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MULTIVARIATE ANALYSIS OF FACTORS AFFECTING THE MANAGEMENT OUTCOME IN RHEGMATOGENOUS RETINAL DETACHMENT

Ophthalmology

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ABSTRACT

Aim: To study the etiology of rhegmatogenous retinal detachment ,type and location of break and visual outcome after retinal detachment surgery inlieu with duration of detachment. **Materials and Methods:** Prospective study conducted at the tertiary eye care hospital over a period of two years. Eighty eyes of 80 patients were included after fulfilling the inclusion criteria. Complete ocular examination of each patient such as visual acuity for distant vision (checked with Snellen's acuity chart),slit lamp examination, fundus examination with binocular indirect ophthalmoscopy. In addition the following were noted: extent of the detachment present, position and number of breaks, status of the macula, presence of PVR, mobility of retina and presence of any peripheral retinal degenerations.**Results:** Risk factors for retinal detachment included myopia in 13eyes (16.25%), prior cataract surgery in 35 eyes (43.75%), peripheral retinal degeneration in 11 eyes (13.75%) and trauma 11 (13.5%). Sixty four eyes (80%) presented with macula off while 16 eyes (20%) presented with macula partly or completely attached. Visual acuity at presentation was <1/60 in 63(78.75 %) eyes. Following surgery, retina was attached in 73eyes (91%) and remained detached in 7eyes (9). Visual acuity after surgery was more than 6/60 in 44 eyes remained the same in 26 eyes (32.5%) and worsened in 10eye (12.5%). **Conclusion:** Prior cataract surgery, myopia.lattice degeneration and trauma are important risk factors for Rhegmatogenous Retinal Detachment. Majority of patients in this setting presented late with Rhegmatogenous Retinal Detachment and this was responsible for relatively poor visual outcomes despite good anatomical results after surgery. Proper screening of eyes at risk and education of patients is important for preventing visual loss due to retinal detachment.

KEYWORDS

Retinal Detachment, Lattice Degeneration,myopia ,proliferative Vitreo Retinopathy,scleral Buckling.

INTRODUCTION

The retina is the inner most light sensitive nervous layer of eye, Rhegmatogenous retinal detachment(RRD) is a condition in which fluid from vitreous cavity passes through a retinal break in to the sub retinal space causing separation of the neurosensory retina from the underlying retinal pigmented epithelium.

The main predisposing factors of rhegmatogenous retinal detachments are myopia,[3,22]previous cataract surgery [1,7,8],lattice degeneration[5]and trauma[9].

Approximately half of all primary rhegmatogenous retinal detachments occur in patients with a history of cataract surgery.[4]. Following cataract surgery, studies have shown the incidence of RRD to greatest in first postoperative year, with an overall incidence of 1.79/at 20 years[1]. cataract surgery increases the risk of RRD at least four fold in 5 years [48]. Incidence of RRD after ND YAG laser capsulotomy for posterior capsular opacification has been found to be 1.9% world wide [11].

Myopic eyes with long axial length have higher shearing forces on retina with saccadic eye movements which predispose to retinal break[13]. This risk increases with higher degrees of myopia. Studies have shown PVD occurs early, lattice degeneration is more common, and retina is thinner in myopic patients, making breaks and RRD more frequent and bilateral [21,22].

Blunt trauma has been implicated as a cause of 15% of all retinal detachments with most occurring in young individuals, there is often a latent period between the time of trauma and development of retinal RRD.Most common type of break is retinal dialysis at the anterior border of vitreous base,[10,16].

Management includes scleral buckling [14] pars plana vitrectomy (PPV) [10,12], pneumatic retinopexy [15] Scleral bucking is done if the break is single,anterior,less than grade 2 PVR and clear media.PPV is done if multiple breaks,posterior breaks,more than gadre 2 PVR and hazy media.Pneumatic retinopexy is done for superior break less than one clock hour.

AIM OF THE STUDY

1. To find the etiological factors leading to Rhegmatogenous Retinal Detachment.
2. To study the location and type of break in relation to risk factor
3. To access the outcome of treatment in lieu with the duration, risk factors and extent of Retinal Detachment.

MATERIALS AND METHOD

A prospective study was conducted with 80 eyes of 80 patients with regmatogenous retinal detachment who were primarily managed with scleral buckling procedure using silicon implants.

INCLUSION CRITERIA

1. Patients with Rhegmatogenous Retinal Detachment reporting to the hospital for the first time.

EXCLUSION CRITERIA

1. Patients operated before the specified period and coming for review
2. Patients with posterior breaks and more than grade 2 PVR.
3. Patients with re-detachment
4. Patients with co-morbid conditions like vitreous hemorrhage, choroidal detachment, IOFB, Optic nerve avulsion were excluded.

PRODEDURE

All patients were screened in the out-patient department for a brief history duration of complaints and anterior segment examination. Details regarding any history of trauma, cataract surgery, and refractive status of the eye were noted.

Evaluation of the visual status, dilatation and retinoscopy was routinely done. The patient underwent detailed ophthalmic and systemic evaluation, Pupils were dilated with cycloplegic. Anterior segment examination with a slit lamp biomicroscope .

Posterior segment examination using a binocular indirect ophthalmoscope with scleral depression Detailed fundus drawings of both the eyes were done in all cases on standard fundus charts using the internationally accepted colour coding.

Patient's general health was assessed for fitness for surgery

Anaesthesia

In cases operated under local anaesthesia facial and retrobulbar block with xylocaine 2% was given. General anaesthesia was used in paediatiric cases. Pupils were dilated with mydriatics and cycloplegics.

Surgical procedure

Surgical procedure was uniform except for minor variation. 360° peritomy was done .Conjunctiva and tenons opened and relieving incisions made. Bridal sutures applied to all four recti taking care to preserve the muscle sheath. Localization and confirmation of all the retinal breaks was done by indirect ophthalmocopy, with sceleral depression-

Areas of tear marked on sclera using cautery.Cryopexy was done for all retinal breaks and degeneration. Silicon sponge (explant), anchored to the sclera using 4-0 ethibond . Buckle selected according to the size, site and type of retinal breaks. Sponges placed at appropriate sites for various circumferential, radial and encircling band. The location of the buckle checked with the indirect ophthalmoscope. SRF drainage done in the quadrant where maximum level of fluid was present.

Fundus was examined to see the position, height of the buckle, adequacy of drainage, and the state of retinal artery. Intraocular pressure was checked and the buckling mattress suture done. conjunctiva closed with 6-0 mersilk. Subconjunctival antibiotic injected at the end of the surgery.Fundus was examined with indirect ophthalmoscope to see for anatomical reposition.

Post operatively all patients had systemic antibiotic and anti inflammatory drugs for one week

REVIEW

Review patient asked for regular follow up every ten days for three visits, every month for three visits and every three months hence forth. At each visit the status of anterior segment, fundus visual acuity was checked and recorded in all the patients. The other eye is also considered high risk and periodically examined under full dilatatio

OBSERVATION

Eighty patients with Rhegmatogenous Retinal detachment were taken for the study.

Table-5: Preoperative Visual Acquity

Preoperative Visual Acquity	No. of Cases	Percentage %
6/6 – 6/18	2	2.5
6/24 – 6/60	7	7
5/60 – 2/60	8	23
less than 1/60	63	78%

Table-6: Duration of Complaints

Duration	No. of Cases	Percentage %
Less than 2 weeks	18	22.5
2 weeks — 1 month	20	25
1 month —2 months	15	18.75
3 months —6 months	15	18.75
More than 6 months	12	15

47% of cases presented within one month of onset of complaint

Table-8: Status of Macula

Status of Macula	No. of Cases	Percentage %
On	9	11.25%
Threatened	8	10%
Off	63	78.75%

Table-13: Etiological Risk Factors

Known risk factor	No. of Cases	Percentage %
Myopia	18	22.5
Lattice degeneration	11	13.5`
Trauma	10	12.5
Pseudo phakia	25	36,5
Aphakia	4	
No risk factor	12	13.5

In post cataract 8pts had yag capsulotomy, 5 were myopes and 8 had post capsule ruptre.

Table-14: YAG CAPSULOTOMY AND DURATION FROM CATARAT SURGERY

Duration	No. of Cases	Percentage %
0-3 months	4	50
3-6 months	3	37.5
6 months – 1 Year	1	12.5

Table-15: Location of break in relation to risk factor

Etiological Factor	ST	IT	SN	IN
Myopia	12	–6	1	–1
Lattice degeneration	8	3	–	–
Pseudophakia	12	3	5	5
Aphakia		–	2	2
Trauma		7	3	
Others	1	2	–	

Nasal breaks were common in aphakia (2)

Type of break in relation to risk factor

Etiological Factor	Round Hole	Horse shoe tear	Operculated tear	Irregular tear	GRT	Dialysis
Myopia	6	7	4	1	–	–
Lattice degeneration	9	1	1	–	–	–
Pseudophakia	6	15	2	2–	–	–
Aphakia	2	2		–	–	–
Trauma			–	6		4
Others	3	1	–	–	–	–

Table-18: Type of Surgery

Type of Surgery	No. of Cases	Percentage %
Cryo + encirclage	64	80
Cryo + radial buckle + encirclage	12	15
Cryo + segmental circumferential buckle	2	2.5
Cryo + radial buckle + segmental circumferential buckle	2	2.5
SRF Drainage	71	88.75

Table-19: Anatomical reposition

Anatomical reposition	No. of Cases	Percentage %
Attached	73	91
Detached	7	9

Anatomical reattachment of 91% was attained in our studies which compares with the study reported by Ranta et.al., 2002 who showed 90% reattachment

Table-21: Functional Outcome

Post Operative VA	No. of Cases	Percentage %
Better than or equal to 6/24	21	26.3
Better than or equal to 6/60	23	28.75
1/60-5/60	26	32.5
CFCF/HM	10	12.5

Table-22: Functional outcome in relation to the duration of RD

Post Operative VA	Duration				
	>2 Weeks	1 Month	2 Months	36 Months	6 Months – 2 Years
Better than or equal to 6/24	10	5	5	1	–
Better than or equal to 6/60	4	10	5	3	1
1/60-5/60	2	3	3	9	9
CFCF/HM	2	2	1	2	3

DISCUSSION

In our study, male patients were more and right eye was affected more.63 patients had visual acquity of less than 1/60.Post cataract surgery,[17,20]myopia,lattice degeneration[5] and trauma[16] were the major risk factors.

In our study,29 patients(38.5%) with RD had prior cataract surgeryHaimann[3]et al., reported up to 40 % of retinal detachment occurs in aphakic and pseudophakic eyes [20,7]. Olsen and Olson reported the incidence of retinal detachment is 2 to 5 % after intracapsular cataract extraction, 0 to 3.6 % after extracapsular cataract extraction, and 0.8 to 1.2 % after phacoemulsification.[21] our study, 38.5% of eyes

with RD had prior cataract surgery. Out of this 8 patients had yag capsulotomy[11],4 were apahkic[12].,7 patients were myope [13,22] and 5 ptatients had PCR[11]

In our study 18 patients were myopes[21],11 patients had lattice degeneration and 10 patients had history of blunt trauma.

Our sudy is in comparison with the studies of Ahuja et al[1] 1984, who showed round hole as the commonest break in the phakes followed by HST, Lattikainen[5] et al. 1985, who showed round hole as the commonest break in myopia[6], Byer et.al 1999, who showed atrophic holes to be commonest in lattice[24] Hudson et,al 1965 who showed dialysis to be common in trauma

Most of the cases had breaks in superotemporal quadrant, except for cases, with history of trauma that had more inferotemporal breaks which is in comparison with the study by Lefferstra et al[9]1950 in his series of 200 patients of trauma with retinal detachment which showed inferotemporal quadrant as the commonest site for the break. In our study, aphakics had a predominance for nasal breaks[2].

All patients underwent scleral buckling[14].Radical buckle was used in case of HSTs segment circumferential buckle for RD's with a quadrantic extent encirclage was done for all myopes, aphakics, pseudophakics and total RD.following surgery retina was attached in 73 patients(91%)

Out of the 21 patients with vision of more than 6/24 above, 10 patients i.e., 50% of cases presented within two weeks and the remaining 50% presented within 2 months. Patients who gained vision between 1/60 - 5/60, more than 70% presented after 3 months [7]. This compares well with the study by Ondrejkova et.al 2004[6] and Zhioura et.al 2002 who in their series reported that functional outcome depended on the duration of RD and extent of RD.

CONCLUSION

The study recommends the recognition of risk factors, proper patient education, periodic detailed examination and early detection as valuable tool to tackle rhegmatogenous retinal detachment and the importance of screening patient with known risk factors.

So much is stressed upon the early diagnosis of glaucoma and diabetic retinopathy. But this study clearly emphasizes the importance of duration of retinal detachment in successful treatment outcome. So increased awareness about the symptoms of this condition like flashes and floaters should be provided to the general public.

All patients who come for refraction should undergo a proper indirect ophthalmoscopic examination under full dilatation with special reference to myopes.

In modern cataract surgery refined techniques and instrumentation if meticulously used could greatly prevent the occurrence of posterior capsule rent. This can go a long way in preventing retinal detachment as a delayed complication in such cases. .

The benefit of YAG capsulotomy especially in the early post operative period in any case of posterior capsular opacification should be weighed against the risk it induces in the occurrence of retinal breaks. And if it has to be done it should be preferably done after six months post operative. Any patient with ocular trauma should undergo detailed indirect ophthalmoscopic examination and should be educated about the symptoms of retinal detachment and report immediately if such symptoms occur.

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