CLINICAL STUDY

Vitrectomy for vitreous opacification in Fuchs' heterochromic uveitis

FIONA M. WATERS, KAREN GOODALL, NICHOLAS P. JONES, DAVID McLEOD

Abstract

Purpose **To assess the role of pars plana vitrectomy (PPV) for symptomatic vitreous opacification in a series of patients with Fuchs' heterochromic uveitis (FHU).**
Methods **A retrospective review was undertaken of 13 patients with FHU who underwent vitrectomy for vitreous opacification between April 1989 and December 1998.**
Results **An improvement in visual symptoms was recorded in all patients, 9 of 13 (69%) demonstrating at least a 2 line increase in Snellen visual acuity. All but one patient attained 6/9 or better visual acuity post-operatively. Surgery was uneventful and did not appear to exacerbate any existing intraocular inflammation.**
Conclusion **From this series we conclude that PPV has an important role in the management of patients with FHU who present with symptomatic vitreous opacification.**

Key words Fuchs' heterochromic uveitis, Pars plana vitrectomy, Uveitis, Vitreous opacification

F.M. Waters
K. Goodall
N.P. Jones
D. McLeod
Manchester Royal Eye Hospital
Oxford Road
Manchester M13 9WH, UK

Miss F.M. Waters, FRCOphth ✉
Academic Department of Ophthalmology
Manchester Royal Eye Hospital
Oxford Road
Manchester M13 9WH, UK
Tel: +44 (0)161 276 5620

Funding: None
Conflict of interest: None
Previous presentation: The preliminary results of this review were presented as a poster at ARVO, 1997

Received: 12 August 1999
Accepted without revision: 15 October 1999

Fuchs' heterochromic uveitis (FHU) is a chronic form of intraocular inflammation. It is a condition that is diagnosed on clinical findings alone. The classical features of heterochromia, low-grade iridocyclitis and cataract were first described by Ernst Fuchs in 1906.[1] Since then further clinical features, in particular the presence of vitreous opacification, have been identified.[2–5] Moreover, the presence of such opacification is increasingly being recognised as a cause of significant visual impairment.

In a review of 103 cases of FHU, Jones[6] found evidence of vitreous opacification in 74 (66%) patients; 34 (33%) of these patients presented with symptoms of floaters. La Hey *et al.*[7] also reported vitreous opacities in 84% of patients from a series of 51 cases of FHU in the Netherlands. Similarly, Fearnley *et al.*[8] reviewed 77 patients with FHU and reported opacification and debris in the vitreous gel in 73 eyes (84%); reduced vision was recorded in 74 (96%) of these patients as a consequence of either cataract formation or vitreous opacification.

Pars plana vitrectomy (PPV) already has an established role in the surgical management of other forms of chronic uveitis complicated by substantial vitreous opacification.[9–20] We describe the results of vitreous surgery in a series of patients with FHU and symptomatic vitreous opacification.

Patients and methods

From April 1989 to December 1998 inclusive, we treated 13 patients with unilateral FHU by a standard three-port PPV for symptomatic vitreous opacification. The diagnosis of FHU was based on the presence of heterochromia, stellate keratic precipitates and iridocyclitis.

At the end of surgery, all patients received a subconjunctival injection of Depo-Medrone (40 mg; Pharmacia & Upjohn), Betnesol (4 mg; Evans) and cefuroxime (125 mg). All were discharged on a short course of topical steroid (guttae Betnesol-N (Evans), q.d.s. for 2 weeks). Surgical outcome was assessed by case-note review. Information was obtained on patient satisfaction (as recorded in the case-notes) and recorded changes in best corrected visual acuity (measured using a Snellen chart).

Of the 13 patients, 9 were male and 4 were female with a mean age at the time of surgery of 35.9 years (range 23–62 years). Five patients had previously undergone cataract surgery with intraocular lens implantation in the affected eye (Table 1). The remaining 8 patients had no evidence of cataract prior to PPV. Pre-operative visual acuity ranged from 6/5 to 6/60 with variable interference with vision following eye movements; in some instances, the best acuity recorded could be described as 'fleeting'.

The time between diagnosis of FHU and vitrectomy ranged from 3 months to 7 years. Nine patients had previously been treated with topical steroids and cycloplegic agents for uveitis prior to the clinical diagnosis of FHU.

Ten patients (77%) presented with floaters, whilst the remaining 3 presented with 'blurred vision'. A posterior vitreous detachment (PVD)

Table 1. *Details of 13 patients with unilateral Fuchs' heterochromic uveitis undergoing pars plana vitrectomy for symptomatic vitreous opacification*

Patient no.	Sex	Age at surgery (years)	Time from diagnosis of FHU to surgery	Previous ocular surgery	Presenting symptoms	Pre-operative visual acuity	Visual acuity at last visit	Patient's post-operative comment[a]	Follow-up period (months)
1	M	62	14 months	None	Floaters	6/24	6/9	'Excellent'	3
2	M	29	7 years	ECCE + PC-IOL	Reduced vision	6/18	6/9	'Thrilled'	5
3	F	48	18 months	ECCE + PC-IOL	Floaters	6/9	6/5	'Absolutely brilliant'	40
4	M	32	3 months	None	Floaters	6/5	6/5	'Much better'	17
5	F	23	5 years	None	Floaters, blurred vision	6/18	6/7.5	'Satisfied'	18
6	F	34	3 months	None	Floaters	6/18	6/5	'Splendid'	24
7	M	31	4 months	None	Blurred vision	6/5	6/6	'Happy'	4
8	M	44	7 years	ECCE + PC-IOL	Floaters	6/6	6/6	'Satisfied'	12
9	M	44	12 months	ECCE + PC-IOL	Floaters	6/18	6/4	'Very pleased'	3
10	M	35	3 months	None	Blurred vision	6/9	6/6	'Fantastic'	0.5
11	M	29	4 years	None	Floaters	6/24	6/9	'Satisfied'	4
12	M	31	18 months	ECCE + PC-IOL	Floaters, blurred vision	6/60	6/5	'Much clearer'	3
13	F	25	18 months	None	Floaters	6/36	6/12[b]	'Satisfied'	1

FHU, Fuchs' hetrochromic uveitis; ECCE + PC-IOL, extracapsular cataract extraction with posterior chamber lens implant.
[a]As recorded in the patient's records.
[b]Suspected amblyopia.

was documented in all affected eyes; this may have been the reason for the acute onset of floaters where this had been reported.

Results

The PPV was uncomplicated in all patients and the pre-operative diagnosis of a complete PVD was confirmed. No intraocular haemorrhage was noted at the time of surgery but one patient had a small hyphaema (2 mm) on the day after surgery. None of our patients had evidence of cystoid macular oedema (CMO) either pre-, intra or post-operatively. At the first follow-up assessment (2 weeks), all patients had a quiet eye with an optically clear posterior segment.

All patients reported a subjective improvement in their visual symptoms (Table 1), 9 of 13 (69%) demonstrating at least a 2 line improvement in Snellen visual acuity. With the exception of one patient with suspected amblyopia (no. 13) all attained 6/9 or better corrected visual acuity. The mean post-operative follow-up period was 10.7 months; 2 patients (nos. 10 and 13) were seen at their first post-operative visit but failed to attend again despite two reminders. Of the phakic patients, one (no. 5) went on to develop an early posterior subcapsular lens opacity.

Discussion

Vitreous opacification is common in many types of chronic uveitis and can blur vision or cause floaters. In 1978, Diamond and Kaplan[10] reported the outcome of PPV combined with lensectomy for uveitis of various types; an improvement in vision occurred in 24 of 25 (96%) patients. Similarly, Algvere *et al.*[12] discussed the role of vitrectomy in the treatment of chronic uveitis with vitreous opacification; 21 of 28 (75%) patients showed an improvement in visual acuity while 4 of 28 (14%) showed a deterioration as a consequence of CMO and/or retinal degeneration. Girard *et al.*[15] undertook PPV and lensectomy by ultrasonic fragmentation in 23 eyes with chronic uveitis complicated by cataract formation and vitreous opacification; 21 of 23 (91%) of these cases showed an improvement in vision with no operative complications. Petrilli *et al.*[16] and Bovey *et al.*[18] also reported excellent results following combined PPV and lensectomy on patients with various forms of uveitis. Finally, there have been specific forms of chronic uveitis in which vitrectomy has been found to be of benefit; these include intermediate uveitis,[17,20] presumed toxocariasis,[9] toxoplasmosis,[11] ankylosing spondylitis[13] and sympathetic uveitis.[21] Ours is the first large series documenting the results of PPV in patients with FHU.

Operative complications reported after vitrectomy for uveitis include retinal detachment,[10,14] ocular hypotony,[15] choroidal ischaemia[10] and vitreous haemorrhage.[14,17] No such problems arose in this series. Furthermore, in various types of chronic uveitis treated by vitrectomy (with or without combined cataract surgery) CMO has limited the improvement in visual acuity despite a clear visual axis.[10,12,15,16,20] However, in our experience, CMO rarely, if ever, occurs in FHU (even post-operatively).

Some authors[19,20] have postulated that vitrectomy performed for intermediate uveitis may influence the clinical course of this condition by reducing the severity and frequency of recurrent inflammation. This has been attributed to a reduction in the antigenic load.[19,20] Certainly, our surgery did not appear to exacerbate the existing uveitis in any of our patients, who were all treated with subconjunctival and topical steroids following PPV.

One patient had a small hyphaema on the first post-operative day. No intraocular haemorrhage had been observed at the time of surgery. The occurrence of a hyphaema following paracentesis in patients with FHU

was first described by Amsler[22] and is often seen during cataract surgery. The bleeding is thought to arise from abnormal iris and iridocorneal angle vessels and, in view of this, care should be taken during surgery to avoid hypotony.

One phakic patient subsequently went on to develop a posterior subcapsular cataract typical of those that form in patients with FHU. This is unlike the central nuclear cataract which characteristically occurs after vitrectomy in phakic patients over 50 years of age.[23] Patients with FHU are known to develop cataract as part of the disease process, so consideration should be given to combining vitrectomy with cataract surgery in those patients who show evidence of lens opacification pre-operatively.[24]

References

1. Fuchs E. Ueber Komplicationen der Heterochromie. Z Augenheilkd 1906;15:165–76.
2. Franceschetti A. Heterochromic cyclitis (Fuchs' syndrome). Am J Ophthalmol 1955;39:50–8.
3. Kimura SJ, Hogan MJ, Thygeson P. Fuchs' syndrome of heterochromic cyclitis. Arch Ophthalmol 1955;54:179–86.
4. Liesegang TJ. Clinical features and prognosis in Fuchs' uveitis syndrome. Arch Ophthalmol 1982;100:1622–6.
5. Schwab IR. Fuchs' heterochromic iridocyclitis. Int Ophthalmol Clin 1990;4:252–6.
6. Jones NP. Fuchs' heterochromic uveitis: a reappraisal of the clinical spectrum. Eye 1991;5:649–61.
7. La Hey E, Baarsma GS, De Vries J, Kijlstra A. Clinical analysis of Fuchs' heterochromic cyclitis. Doc Ophthalmol 1991;78:3–4.
8. Fearnley IR, Rosenthal AR. Fuchs' heterochromic iridocyclitis revisited. Acta Ophthalmol Scand 1995;73:166–70.
9. Treister G, Machemer R. Results of vitrectomy for rare and proliferative haemorrhagic diseases. Am J Ophthalmol 1977;84:394–412.
10. Diamond JG, Kaplan HJ. Lensectomy and vitrectomy for complicated cataract secondary to uveitis. Arch Ophthalmol 1978;96:1798–804.
11. Fitzgerald CR. Pars plana vitrectomy for vitreous opacity secondary to presumed toxoplasmosis. Arch Ophthalmol 1980;98:321–3.
12. Algvere P, Alanko H, Dickhoff K, Lahde Y, Saari KM. Pars plana vitrectomy in the management of intraocular inflammation. Acta Ophthalmol 1981;59:727–36.
13. Belmont JB, Michelson MD. Vitrectomy in uveitis associated with ankylosing spondylitis. Am J Ophthalmol 1982;94;300–4.
14. Nolthenius PA, Deutman AF. Surgical treatment of the complications of chronic uveitis. Ophthalmologica 1983;186:11–6.
15. Girard LJ, Rodriguez J, Mailman ML, Romano TJ. Cataract and uveitis management by pars plana lensectomy and vitrectomy by ultrasonic fragmentation. Retina 1985;5:107–14.
16. Petrilli A, Belfort R Jr, Abreu MT, Lime LA, Amaral MG, Bonomo PP. Ultrasonic fragmentation of cataract in uveitis. Retina 1986;6:61–5.
17. Mieler WF, Will BR, Lewis H, Aaberg TM. Vitrectomy in the management of peripheral uveitis. Ophthalmology 1988;95:859–64.
18. Bovey EH, Gonvers M, Herbort CP. Pars plana vitrectomy in uveitis. Klin Monatsbl Augenheilkd 1992;200:464–7.
19. Heiligenhaus A, Bornfeld N, Foerster MH, Wessing A. Long term results of pars plana vitrectomy in the management of complicated uveitis. Br J Ophthalmol 1994;78:549–54.
20. Schonfeld C-L, Weibschadel S, Heidenkummer HP, Kampik A. Vitreoretinal surgery in intermediate uveitis. Ger J Ophthalmol 1995;4:37–52.
21. Reynard M, Minckler DS. Cataract extraction in sympathising eyes. Arch Ophthalmol 1983;101:1701–3.
22. Amsler M. New clinical aspects of the vegetative eye. Trans Ophthalmol Soc UK 1948;68:45–74.
23. Novak MA, Rice TA, Michels RG, Amer C. The crystalline lens after vitrectomy for diabetic retinopathy. Ophthalmology 1986;93:602–10.
24. Soheilian M, Karimian F, Javadi MA, Sajjadi H, Ahmeadieh H, Azarmina M, *et al*. Surgical management of cataract and posterior chamber intraocular lens implantation in Fuchs' heterochromic iridocyclitis. Int Ophthalmol 1997;21:137–41.