular pressure was normalised postoperatively after removal of the membrane. Transient postoperative hypotony was detectable in only a minority of patients.

The intraoperative complications consisted of haemorrhages in the vitreous (five eyes) or anterior chamber (one eye). Iatrogenic retinal breaks occurred in three eyes during surgery when epiretinal membranes and fibrovascular strands were peeled off. Postoperative vitreous haemorrhages developed in five eyes with epiretinal and epipapillary neovascularisations.

The postoperative course was complicated by the development of band keratopathy in one eye. Secondary cataract formation is a well known complication following pars plana vitrectomy and occurred in seven eyes in our series. In one eye, complicated cataract developed after synechiolysis through a limbal incision. Three eyes had previous cataract surgery (pars plana approach in two eyes, and intracapsular cataract extraction in another).

Retinal detachment developed in three eyes after pars plana vitrectomy requiring additional surgery. In two eyes, an internal tamponade with liquid silicone was performed because of retinal breaks at the posterior pole and recurrent retinal traction after previous membrane peeling. One of these eyes developed silicone keratopathy.

Twenty three eyes (82.8%) showed improvement of visual acuity (2 lines or more) after vitrectomy, with 16 eyes (57%) achieving a vision of 6/24 or better (Fig 1). Four eyes postoperatively showed no change in visual acuity. The final visual acuity usually developed within the first 3 months after surgery. Vision decreased in one eye with Behçet's disease related to the progressive course of the disease despite surgery. No significant correlation between the final visual result and the preoperative frequency of recurrences, or the duration of the disease was

detectable in our series. Improvement of visual function was less favourable in eyes with severe preoperative inflammatory activity. Eyes with endogenous intermediate uveitis had a better visual prognosis when compared with the other entities. Improvement of visual acuity was prevented in two eyes with macular scars following chorioretinitis. In 10 eyes, an optic disc atrophy was responsible for impaired visual acuity, which was coincident with retinal vascular obliterations and chorioretinal scars. Macular puckers were the reason for visual impairment in two eyes. Peripheral visual field defects due to chorioretinal scars were detected in 16 eyes, and due to retinal vascular obliteration in 12 eyes. The reasons for vision less than 6/24 in 12 eyes were chorioretinal scars (seven eyes), optic disc atrophy (five eyes), retinal vascular obliteration (four eyes), cystoid macular oedema (three eyes), macular pucker (one eye), and amblyopia (one eye).

The degree of preoperative inflammatory activity was: no inflammatory activity in three cases, low inflammatory activity in 21 cases, and high inflammatory activity in two cases with chorioretinitis, and in two patients with Behçet's diseases. In 11 patients, the topical corticosteroid medication could be discontinued postoperatively, while it could be strongly tapered in another 11 cases. While quiescence was not achieved during the preoperative course in 17 cases without oral prednisolone, the systemic corticosteroid treatment could be withdrawn postoperatively in 10 cases. Since one patient with systemic lupus erythematosus has been in complete remission during the last 4 years, the systemic immunosuppression was discontinued. Systemic immunosuppressive chemotherapy was continued postoperatively in six cases with systemic immune disorders, namely Behçet's disease, VKH syndrome, and systemic vasculitis. Details of the preoperative and postoperative medical regimen are shown in Table 1. The average of months the inflammation persisted was reduced from 9.9 months per year preoperatively (0.63 SEM) to 1.7 months per year postoperatively (0.49 SEM) for all patients (Student's *t* test, $p < 0.0001$). Furthermore, the number of acute exacerbations of inflammation was reduced from a preoperative average of 3.17 per year (0.22 SEM) to an average of 0.82 exacerbations per year postoperatively (0.21 SEM; Student's *t* test, $p < 0.0001$), as listed in Table 2.

Cystoid macular oedema was present in six eyes pre- or intraoperatively, and the patients' clinical characteristics are listed in Table 3. Cystoid macular oedema did not resolve postoperatively in three eyes resulting in visual acuities of 6/24, 6/36, and 6/60. Cystoid macular oedema resolved in three eyes within 12 to 15 months after surgery with a visual outcome of 6/7.5, 6/9, and 6/9. There were no significant differences between these two groups in terms of the underlying disease; all but one had endogenous uveitis, and chorioretinitis was present in one eye. The surgical procedures were similar in both groups. There was no significant influence of the duration and preoperative frequency of the inflammatory attacks, or of vitreous haze or

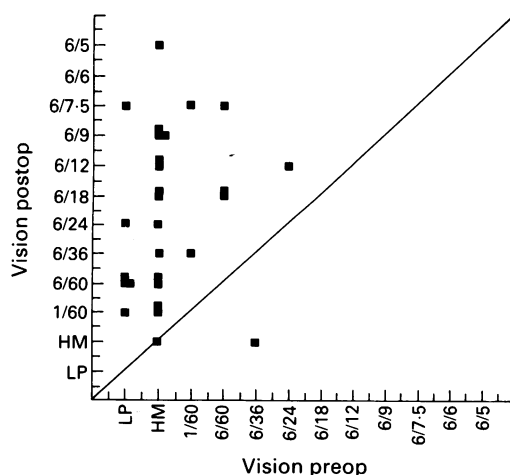


Figure 1 Preoperative versus postoperative visual acuity in 28 eyes undergoing pars plana vitrectomy in chronic uveitis

Table 1 Preoperative and postoperative topical and systemic immunosuppressive therapy in 28 eyes with complicated uveitis undergoing pars plana vitrectomy and lensectomy, divided into groups according to aetiology

Aetiology	No of eyes	Medication preoperative topical	NSAID	Pred-nisone	Chemo-therapy	Postoperative topical			Pred-nisone	Chemo-therapy
						+	-	NSAID		
Endogenous intermediate uveitis	16	16/16	7/16	6/16	0/16	1/16	7/16	6/16	0/16	0/16
Behçet's disease	3	3/3	0/3	3/3	3/3	2/3	1/3	0/3	3/3	3/3
Sarcoidosis	1	1/1	0/1	1/1	0/1	0/1	1/1	0/1	1/1	0/1
Systemic lupus erythematosus	2	2/2	0/2	2/2	2/2	0/2	0/2	0/2	0/2	0/2
Systemic vasculitis	1	1/1	0/1	0/1	1/1	1/1	0/1	0/1	0/1	1/1
Sympathetic ophthalmia	1	1/1	0/1	1/1	0/1	1/1	0/1	0/1	1/1	0/1
Idiopathic chorioretinitis	2	2/2	0/2	2/2	0/2	1/2	0/2	0/2	0/2	0/2
Vogt-Koyanagi-Harada syndrome	2	2/2	0/2	2/2	2/2	0/2	2/2	0/2	2/2	2/2

Dosage of topical corticosteroid medication: + unchanged; - tapered; NSAID: non-steroidal anti-inflammatory drugs.

Table 2 Preoperative and postoperative course of inflammation in 28 eyes with complicated uveitis undergoing pars plana vitrectomy and lensectomy, divided into groups according to aetiology

Aetiology	No of eyes	Inflammatory activity*		Acute exacerbations*		Statistical significance (Student's t test)
		Preop (months/year)	Postop (months/year)	Preop (N/year)	Postop (N/year)	
Endogenous intermediate uveitis	16	9.6 (0.88)	1.1 (0.3)	3.3 (0.25)	0.5 (0.13)	p<0.0001
Behçet's disease	3	11.3 (0.67)	7.3 (2.9)	3.3 (0.88)	3.3 (0.88)	NS
Sarcoidosis	1	3	2	2	1	NS
Systemic lupus erythematosus	2	12 (0)	1 (1)	3 (1)	0.5 (0.5)	NS
Systemic vasculitis	1	12	0	2	0	NS
Sympathetic ophthalmia	1	10	1	2	0	NS
Idiopathic chorioretinitis	2	8.5 (3.5)	0.5 (0.5)	2 (0)	0.5 (0.5)	NS
Vogt-Koyanagi-Harada syndrome	2	12 (0)	2 (0)	2.5 (1)	1 (0.5)	NS

* Means (SEM); NS=not significant.

Table 3 Clinical characteristics of seven eyes with cystoid macular oedema in a series of 28 eyes undergoing pars plana vitrectomy and lensectomy in the management of chronic uveitis

Case no Age (years), sex	Cystoid macular oedema		Lensectomy	Prevalent posterior vitreous detachment	Vision preop	Vision postop	Visual improvement
	Preop/Postop						
1, 19, M	+/-		+	-	HM	6/9	after 12 months
2, 22, M	+/+		+	+	LP	6/24	within 3 months
3, 31, M	+/+		-	+	HM	6/60	within 2 months
4, 28, M	+/-		+	+	HM	6/9	after 12 months
5, 13, M	+/-		-	+	6/60	6/7.5	after 15 months
6, 51, M	-/+		+	-	6/24	6/12	immediately
7, 10, F	+/+		-	-	1/60	6/36	immediately

vitreal haemorrhage on the prevalence of cystoid macular oedema in our series. Postoperative resolution of cystoid macular oedema was possible even in long standing uveitis. A correlation between preoperative vitreous detachment and cystoid macular oedema was not noticeable in our series. Only in one eye did cystoid macular oedema develop after vitrectomy and lensectomy.

Discussion

Following the first report of Diamond and Kaplan⁵ the efficacy of pars plana vitrectomy in eyes with chronic and recurrent uveitis has been evaluated repeatedly.^{3, 8-24} Most of these studies, however, have had a relatively short follow up period. To the best of our knowledge the present study presents the longest follow up period published to date. The results of this study indicate that pars plana vitrectomy has a beneficial effect on the long term course of uveitis and may restore or preserve vision. The frequency of inflammatory episodes, and severity of inflammatory activity were significantly reduced postoperatively permitting the tapering of the dosage of the anti-inflammatory regimen. The majority

of postoperative complications are related to progression of the underlying condition as patients with a progressive systemic disorder like Behçet's disease had poorer long term results.²⁰

The instantaneous postoperative beneficial effect on visual acuity is produced by surgical removal of media opacities obscuring the optical axis. The long term effect shown by this study may be caused by a possible therapeutic effect related to removing of vitreal debris and immunocompetent inflammatory cells, thus leading to a decreased incidence and severity of recurrences.^{4, 7} Experimental results suggest that the persistence of the vitreous is associated with the reactivation of a secondary immune response.⁷

There is an extensive controversy in the literature on the appropriate surgical technique in pars plana vitrectomy for complicated uveitis. The main subject of this controversy is whether or not an attempt should be made to remove as much vitreous as possible or whether the operation should be confined to a core vitrectomy. Recommendations in the older literature based on poor results when a complete vitrectomy was performed^{5, 11, 21} are not valid when the recent improvements in instrumentation for intravitreal

surgery are considered.²³ It was our impression that complete removal of the vitreous may improve the long term prognosis. In particular, the removal of the anterior hyaloid and the anterior limiting membrane may reduce postoperative cyclitis membrane formation following lensectomies. Moreover, complete removal of the vitreous opacities may permit direct treatment of retinal lesions (for example, neovascularisations) either intra- or postoperatively. We did not observe an increase in frequency of rubeosis iridis postoperatively.

Macular puckers and other epiretinal membranes should be removed whenever feasible as the visual function generally may improve after release of macular traction. Epiretinal membrane formation is essential in the presence of tractional detachment which occasionally may occur in the complicated course of endogenous uveitis.^{16,20} Recurrent epimacular membranes may occur after successful primary surgery as is the case in proliferative vitreoretinopathy,²⁵ however, in our series only one patient developed a macular pucker postoperatively.

Cataract formation in chronic uveitis is common and is the most frequent indication for surgical intervention. The traditional anterior approach in cataract surgery in uveitis has been the intracapsular cataract extraction eventually combined with a large sector iridectomy facilitating visibility of the posterior segment. More recently, extracapsular techniques have been established. However, the surgical removal of cataracts in uveitis using an anterior approach is frequently accompanied by serious complications.^{4,22} Furthermore, this approach does not allow sufficient removal of vitreous opacities obscuring the optical axis.^{15,26} The pars plana approach offers several advantages compared with the anterior approach, and might be considered as the surgical procedure of choice in removing cataracts in patients with uveitis complicated by the development of significant amounts of vitreous debris. It allows removal of peripheral lens material in the presence of a miotic pupil, eliminates the potential for synechiae to the posterior capsule and/or anterior hyaloid, and clears the visual axis of inflammatory debris.^{12,13} Extensive iris surgery should be avoided, since this might induce uveitis reactivation, and may only be performed in presence of miotic pupils. Cataract formation undoubtedly is the most frequent complication of this pars plana approach.¹⁴ Cataract surgery in these eyes, however, is facilitated by the reduced inflammatory reaction following pars plana vitrectomy. Lens implant surgery in uveitis^{27,28} has induced controversy, and only surface inactivated one piece polymethylmethacrylate (PMMA) posterior chamber intraocular lenses should be considered in these cases.²⁷

Some reports stress the recurrence of severe intraocular inflammation postoperatively.²⁰ This could not be demonstrated in this study, but mild to moderate inflammatory episodes often can be observed during the first postoperative days.²⁶ However, preoperative control of intraocular inflammation seems to be crucial in all patients.

In contrast with others we did not observe severe postoperative ocular hypotony,^{13,15,21} since

preoperative ocular hypotony responded favourably to vitreoretinal surgery removing ciliary traction.²⁹ Phthisis did not occur in our series. In this study pars plana vitrectomy had a beneficial effect on prevalent glaucoma in four eyes, which may be the result of reduction of inflammatory activity, the cessation of progressive retinal neovascularisation, and the withdrawal of topical steroid treatment in one case of steroid induced glaucoma. Postoperative neovascular glaucoma progressed in only one eye in our series, and this may be related to the scleral buckle procedure and silicone tamponade in this case.

This study confirms the results by others^{5,20} that age, sex, duration of disease, response to steroids, glaucoma, hypotony, and the presence of vitreous haemorrhage had no influence on the final results of surgery. We did not observe a significant correlation between the final visual outcome and the preoperative frequency of recurrences, or the duration of the disease.⁵

However, vascular proliferations, macular holes, cystoid macular oedema and active inflammation before surgery significantly impaired the visual outcome.^{13,20,30} In particular, the high complication rate observed in patients with active retinal neovascularisation has been pointed out repeatedly. Such complications may occur in patients suffering from systemic lupus erythematosus and Behçet's disease, or in patients with intermediate endogenous uveitis developing neovascularisations in the vitreous base. The presence of rubeosis of the iris impairs the prognosis even more. Cryotherapy of the vitreous base and/or laser coagulation of the ischaemic retina is advisable in these patients.^{2,3} Adequate control of vascular proliferations by ablative therapy in the postoperative period may be helpful in reducing postoperative complications.²⁰

Cystoid macular oedema threatens visual function in all patients with chronic uveitis and may prevent functional recovery after otherwise successful vitreoretinal surgery.²¹ The prevalence of cystoid macular oedema in patients undergoing pars plana vitrectomy described previously ranged from 13%³¹ to 56%,⁵ and was 26% in our series. Confirming previous observations,³⁰ pars plana vitrectomy had a favourable outcome on cystoid macular oedema in our series as the oedema resolved in three patients within 12–15 months after surgery. Although Pederson and coworkers³² suggested (based on histopathological studies) that cystoid macular oedema in uveitis may be caused by infiltrative shortening of the vitreous base and posterior hyaloid detachment, a coincidence of cystoid macular oedema and posterior hyaloid detachment could not be detected in our series. Even in the presence of cystoid macular oedema, visual acuity improved in our series (ranging from 6/60 to 6/12). Assessing macular function preoperatively is crucial. According to Nussenblatt,³⁰ laser interferometry gives the most reliable results, while visual evoked responses are less accurate. However, none of these methods seems to be applicable to predicting the possible occurrence and duration of cystoid macular oedema after surgery.

In conclusion, pars plana vitrectomy is

successful in restoring vision in patients with media opacities and chronic uveitis. Although the number of patients with conditions other than endogenous uveitis included in this study is small, vitrectomy appears to be a good option in the management of uveitis related complications such as vitreous haemorrhages, retinal detachments, ciliary membranes, or ocular hypotony. Our data further suggest that this approach may reduce the inflammatory activity post-operatively, and may allow tapering the immunosuppressive medication especially in endogenous intermediate uveitis. These results, however, need further evaluation to elucidate the underlying pathogenetic mechanisms,^{4,30} and prospective studies should be performed including larger numbers of patients with these disparate disorders.

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