

# Role of Vitrectomy in the Management of Eales' Disease

Asfandyar Asghar, Javed Hassan Niazi

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See end of article for  
authors affiliations

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Correspondence to:  
Asfandyar Asghar  
Senior Registrar  
Isra Postgraduate Institute of  
Ophthalmology,  
Al-Ibrahim Eye Hospital, Malir,  
Karachi

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**Purpose:** To study the visual outcome and complications after pars plana vitrectomy in Eales' disease.

**Patients and Methods:** Patients were admitted from the outpatients department at Jinnah Postgraduate Medical Centre, Karachi, from November 2001 up to May 2002. Patients were diagnosed as Eales' disease after all causes of ocular and systemic vasculitis had been ruled out on the basis of history, clinical examination and laboratory investigations. Patients with non-resolving vitreous hemorrhage, recurrent vitreous hemorrhage, fresh vitreous hemorrhage in only eye patients, combined tractional and rhegmatogenous retinal detachment were included in the study. Patients with past history of trauma to the eye, ocular surgery, corneal opacity, rubeosis iridis, glaucoma were excluded from the study.

**Result:** 10 eyes of patients were included. Mean age of presentation was 27.75 years. Male to female ratio were 4:1. Most common presentations were non-resolving vitreous hemorrhage in 7 eyes (70%), combined tractional and rhegmatogenous retinal detachment in 2 eyes (20%) and tractional retinal detachment in 1 eye (10%). Pre-operative visual acuity in all patients was perception of light to counting finger. 90% of eyes regained good visual acuity after pars plana vitrectomy i.e. 0.2 (6/30) or better, after follow up period of 6 months. Per-operative complications included active bleeding in 3/10 cases and sub-retinal seepage of perflurocarbon liquid in 1/5 cases. Post-operative complications included cataract in 2/7 cases, secondary glaucoma in 2/7 cases, rhegmatogenous retinal detachment in 2/10, emulsifications of silicone oil in 3/7 cases and pre-retinal membrane formation in 1/7 cases.

**Conclusion:** In Eales' Disease, uncomplicated pars plana vitrectomy has shown improvement of visual acuity in majority of patients.

In 1880 Henry Eales' noted abnormal retinal vein in a healthy young man with recurrent vitreous hemorrhage<sup>1</sup>. Henry Eales believed that epistaxis was associated with the retinal hemorrhages and that constipation and elevated venous pressure were underlying cause of this condition. In the century date as followed, he has been honored with the eponym for

the disease. However, it remains a diagnosis by exclusion, and retinal diseases with other causes of inflammation or neovascularization must be excluded<sup>2</sup>.

Eales disease is an idiopathic obliterative vasculopathy that primarily affects the peripheral

retina<sup>3</sup>. Eales' disease is distributed world wide though it is more common in South East Asian sub-continent<sup>4</sup>.

Henry Eales' treated his patients with mixture of laxative, digitalis and belladonna. Other medications included vitamin C, thyroid extract, osteogenic hormones and endogenic hormones. Systemic steroid therapy in massive doses has also been used. None of these treatments has demonstrated a clear cut benefit<sup>2</sup>.

Since Eales' disease is basically a retinopathy of peripheral fundus and severe visual loss usually results from complications of neovascularization such as persistent vitreous hemorrhage, retinal detachment and anterior segment neovascularization with secondary glaucoma. Vitrectomy techniques often can be employed for removing persistent vitreous hemorrhage and scar tissue. In this study we evaluated visual out come and complications of pare plana vitrectomy.

## PATIENTS AND METHODS

A descriptive study was conducted at the department of the Ophthalmology Jinnah Postgraduate Medical Center Karachi from November 2001 to May 2002.

Patients were diagnosed as Eales' disease after all causes of ocular and systemic vasculitis had been ruled out on the basis of history, clinical examination and laboratory investigations. Patients were divided into two groups. First groups included those patients who were treated with systemic steroids and the vitreous hemorrhage cleared. These patients were subsequently subjected to photocoagulation and or fundus fluorescein angiography (FFA) followed by photo coagulation. They were followed for any recurrence of vitreous hemorrhage. All those patients who had vitreous hemorrhage in one eye and the fellow eye showed sign of perivasculitis and ischemic areas on FFA were lasered in the follow eye. Light panretinal photocoagulation was done using 1200-1500 burns. Second group included those patients with non resolving vitreous hemorrhage, recurrent vitreous hemorrhage, fresh vitreous hemorrhage in only eye patients, tractional retinal detachment and combined retinal detachment were included in the study. Patients with past history of ocular trauma, ocular surgery, corneal opacity, rubeosis iridis and glaucoma were excluded from the study.

All 10 eyes underwent 3 port pars plana vitrectomy to remove non resolving vitreous

hemorrhage, but some eyes needed secondary surgical intervention to flatten the retina.

The written consents were taken from all patients before pars plana vitrectomy. Questionnaire and check files were created in SPSS for data entry.

## RESULTS

10 eyes of 10 patients were included in the study. Mean age of presentation was 27.75 years. There were 8 males (80%) and 2 females (20%) patients. The most common presentations was non resolving vitreous hemorrhage 7 eyes (70%), combined tractional and rhegmatogenous retinal detachment in 2 eyes (20%) and tractional retinal detachment in 1 eye (10%). Five eyes (50%) needed pars plana vitrectomy as primary procedure to remove the non resolving vitreous hemorrhage while the other 5 eyes (50%) needed secondary surgical intervention to flatten the retina. Surgical complications during and after the surgery were noted and are shown in (Table 1,2).

After removing the vitreous hemorrhage, tractional retinal bands were seen in 2 eyes (20%), active bleeding occurred in 3 eyes (30%) and an operculated tear was localized in 1 eye (10%). Internal tamponade, long and short term was used and shown in (Table 3). In eyes where perfluorocarbon liquid was used to flatten the retina perfluoro-silicone oil exchange was performed in 5 eyes (50%), fluid silicone oil exchanged were perform in 2 eyes (20%). Scleral buckling as well as internal tamponade techniques were used in eyes with combined tractional and rhegmatogenous retinal detachment or with tractional retinal detachment.

Pre operative visual acuity is shown in (Table 4). Statistically results were significant as compare to pre operative visual acuity of the patient with post operative visual acuity, as shown in (Table 5).

## DISCUSSION

Annual incidence of Eales' disease in India is about 1 in 200-250<sup>4</sup>, but no statistics are available in our country. Gieser and Murphy<sup>5</sup> reported average age of onset as 20 to 30 years and usually occurs bilaterally. In our study mean age of presentation is 27.75 years. Howard<sup>10</sup> reported higher incidence of Ealse' disease in males (80% - 90%) as compared to females<sup>8</sup>. In our study males to females ratio were 4:1.

Vitreous hemorrhage was the most frequent indication for vitrectomy in Eales' disease patients in our study (70%). The same indication was mentioned

by Shanmugam<sup>8</sup> (87.5%) Combined tractional and rhegmatogenous retinal detachment was the indication of vitrectomy in 20% patients in our study while 4.7% was indicated by Shanmugam<sup>8</sup> in his study. Tractional retinal detachment was the indication of vitrectomy in 10% of cases in our study as compared to 3.1% indicated by Shanmugam<sup>8</sup> in his study. The high percentage of tractional retinal detachment and combined tractional and rhegmatogenous retinal detachment might be due to late presentation of our patients.

In our study, most of the eyes regained good visual acuity after vitrectomy i.e. 0.2 (6/30) or better after follow up period of 6 months (90%). Shanmugam<sup>8</sup> had mentioned visual improvement in 71.8% of the eyes after vitrectomy with the follow up period of 60 months. The better results in our study may be due to availability of endocautery, endolaser photocoagulation, and smaller number of patients. Hence we can expect better visual results in eyes with vitreous hemorrhage in Eales' disease, where patients have reported earlier and there has timely interventions which have undergo uncomplicated vitrectomy.

**Table 1:** Complications (Per-operative)

Complications	No of eyes n (%)
Active bleeding	3/10(30)
Sub retinal Perfluorocarbon Liquid	1/5 (20)

**Table 2:** Complications (Postoperative)

Complications	No of eyes n (%)
Cataract	2/7 (28.6)
Secondary Glaucoma	2/7 (28.6)
Rhegmatogenous detachment	2/10 (20)
Emulsification of silicone oil	3/7 (42.9)
Pre retinal membrane formation	1/7 (14.3)

**Table 3:** Internal Tamponade

Tamponade	No of eyes n (%)
Silicone Oil	7/10 (70)

Perfluorocarbon Liquid	5/10 (50)
No Tamponade	3/10 (30)

In the majority of the patients we had performed endolaser photocoagulation per-operatively. Three (30%) out of 10 eyes developed active bleeding which was managed initially by raising the height of bottle followed by applying endocautery to the bleeding site. Gadkari<sup>9</sup> had mentioned 14 eyes (56%) out of 25 eyes in which active bleeding occurred.

One (20%) out of 5 eyes, in which perfluorocarbon liquid (PFCL) was used, the PFCL incidentally went in sub retinal space. In this case we removed the subretinal perfluorocarbon liquid with the help of extrusion needle by doing retinotomy followed by endo laser photocoagulation. De Queiroz et al<sup>11</sup> noticed subretinal seepage of perfluorocarbon liquid in 0.9% of cases.

**Table 4:** Pre-operative visual acuity

Visual Acuity	No of eyes n (%)
PL	1 (10)
HM	5 (50)
CF	4 (40)

PL= Perception of light; HM= Hand movement; CF= Counting fingers

**Table 5:** Peroperative/postoperative visual status cross tabulation

Visual Acuity	Preoperative	Postoperative			
		.00	.2	.6	1.0
CF	4		4		
HM	5	1			4
PL	1			1	
Total	10	1	4	1	4

CF= Counting fingers; PL = Perception of light; HM= Hand movement; 00= No improvement; 0.2 = 6/30; 0.6= 6/9; 1.00= 6/6

Rhegmatogenous retinal detachment occurred in 2 eyes (20%) out of 10 eyes. In one eye retina was successfully re-attached with help of perfluorocarbon liquid and perfluorocarbon liquid / silicone oil exchange. In addition to the above mentioned measures external tamponade was also used. In the other eye, retina failed to reattach due to proliferative vitreoretinopathy (PVR). Gadkari<sup>9</sup> had mentioned in his study 1 eye (4%) out of 25 eyes and Shanmugam<sup>8</sup> mentioned 9 eyes (14.06) in his study in which rhegmatogenous retinal detachment occurred.

During 6 months follow up, 2 eyes (20%) out of 10 eyes developed secondary raised intraocular pressure due to silicone oil use. In both eyes, intraocular pressure was controlled with anti glaucoma treatment and subsequently silicone oil was removed. Intraocular pressure was controlled after removing silicone oil in one eye, but second eye had to undergo trabeculectomy to control intraocular pressure in 6 months follow up period. Casswell<sup>12</sup> reported 19 eyes with uncontrollable glaucoma.

Cataract occurred in 2 eyes (28.57%) out of 7 eyes in which silicone oil was used. Both eyes had a clear lens preoperatively. One eye developed cataract, while silicone oil was in the eye and the other developed cataract 1 month after removal of silicone oil. Phaco emulsification was performed to remove both cataracts, followed by intraocular lens implantation. Caswell<sup>12</sup> reported 32 eyes, in which 11 had clear lens at the time of silicone oil removal, but 6 eyes later developed cataract. Twenty eyes already had lens opacities at the time of silicone oil removal.

Emulsification of silicone oil occurred in 3 eyes (42.85%) out of 7 eyes. This was managed by removal of silicone oil. Federman<sup>13</sup> has mentioned that within a period of 1 year the intraocular silicone oil showed some degree of emulsification in 150 eyes out of 170 patients. Epiretinal fibrous proliferation occurred in 1 eye (14.28%) out of 7 eyes. Federman<sup>13</sup> mentioned in his study 15% cases with epiretinal fibrous proliferation.

## CONCLUSION

In Eales' disease, uncomplicated pars plana vitrectomy has shown to improve visual acuity in majority of patient with non resolving vitreous hemorrhage, recurrent vitreous hemorrhage and complicated

retinal detachment. Better visual results can be achieved with vitrectomy by a well trained vitreo retinal team as well as better equipped vitreo retinal setup.

Prognosis of patient suffering from non resolving vitreous hemorrhage or recurrent vitreous hemorrhage and complicated retinal detachment, who undergo uncomplicated vitrectomy is good provided these patient present at an early stage of the disease.

## Author's affiliation

Dr. Asfandyar Asghar  
Senior Registrar  
Isra Postgraduate Institute of Ophthalmology  
Al-Ibrahim Eye Hospital, Malir  
Karachi

Dr. Javed Hassan Niazi  
Isra Postgraduate Institute of Ophthalmology  
Al-Ibrahim Eye Hospital, Malir  
Karachi

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