

# Surgical Treatment of Uveitis

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## ABSTRACT

*The results obtained by pars plana vitrectomy in 24 eyes with chronic uveitis, including endogenous intermediate and other types of uveitis, were retrospectively analyzed. Vitrectomy and lensectomy were performed in 8, and vitrectomy alone in 16 eyes. The mean follow-up period was 50 months, and mean patient age 38 years. There were 15 (71.4%) male and 6 (28.6%) female patients. Improvement of visual acuity was achieved in 79% (19), and visual acuity of  $\geq 0.1$  in 58% of eyes. Visual acuity of  $< 0.2$ , recorded in 14 eyes, was due to optic disc atrophy in 4, cystoid macular edema in 3, macular pucker in 2, vascular obliteration in 2, and chorioretinal scars in 3 eyes. Postoperative complications included cataract in 4, vitreous hemorrhage in 2, glaucoma in 1, and retinal detachment in 3 eyes. Vitrectomy considerably reduced the severity of inflammatory reaction, and allowed reduction or discontinuation of local and systemic steroid therapy.*

## Introduction

Vitreoretinal surgery is a prominent and, we are inclined to believe, indispensable procedure in the management of complicated, chronic uveitis, including endogenous intermediate and other types of uveitis. Removal of fibrin, cellular and hemorrhagic opacities from the vitreous body improves visual function in a large proportion of patients operated on<sup>1-4</sup>. The sample obtained during vitrectomy can then be analyzed for the presence of bacteria, antibodies or malignant cells. Many cases of severe complications of uveitis can now be successfully treated by sophisticated methods of vitreoretinal sur-

gery. The more so, progression of the disease has been observed to be significantly slowed down by surgery in more than 70% of eyes, especially in cases of noninfective chronic uveitis<sup>5-7</sup>. The development of cystoid macular edema is considerably reduced after vitrectomy, contributing greatly to the preservation of visual function. Endogenous uveitis may have a variable clinical course, from very slow to uncontrolable development of the disease with numerous exacerbations and remissions that may lead to blindness<sup>8</sup>. Typical complications of this disease include synechiae, cataract, secondary glaucoma, vitreous opacities and hemorrhage, cystoid macular edema, pro-

liferations with traction detachment, and chronic hypotonia with possible phthisis.

Classic medicamentous treatment for uveitis consists of a combination of non-steroidal anti-inflammatory drugs and corticosteroids, especially in a case of severe inflammatory reaction. Immunosuppressive drugs should be used with great caution and in strictly selected cases, because of the possible adverse side effects. Surgical treatment of chronic uveitis by lensectomy and pars plana vitrectomy for opacified vitreous marked the beginning of modern surgical management of the disease<sup>9</sup>. Experimental studies have shown that vitreous body is in relation with the activation of secondary immune response<sup>10,11</sup>, thus the removal of the vitreous may have a very beneficial effect on the clinical course of the disease.

Results of surgical treatment of complicated cases of uveitis were analyzed in this retrospective study.

### Material and Methods

Data of 21 patients with chronic, complicated uveitis, i.e. 24 eyes submitted to pars plana vitrectomy from January 1988 till March 1994, were analyzed (Table 1).

All patients had been previously treated with steroidal and nonsteroidal anti-inflammatory drugs, and with chemotherapy when necessary. Multiple exacerbations of the disease and weaker responses to medicamentous therapy were recorded in majority of patients (Table 2).

**TABLE 1**  
ETIOLOGY OF UVEITIS

Diagnosis	No. of eyes
Juvenile rheumatoid arthritis	3
Vasculitis	4
Behcet's disease	1
Intermediate uveitis	16
Total	24

The main reasons for surgical treatment included impaired visual acuity due to inflammatory infiltration, presence of vitreous debris and vitreous opacity. In cases with complicated cataract or retinal detachment, lensectomy and cerclage, i.e. scleral buckling with vitrectomy, were carried out. Most of our patients were referred from other ophthalmologic centers, where thorough clinical and laboratory examinations had been performed. Ultrasonography was used in patients in whom fundus visualization was impossible due to vitreous opacities.

The clinical course of the disease, i.e. pre- and postoperative inflammatory activity, and pre- and postoperative occurrence of acute disease exacerbations were observed. Clinical and laboratory examinations showed uveitis associated with juvenile rheumatoid arthritis in 3, vasculitis in 4, Behcet's disease in 1, and endogenous intermediate uveitis in 16 eyes. The follow-up period ranged from 6 to 84 months (mean 50 months) and patients' age from 5 to 69 years (mean 38 years). There were 15 (71.4%) males and six (28.6%) females.

Pars plana vitrectomy was carried out using the standard surgical procedure through three sclerotomies 4 mm from the limbus. Vitrectomy with lensectomy was performed in 8 eyes, with careful removal of all lens material with the capsule. Pars plana vitrectomy with preservation of the transparent lens was done in 16 eyes. During the procedure, efforts were made to remove the entire vitreous. Due attention was paid to vitrectomy of the vitreous base and possible ciliary body membranes, which was achieved by scleral indentation of the area.

Surgical therapy for vitreous hemorrhage with posterior vitreous detachment was performed in 9, and membranectomy in 12 eyes. Operation for macular pucker and traction retinal detachment were performed in 6 eyes each. Internal tam-

**TABLE 2**  
PREOPERATIVE LOCAL AND SYSTEMIC TREATMENT OF UVEITIS

	Juvenile rheumatoid arthritis	Vasculitis	Diagnosis Behcet's disease	Intermediate uveitis
No. of eyes	3	4	1	16
Local therapy	3	4	1	16
Steroidal therapy	2	0	1	5
Nonsteroid drugs	2	1	0	8
Chemotherapy	1	3	1	0

**TABLE 3**  
POSTOPERATIVE LOCAL AND SYSTEMIC TREATMENT OF UVEITIS

	Juvenile rheumatoid arthritis	Vasculitis	Diagnosis Behcet's disease	Intermediate uveitis
No. of eyes	3	4	1	16
Local therapy	2	3	1	12
Steroidal therapy	1	0	1	0
Nonsteroid drugs	0	0	0	7
Chemotherapy	0	2	1	0

ponades with silicone oil and gas (air) injection were carried out in 2 eyes each. Endolaser photocoagulation was used in 8 eyes with neovascular alterations, whereas cryocoagulation was performed in 4 eyes. During the postoperative period, corticosteroids were locally and parabolically applied, with administration of anti-inflammatory drugs and chemotherapeutics when necessary.

## Results

During the study period, vitrectomy was carried out in 24 eyes with chronic, complicated uveitis. All patients had previously received medicamentous therapy with steroidal and nonsteroidal anti-inflammatory drugs, and possibly chemotherapy. However, surgical therapy was indicated for frequent exacerbations of the disease and impairment of visual acuity. In some patients, medicamentous therapy had to be continued during the postoperative period (Table 3).

Pars plana vitrectomy with lensectomy was performed in 8, and vitrectomy alone in 16 eyes. Vitreous hemorrhage and debris were operatively treated in 9, and membranes and neovascularization in 12 eyes. Operative treatment for traction retinal detachment and macular pucker was performed in 6 eyes each. Local application of steroids led to the development of cataract and glaucoma in 2 eyes. Intraoperative vitreal hemorrhage and iatrogenic ruptures were observed in 4 and 3 eyes, respectively. During the postoperative course, secondary cataract developed in 4, vitreous hemorrhage in 2, glaucoma in one and retinal detachment in 3 eyes. Preoperative visual acuity in our patients ranged from light perception and hand movement to 0.2.

The results obtained were very satisfactory. Visual acuity was improved in 19 (79%), unchanged in two, and deteriorated in three patients. Visual acuity of  $\geq 0.1$  was achieved in 58% of eyes. Poorer visual acuity was recorded in one patient

**TABLE 4**  
PRE- AND POSTOPERATIVE VISUAL ACUITY IN 24 OPERATED EYES

Preoperative visual acuity	No. of eyes	Postoperative visual acuity	No. of eyes
Light perception (LP)	5	LP	1
		0.01	1
		0.1	1
		0.2	1
		0.4	1
Hand movement in front of the eye (HM)	12	LP	1
		HM	1
		0.01	3
		0.1	3
		0.2	2
		0.4	1
		0.7	1
Visual acuity 0.01	3	HM	1
		0.1	1
		0.3	1
Visual acuity 0.1	2	0.03	1
		0.6	1
Visual acuity 0.2	2	0.7	1
		1.0	1

with Bahcet's disease and in two patients with vasculitis. Patients with endogenous intermediate uveitis had best visual prognosis, whereas of those with severe preoperative inflammatory reaction the results were by far less satisfactory.

Visual acuity of <0.2, recorded in 14 eyes, was caused by optic disk atrophy in 4, cystoid macular edema in 3, macular pucker in 2, vascular obliteration in 2, and chorioretinal scars in 3 eyes (Table 4).

### Discussion

Uveitis presents a very complex problem from the diagnostic and therapeutic point of view, the more so as the disease etiology is unknown in more than 50% of cases. This retrospective study of vitrec-

tomy in treatment of uveitis complications showed that this procedure can be of great help for visual function recovery and preservation. Total vitrectomy was found to evidently reduce the autoimmune process, and decrease the rate and severity of inflammatory recurrences. The development of cataract is a common phenomenon in chronic uveitis, thus surgical therapy by pars plana vitrectomy is considered a treatment of choice, allowing the removal of the entire lens mass, decreasing the possible development of synechiae and cleansing the optic zone<sup>12</sup>. In cases of cataract occurring as a postvitrectomy complication, implantation of a polymethyl methacrylate (PMMA) lens into the posterior chamber was performed<sup>13</sup>. In this study, there was no severe

postoperative inflammatory reaction, reported elsewhere<sup>14</sup>. A mild reaction during the first few postoperative days and one case of bulbar hypotonia<sup>15</sup> were observed.

Analysis of the study material showed neovascularizations, cystoid macular edema and severe inflammatory reaction to compromise the result of surgical procedure<sup>16</sup>. This refers to vascular proliferations in particular; therefore, laser photocoagulation or cryotherapy was used in such cases<sup>4</sup>. Removal of epiretinal membranes and macular pucker gave very good results, thus relieving retinal tractions. Cystoid macular edema was observed in 5 (21%) eyes. Vitrectomy proved to be very useful, because the regression of edema was recorded few months postoperatively.

In conclusion, vitrectomy proved to be a highly successful method in treatment of chronic uveitis with its complications, such as vitreous hemorrhage and opacity, cataract, neovascularizations and ciliary membranes, traction retinal detachment and hypotonia. Vitrectomy was found to diminish the inflammatory response and the severity of the autoimmune process, to relieve the optic zone, and to lead to the reduction or discontinuation of immunosuppressive and steroidal therapy. This was confirmed by the results achieved in our series of patients. Visual function improvement was achieved in 79% of cases, which proved the importance of vitrectomy as a method of surgical treatment in cases of complicated chronic uveitis.

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## **KIRURŠKO LIJEČENJE UVEITISA**

### **S A Ž E T A K**

Autori prikazuju rezultate pars plana vitrektomije u retrospektivnoj studiji na 24 oka s kroničnim uveitisom, uključujući intermedijalni endogeni kao i druge vrste uveitisa. Vitrektomija je učinjena na 16, a vitrektomija i lensektomija na 8 očiju. Prosječno vrijeme praćenja bilo je 50 mjeseci, a prosječna dob bolesnika 38 godina. Poboljšana vidna oštrina postignuta je u gotovo 80% bolesnika, dok je u 20% zadržana ista ili je bila pogoršana. Uzrok tome bile su atrofija vidnog živca u 4, cistoidni makularni edem u 3, makularni paker u 2, vaskularna obliteracija u 2 i korioretinalni ožiljci u 3 oka. Vitrektomija se pokazala kao vrlo uspješna metoda u kirurškom liječenju kroničnog uveitisa i njegovih komplikacija jer smanjuje intenzitet upalne reakcije kao i njeno pojavljivanje. Također, vitrektomijom se smanjuje i lokalna i sistemska upotreba steroida.