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Case Study

Management of Long-Standing Macula-Off Rhegmatogenous Retinal Detachment: A Case Report

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ABSTRACT

Background Rhegmatogenous retinal detachment (RRD) is an urgent vision-threatening ophthalmic emergency characterized by the separation of neurosensory retina from underlying retinal pigment epithelium secondary to a break in the retina. The disease, if not treated in a timely manner, can cause irreversible loss of vision especially when the macula is involved.Case Presentation: A 24-year-old woman presented with a two-week history of reduced vision in the right eye. There was no history of trauma, ocular surgery or systemic illness. Best-corrected visual acuity (BCVA) was 6/9 in the affected eye that did not improve on pinhole. Anterior segment examination was unremarkable. Fundus examination showed retinal detachment with a single retinal break associated with lattice degeneration. OCT of the macula showed marked retinal thickening with subretinal fluid, cystoid changes and loss of normal foveal contour denoting chronic macula-off rhegmatogenous retinal detachment.Management: The patient was offered surgical intervention with a combined approach of pars plana vitrectomy (PPV), scleral buckling (SB), endo laser photocoagulation and silicone oil tamponade. Follow-up post-op were planned to ensure retinal reattachment and recovery of vision with the removal of the silicone oil.Conclusion: Surgery in patients with RRD that has macular detachment is highly effective in achieving anatomic success and must be performed urgently and aggressively. However, the long-term visual prognosis remains poor in chronic cases secondary to irreversible photoreceptor damage. Improving visual outcomes depends on early diagnosis and appropriate referral.

INTRODUCTION

A rhegmatogenous retinal detachment (RRD) is a common type of retinal detachment, which is characterised by a hole or tear in the retina, causing the vitreous gel to get behind the retina. The vitreous gel then pushes the retina away from the back of the eye, leading to retinal detachment. It is

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a separation of the neurosensory retina from the underlying retinal pigment epithelium (RPE) with the accumulation of fluid in the spaces between these two layers.

There are three categories of RD

1. Rhegmatogenous [1]
2. Tractional [1]
3. Exudative [1]

Tractional detachments occur when proliferative membranes contract and elevate the retina. Components of rhegmatogenous and tractional etiologies may also lead to retina detachment (RD). Exudative detachments result from fluid accumulation beneath the sensory retina caused by retinal or choroidal diseases.[2]

For an RRD to occur, the following are needed:

- A full-thickness retinal break
- Liquified vitreous, with or without
- Traction over the break

RRD can occur over hours to months, depending on the location of the detachment. An inferior RRD due to an inferior atrophic retinal hole or inferior retinal dialysis in a young individual usually takes years to involve the fovea and become symptomatic. On the contrary, a superior horseshoe tear can cause rapid progression of superior RRD that involves the fovea early in an older patient with the posterior vitreous detachment (PVD) and liquefied vitreous.[3]

An RD can lead to severe vision loss; without surgical intervention, RD can be a permanently blinding condition.

Risk factors

- Lattice degeneration [4]
- Retinal breaks [5]
- Retinal holes or tears [6]
- Atrophic hole [5]
- Operculated hole [6]
- Horseshoe tears (HSTs) [4]
- Giant retinal tears (GRTs)
- Retinal dialysis [7]
- Retinal breaks following necrosis after trauma or infection (retinitis) [8][9]

Case presentation

Patient History

A 24-year-old female student came to the clinic with the chief complaint of decreased vision in the right eye (OD) for 2 weeks. The condition is progressive in nature. She had undergone evaluation elsewhere for her problem and was diagnosed with inferior rhegmatogenous retinal detachment OD. She does not have any history of trauma or injury to the eye.

Medical History:

The patient had no significant past medical history and was not under treatment for any systemic illness. She had no prior history of similar ocular problems.

Family and Allergy History

No significant family ocular history or known allergies.

Examination Findings

Visual Acuity Testing

PGP- NIL				
VISUAL ACUITY				
EYE	Distance Vision	With Pinhole	Near Vision	Cm
OD	6/9	No Improvement	N6	40 cm
OS	6/6(P)		N6	40 cm
AUTO REFRACTION				

EYE	SPHERE	CYLINDER	AXIS
OD	-0.50	-1.50	60
OS	+0.00	-1.25	90

SUBJECTIVE REFRACTION / ACCEPTANCE								
	DISTANCE				ADD	ACCEPTANCE		
EYE	Dsph	Dcyl	Axis	BCVA	Dsph	BCVA	Cm	Preference
OD	+0.00			6/9	+0.00	N6	40	NI with glasses
OS	+0.00	-0.50	90	6/6	+0.00	N6	40	Prefers new glass

Ocular Alignment: Orthophoria at distance and near

Ocular Motility: Full in both eyes

External Examination: Normal facial symmetry, head posture, and adnexa

Slit-Lamp and Anterior Segment Evaluation

EXAMINATION	OD	OS
Lid	Normal	Normal
Conjunctiva	Normal	Normal
Cornea	Clear	Clear
Anterior Chamber	Deep & Quite	Deep & Quite
Iris	Normal	Normal
Pupil	RRR	RRR
Lens	Clear	Clear
Intraocular Pressure (AT @10:14am)	12 mmHg	12 mmHg

Posterior Segment and Imaging

Dilated fundus examination revealed:

- Right Eye- Retinal detachment with a single break.
- Right Eye- Lattice degeneration.
- Right Eye- Long-standing RD+macula off.

OCT Macula report in BE

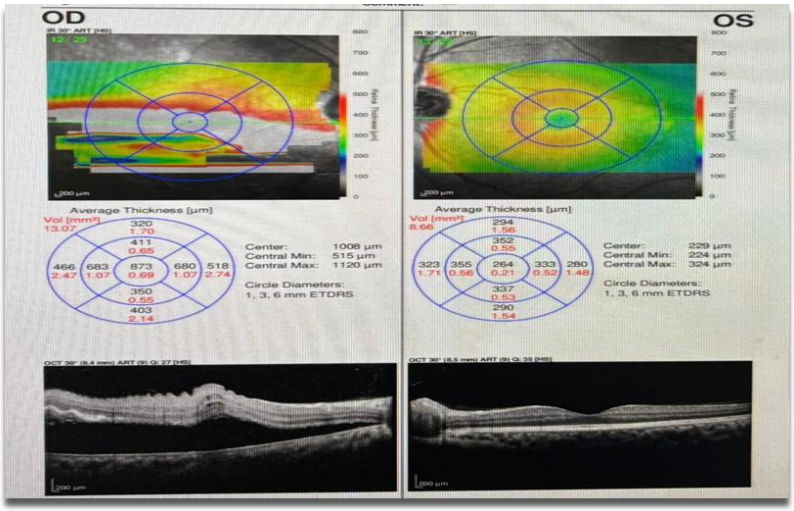

Figure 1: OCT report of RRD in OD
Sources Image capture by Motorola Edge 60 Pro

- OD- The macular map shows extensive retinal thickening, especially in the central and parafoveal regions.
- OD- Cross-sectional B-scan demonstrates:
- Massive retinal edema.
- Multiple cystoid spaces.
- Possible subretinal fluid.
- Loss of normal foveal contour.
- OS- Central foveal thickness: 229 µm (Within normal range ~250 ± 20 µm).
- OS- Thickness map shows a relatively symmetric pattern.
- OS- B-scan shows:
- Normal macular contour.
- No cystoid spaces, no subretinal fluid

Diagnosis

- Rhegmatogenous Retinal Detachment (Right Eye)
- Macula-off status
- Lattice degeneration with a single retinal break
- Simple myopic astigmatism (Left Eye)

Management and Follow-Up

1. Ocular Treatment:

- Pars Plana Vitrectomy (PPV): Removal of vitreous gel to relieve vitreoretinal traction, facilitate drainage of subretinal fluid, and allow internal repair of the retinal break.
- Scleral Buckling (SB): Placement of an external band to indent the sclera, reducing traction and supporting retinal reattachment.
- Endolaser Photocoagulation (EL): Application of laser around the retinal break and lattice degeneration to create chorioretinal adhesion and prevent recurrence.
- Silicone Oil Injection (SOI): Use of silicone oil as a long-term intraocular tamponade to maintain retinal attachment during healing.

2. Post-Operative and Follow-Up Care:

- Regular monitoring of retinal attachment status and intraocular pressure.
- Use of topical antibiotics and corticosteroids to control inflammation and prevent infection.
- Monitoring for complications such as proliferative vitreoretinopathy (PVR) or re-detachment.
- Patient education regarding head positioning (if required) and adherence to follow-up schedule.

3. Surgical Consideration:

- Combined surgical approach indicated due to long-standing macula-off retinal detachment.
- Procedure to be performed under local or general anesthesia, depending on patient condition and surgeon preference.
- Silicone oil removal (SOR) planned after 3–6 months once retinal stability is achieved

DISCUSSION

The case highlights the clinical presentation of Rhegmatogenous Retinal Detachment (RRD), the most common form of retinal detachment. RRD occurs due to a wide retinal break that allows vitreous to enter the subretinal space, leading to detachment of the retina from the retinal pigment epithelium (RPE).RRD is linked with posterior vitreous detachment (PVD), vitreoretinal traction, and also predisposing retinal lesions such as lattice degeneration or retinal tears. [4,5] Retinal detachment progress can vary depending on the location and type of retinal tear. Retinal tears on the superior side tend to progress rapidly due to gravity, affecting the macula early and leading to sudden visual loss. On the other hand, inferior detachments may have slow progression and usually remain asymptomatic for a very long time. If untreated, RRD can lead to permanent photoreceptor damage and vision loss, which

cannot be reversed. Therefore, it is necessary to have regular check-ups and imaging techniques such as fundus evaluation and optical coherence tomography (OCT). Primary management of RRD is surgical, including procedures such as scleral buckling, pars plana vitrectomy, or pneumatic retinopexy, depending on the severity and configuration of the detachment. The prognosis depends on the duration of detachment and whether the macula is involved at the time of intervention.

CONCLUSION

This case enables us to understand the importance of early detection, immediate referral, and appropriate surgical management to preserve visual function. With advances in surgical techniques, the prognosis of retinal detachment has significantly improved, especially when treated before macular involvement. Regular ocular examinations and patient awareness of risk factors play a vital role in preventing delayed presentation and ensuring better visual outcomes.

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