



IJCRR

Section: Healthcare

Sci. Journal Impact

Factor: 6.1 (2018)

ICV: 90.90 (2018)

Scopus

An Ayurvedic Protocol to Manage Rhegmatogenous Retinal Detachment and the Resultant Macular Hole - A Case Report

Narayanan Namboothiri Narayanan¹, Aravind Kumar², Krishnendu Sukumaran²

¹Chief Physician and President, Sreedhareeyam Ayurvedic Research and Development Institute Nelliakkattu Mana, Kizhakombu, Koothattukulam, 686662, Ernakulam Dt., Kerala, India; ²Research Coordinator, Sreedhareeyam Ayurvedic Research and Development Institute, Nelliakkattu Mana, Kizhakombu, Koothattukulam, 686662, Ernakulam Dt., Kerala, India.

ABSTRACT

Introduction: Retinal detachment (RD) is when the neurosensory retina (NSR) separates from the retinal pigment epithelium (RPE). Sometimes it may be associated with a macular hole. The symptom of diminished vision seen in both conditions may be compared with *Kacha* in *Ayurveda*.

Case: The case of an 8-year-old boy who presented to the OPD of Sreedhareeyam Ayurvedic Eye Hospital with the blurring of vision and who was diagnosed with retinal detachment and the macular hole is presented here.

Intervention: The patient underwent two courses of inpatient management, which included *Ayurvedic* oral medicines, and external therapies for the eyes (*Kriyakalpa*) and head.

Results: Signs of improvement in visual acuity, fundus photography, and optical coherence tomography (OCT) were observed at the end of both treatments.

Conclusion: The main aim of management was to preserve and give a better quality of vision for the patient. The results indicate the potential of *Ayurvedic* treatments to manage and maintain vision in RD and macular hole.

Key Words: Alternative medicine, Case report, *Kacha*, *Kriyakalpa*

INTRODUCTION

RD is classified based on the mechanism of fluid accumulation into rhegmatogenous, tractional, and exudative. From a clinical standpoint, this classification may be modified to group the tractional and exudative varieties under secondary RD and the rhegmatogenous variety under primary RD.¹ Rhegmatogenous RD occurs secondary to a full-thickness defect in the sensory retina; tractional RD occurs when the NSR is pulled away from the RPE by contracting vitreo-retinal membranes in the absence of a break; and exudative RD is due to subretinal fluid derived from the vessels of either the NSR, the choroid, or both.²

A macular hole is a full-thickness defect or loss of the neuro-retinal tissue in the macula involving the fovea. Causes include idiopathic (83% of cases, usually in women aged 60-80 years), traumatic (5%), and others (cystoid macular edema, vitreo-macular traction, rhegmatogenous RD, post-

surgical myopia, post-LASER treatment).³

Both RD and the macular hole may be considered as *Kacha* (diminished vision), a *Drishtigata Roga* (disease of vision) according to *Ayurveda*, due to their common symptom of profound vision loss. In *Kacha*, the patient sees objects above but not below, objects are perceived as though covered by a thin cloth, and vision gradually diminishes. Management is repeated administration of *Sneha* (drinking of fats), *Asra-visravana* (bloodletting), *Reka* (purgation), *Nasya* (nasal medication), *Anjana* (collyrium), *Murdha-Basti* (retention of oil over the head), *Basti Kriya* (enema), *Tarpana* (retention of fat over the eye), *Lepa* (application of paste), and *Seka* (pouring of liquids over the eye).

METHODOLOGY

The efficacy of an *Ayurvedic* treatment protocol to manage

Corresponding Author:

Dr. Aravind Kumar, M.S. (Ay), Sreedhareeyam Ayurvedic Research and Development Institute Nelliakkattu Mana, Kizhakombu, Koothattukulam, Ernakulam Dt., Kerala - 686662; Phone: 9400630608; Email: aravind0511@gmail.com

ISSN: 2231-2196 (Print)

ISSN: 0975-5241 (Online)

Received: 04.05.2020

Revised: 02.06.2020

Accepted: 20.06.2020

Published: 22.07.2020

rhegmatogenous RD and the resultant macular hole was assessed in this report. It was prepared according to the Case Report (CARE) guidelines,⁴ to ensure transparency and effectiveness in reporting. Institutional ethical clearance was not required for this study. As the patient is underage, written informed consent was obtained from his mother prior to detailing his case.

CASE PRESENTATION

An 8-year-old boy presented with a 3-week complaint of blurring of vision and presence of a stationary black spot in his right eye (OD), as revealed by his mother. The patient sustained a sports-related injury 8 months ago when a football collided with his forehead. The trauma was accompanied by bleeding, redness of the eye, and swelling above his right eyelid. 3 weeks ago, he started experiencing a black spot in his visual field and blurring of vision OD. He was diagnosed with retinal detachment with macular hole OD and was advised surgery, which he declined. He came to Sreedhareeyam for alternative options.

The child was born into a non-consanguineous family. His height is 139cm and his current weight is 38kg. His personal history readings (bowel, appetite, micturition, and sleep) were also normal. Review of systems and vital signs were normal.

Unaided distant visual acuity (DVA) was counting fingers (CF +ve) OD and LogMAR 0 in his left eye (OS); and his near vision was N36 OD and N6 OS. Anterior segment examination revealed normal findings in both eyes (OU). Pupillary examination revealed an afferent pupillary defect OD and normal reflexes OS. Fundus examination OD revealed a macular hole, elongated optic disc, and a subtotal rhegmatogenous retinal detachment (**Figure 1a**). Optical coherence tomography (OCT) scanning OD showed a dome-shaped elevation under the retina, suggestive of retinal detachment (**Figure 1b**).

Therapeutic Intervention

The patient underwent 2 courses of treatment. One was from May 5th, 2019 to May 24th, 2019, and the other was from December 28th, 2019 to January 8th, 2020. He was administered oral medicines such as *Kvatha* (herbal decoction), *Gutika* (herbal tablets), and *Ghrta* (medicated *ghee* or clarified butter) (**Table 1**), and external therapies for both the eyes (*Netra Kriya Kalpa*) and the head (**Table 2**). As he was under 10, *Panchakarma* (bio-purification) was not attempted due to his age.

All medicines, except Geriforte, were manufactured at Sreedhareeyam Farmherbs India, Pvt. Ltd., the hospital's GMP-certified drug manufacturing unit. Geriforte was man-

ufactured at The Himalaya Drug Company, based in Bengaluru, India.

Outcome Measures

The patient was prescribed medicines at discharge after both courses of treatment (**Table 3**) and advised regular follow-ups.

DVA at discharge after the first course of treatment was LogMAR 1.778 OD and LogMAR 0 OS, and NVA was maintained. Pupillary reactions were maintained OD and OS. Fundus examination OD showed a reduction in the macular hole (**Figure 2a**). OCT scanning OD showed absorption of the vitreous from the retina and lowering of the structure towards its normal position (**Figure 2b**).

The same findings in VA and pupillary reactions were observed at admission for the second course of treatment. Fundus examination and OCT were not done. DVA at discharge after the second course of treatment showed LogMAR 1.477 OD and LogMAR 0 OS. Fundus examination OD showed further reduction of the macular hole, (**Figure 3a**), and OCT scanning showed further lowering of the retina to its normal position (**Figure 3b**). A timeline of events for this case is provided in **Table 5**.

DISCUSSION

Rhegmatogenous RD is characterized by the presence of a retinal break held open by vitreo-retinal traction.⁸ Predisposing factors include lattice degeneration, snail-track degeneration, degenerative retinoschisis, and pathological myopia, in which the risk of RD is higher when the refractive error is more. Afferent pupillary defect (Marcus Gunn pupil) is present in eyes with extensive detachment.

A causal role of RD attributed to a macular hole can only be made if the detachment involves the posterior pole, or if more extensive, is seen to have advanced from a posterior pole RD.⁹ This is because it is difficult to determine whether a macular hole is of partial or full-thickness and if the hole is responsible for retinal detachment.

This patient's condition was explored along the lines of *Kacha* according to Ayurveda. *Kacha* as an entity unto itself was described by *Vagbhata*. He considered it as that in which the *Doshas* afflict the third *Patala* (layer) of the eye. Gross deterioration of vision is the hallmark symptom of *Kacha* and, by its nature, is *Yapya* (controllable). The improvement of the vision of this patient indicated that the *Doshas* were being expelled from the third *Patala*.

Pathyakshadhatryadi Kashaya, indicated in the *Patalagata Rogas* (diseases of the layers of vision), is *Kapha-Pitta Samaka* (relieves *Kapha* and *Pitta*) and *Cakshushya* (healthy

for eyes). *Sudarsanam Gutika* is indicated in all varieties of fever, and hence, helps in restoring proper digestion. *Pathya PunarnavadiChurna* normalized *Vata Dosh*a in this case by enhancing the expulsion of the waste and movement of *Doshas* out of the body and eye. *Vidaryadi Kvatha* is *Brmhana* (nourishing) and relieves *Vata* and *Pitta*, hence it helped to anchor the retina to the rest of the eye.

Local therapeutics was employed in this case as the patient was too young for *Pancakarma* treatments. *Purampada* or *Bidalaka* created a counter-pressure gradient that significantly pushes the retina to its original position. *Ascyotana* enabled the absorption of the medicines to reach the target tissues by such parameters as height and temperature of the medicines. *Siroveshtana*, *Sirolepa*, and *Talapoticchil* enabled absorption of the essential elements through the skin and hair follicles, thus bypassing barriers and reaching the target tissues. *Laksha*, one of the main ingredients in the medicines for head treatments, helped the retina restore itself to the rest of the eye by its properties of *Pitta-Kapha Nasaka* (diminishing *Pitta* and *Kapha*), *Sandhaniya* (binding), *Balya* (strengthening), and *Ropana* (healing).

Vinayakanjana is prepared from *Durva*, goat's milk, and goat's ghee. It is useful as a healing agent and is prescribed in eye diseases. *Ananta Ghrta*, prepared from *Yashtimadhu*, *Amalaki*, *Jivanti*, and *Haritaki*, is indicated as a *Tarpanain* all eye diseases. *Sunetra Junior* is prepared from *Daruharidra*, *Haridra*, and rose water, and is indicated in pediatric eye cases. *Vainateya Ghrta* is prepared from *Draksha*, *Jivanti*, *Vasa*, and *Triphala*, is indicated in retinal diseases. *Pancatik-taka Guggulu* is prepared from *Triphala*, *Pippali*, and *Guggulu*, and is indicated in muscular growths in the eye.

CONCLUSION

The main challenge, in this case, was restoring vision and reattaching the retina. It was partially successful in both parameters, as vision marginally improved and the retina showed signs of reattachment. Results were a concerted effort brought about by the combined effect of both oral medicines and external therapies. Repeated courses of treatment may aid to further reattach the retina and give back some eyesight to the patient. The results may be validated and analyzed by large-scale studies and trials.

Acknowledgment: The authors thank Sreedhareeyam Ayurvedic Eye Hospital and Research Center, and Sreedhareeyam

Farmherbs India Pvt. Ltd., for their help in preparing this case report. The authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to the authors/editors/publishers of all those articles, journals, and books from where the literature for this article has been reviewed and discussed.

Conflicts of Interest: None declared

Sources of Funding: None declared

Abbreviations:

RD: retinal detachment

DVA: distant visual acuity

NVA: near visual acuity

OD: oculus dexter

OS: oculus sinister

OU: oculus uterque

NSR: neurosensory retina

RPE: retinal pigment epithelium

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Table 1: Oral Medicines

Medicine	Dosage	Anupana (post-prandial beverage)	Time	Duration
<i>Pathya Shadanga Kvatha</i> ⁵	40mL	Lukewarm water	6am and 6pm	06/06/2019 - 24/06/2019
<i>Sudarsanam Gutika</i>	3g	<i>Pathya ShadangaKvatha</i>		
<i>Pathya Punarnavadi Kvatha</i>	40mL	Lukewarm water	6am and 6pm	07/06/2019 - 24/06/2019
<i>Vidaryadi Kvatha</i> ⁶	40mL	Lukewarm water	6am and 6pm	
<i>Vainateya Ghrta</i> *	5g	Lukewarm water	At night	26/12/2019 - 02/01/2020
Geriforte [^]	1 tablet	Lukewarm water	Twice a day after food	

Table 2: External Therapies

Treatment	Medicine	Method of Administration	Duration
<i>Talapoticchil</i>	<i>Vasa Lakshadi Churna</i>	A paste prepared by mixing 60g of the powder and 300mL of the decoction was applied on a plantain leaf, which was kept face down over the head, obviating a small circular hole in the center.	06/06/2019
	<i>Vasa Triphaladi Kvatha</i>		
<i>Purampada</i>	<i>Mukkadi Purampada</i>	A paste prepared from the medicine was applied over the eyelid, obviating the lashes.	06/06/2019 - 14/06/2019 26/12/2019 - 02/01/2020
<i>Ascyotana</i>	Drops prepared from <i>Ocimum sanctum</i> Linn., <i>Veronica cinerea</i> -Less., and honey	1 drop of the medicine was instilled from a height of 2 <i>Angula</i> (2 fingers) in both eyes.	07/06/2019 - 13/06/2019
	<i>Ananta Ghrta</i> *		13/06/2019 - 20/06/2019
	<i>Vinayakanjana</i> *		26/12/2019 - 27/12/2019
	<i>Vinayakanjana</i> * and honey		
<i>Bandhana</i> (after <i>Ascyotana</i>)	Flowers of <i>Jasminum grandiflorum</i> Linn.	The flowers were placed on the closed eyes with the stalks pointed outwards. Then, the eye was bandaged with a Cora cloth, with pieces of cotton inside it	16/06/2019 - 20/06/2019 26/12/2019 - 27/12/2019
<i>Siroveshtana</i> ^o	<i>Vasa Lakshadi Churna</i>	30g of powder was made into a paste by mixing with the decoction. A Cora cloth was immersed in 100mL of the decoction and the paste was smeared over the cloth. The cloth was applied over the forehead from one ear to the other and tied over the head.	07/06/2019 - 12/06/2019
	<i>Vasa Triphaladi Kvatha</i>		
<i>Sirolepa</i>	<i>Biophytum sensitivum</i> and <i>Cynodon dactylon</i> C. Fisher	60g of the powdered ingredients were made into a paste and applied to the forehead.	07/06/2019 - 16/06/2019
<i>Lepa</i>	Powders of <i>Pueraria tuberosa</i> Willd., <i>Laccifer lacca</i> Kerr., and extract of <i>Aloe vera</i> (Burm.f).	30g of powder is mixed with the extract to form a paste. This is applied over the forehead.	27/12/2019 - 31/12/2019
<i>Sirodhara</i>	<i>Laksha Kera</i> and <i>Kshirabala Taila</i>	The oils are poured in a thin stream over the head from a coconut shell with a hole in the center.	29/12/2019 - 31/12/2019
<i>Netra Picu</i> ^o	<i>Murivenna</i>	15mL of each medicine was taken in a bowl and warmed. Sterilized pieces of cotton are taken and the lukewarm medicine is put in. This was then placed over the closed eyes.	18/06/2019 - 22/06/2019
	<i>Vinayakanjana</i> *		

Table 2: (Continued)

Treatment	Medicine	Method of Administration	Duration
Avaguntana (Pinda Sveda)	Ocimum sanctum Linn.	5g of the medicine was made into a bolus the size of a fruit of <i>Emblica officinalis</i> Gaertn. This was gently pressed over the closed eyelids to do fomentation.	23/06/2019 - 24/06/2019
Anjana ^o	Sunetra Junior*	One drop of the medicine was instilled into the inner canthus from a height of 2 <i>Angulas</i> (fingers). The patient was asked to move the eyeball in a circular manner.	23/06/2019 - 24/06/2019 26/12/2019 - 02/01/2020

Table 3: Discharge Medicines

Medicine	Dosage	Time	Prescription Date
Khadirarishta ⁷	10 mL	1/2 hour after food	24/06/2019
VainateyaGhrta*	1/2 tablespoon	1/2 hour after food	24/06/2019 02/01/2020
Sunetra Junior*	1 drop in both eyes	Morning and evening	24/06/2019 02/01/2020
Vinayakanjana*	2 drops over the closed eyelid	Bedtime	24/06/2019 02/01/2020
Pancatiktaka Guggulu*	1/2 tablet	1/2 hour after food	24/06/2019
Vidaryadi Kvatha	40mL	6am and 6pm	02/01/2020
Geriforte [^]	1 tablet	1/2 hour after food	02/01/2020

*Patented medicines of Sreedhareeyam Ayurvedic Eye Hospital and Research Center

[^]Patented Medicine of The Himalaya Company, based in Bengaluru, Karnataka, India

^oTreatment protocols of Sreedhareeyam Ayurvedic Eye Hospital and Research Center

Table 4: Timeline of Events

Date	Event
January 2019	<ul style="list-style-type: none"> Patient sustains an injury by a football colliding with his right eye. resulting in bleeding, redness of the eye, and a swelling over the right eyelid. The symptoms subside.
April 2019	<ul style="list-style-type: none"> Develops a stationary black spot along with blurring of vision OD. Gets diagnosis of rhegmatogenous RD with macular hole OD and is advised surgery, which he declines.
May 9 th , 2019	<ul style="list-style-type: none"> Consults Sreedhareeyam Eye Hospital and is advised inpatient management.
June 6 th , 2019	<p>Admitted for a course of inpatient management</p> <p>Uncorrected DVA: CF +ve OD, LogMAR o OS</p> <p>Near Visual Acuity: N36 OD, N6 OS</p> <p>Pupillary Examination: Afferent pupillary defect OD, normal direct and consensual reactions OS</p> <p>Posterior Segment: macular hole, elongated optic disc, and a subtotal rhegmatogenous retinal detachment OD, normal findings OS.</p> <p>OCT: dome-shaped elevation OD</p> <p><i>Pathya ShadangamKvatha</i> and <i>SudarsanamGutika</i> are started.</p> <p><i>Talapoticchil</i> is done.</p> <p><i>Purampadais</i> started.</p>
June 7 th , 2019	<p><i>Pathya PunarnavadiKvathais</i> started.</p> <p><i>Ascyotana</i> with drops prepared from <i>Tulasi</i>, <i>Sahadevi</i>, and honey is started</p> <p><i>Siroveshtana</i> and <i>Sirolepa</i> are started.</p>
June 12 th , 2019	<p><i>Siroveshtana</i> is stopped.</p>

Table 4: (Continued)

Date	Event
June 13 th , 2019	Ascyotana with drops prepared from <i>Tulasi</i> , <i>Sahadevi</i> , and honey is stopped; the same procedure is started with <i>Ananta Ghrta</i> * and <i>Vinayakanjana</i> . *
June 14 th , 2019	<i>Purampada</i> is stopped.
June 16 th , 2019	<i>Bandhana</i> is started.
June 18 th , 2019	<i>Netra Picu</i> is started
June 20 th , 2019	<i>Ascyotana</i> and <i>Bandhana</i> are stopped.
June 22 nd , 2019	<i>Netra Picu</i> is stopped.
June 23 rd , 2019	<i>Avaguntana</i> and <i>Anjana</i> are started.
June 24 th , 2019	All treatments and oral medicines are stopped. Uncorrected DVA: LogMAR 1.778 OD, LogMAR 0 OS NVA: N36 OD, N6 OS Pupillary Examination: Afferent pupillary defect OD, normal direct and consensual reactions OS Posterior Segment: reduction in the macular hole OD, normal findings OS. OCT: reduction in the dome-shaped elevation OD; normal findings OS.
December 26 th , 2019	Uncorrected DVA: LogMAR 1.778 OD, LogMAR 0 OS Near Visual Acuity: N36 OD, N6 OS Pupillary Examination: Slight afferent pupillary defect OD, normal direct and consensual reactions OS. <i>VidaryadiKvatha</i> , <i>VainateyaGhrta</i> *, and <i>Geriforte</i> are started. <i>Purampada</i> , <i>Anjana</i> , <i>Ascyotana</i> with <i>Vinayakanjana</i> * and honey, and <i>Bandhana</i> are restarted.
December 27 th , 2019	<i>Ascyotana</i> and <i>Bandhana</i> are stopped. <i>Lepa</i> is started.
December 29 th , 2019	<i>Sirodhara</i> is started.
December 31 st , 2019	<i>Lepa</i> and <i>Sirodhara</i> are stopped.
January 2 nd , 2020	All treatments and medicines are stopped. Uncorrected DVA: LogMAR 1.477 OD, LogMAR 0 OS Near Visual Acuity: N36 OD, N6 OS Pupillary Examination: Slight afferent pupillary defect OD, normal direct and consensual reactions OD. Fundus examination: further reduction of the macular hole OD. OCT: Retina is further lowered toward its normal position OD.

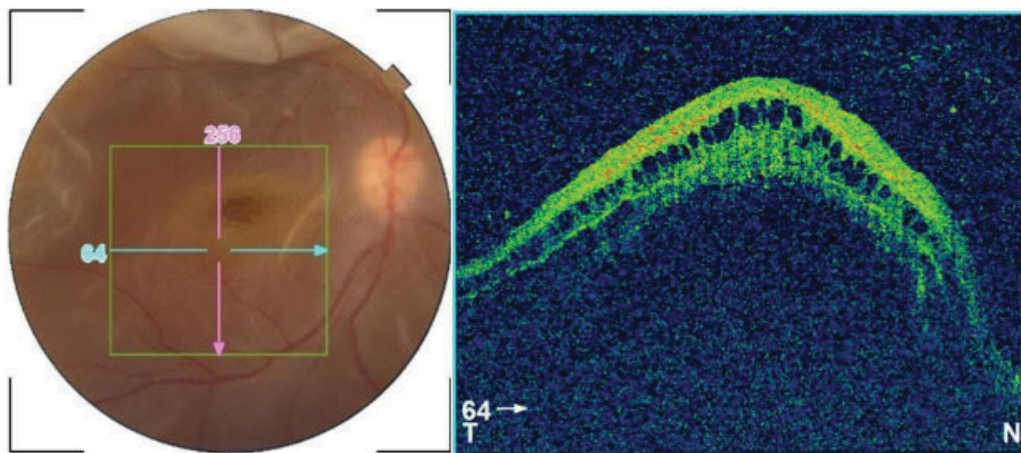


Figure 1a and 1b: Fundus photograph and OCT scan OD at admission before the first course of treatment.

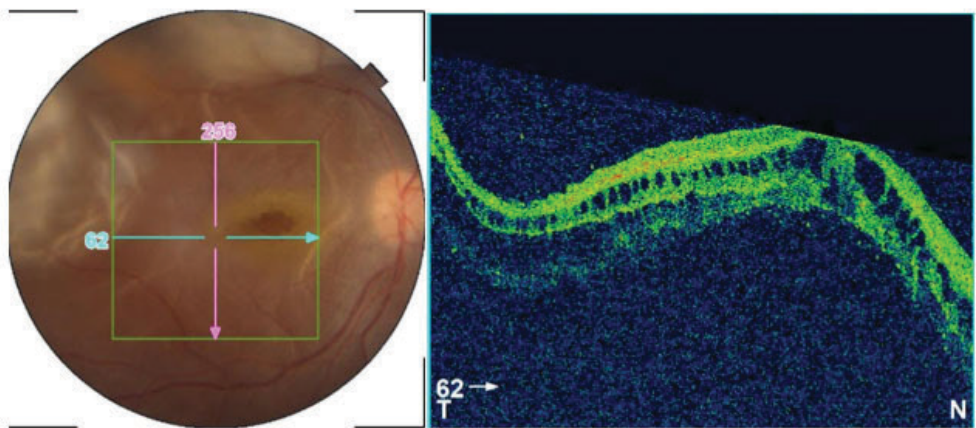


Figure 2a and 2b: Fundus photograph and OCT scan OD at discharge after the first course of treatment.

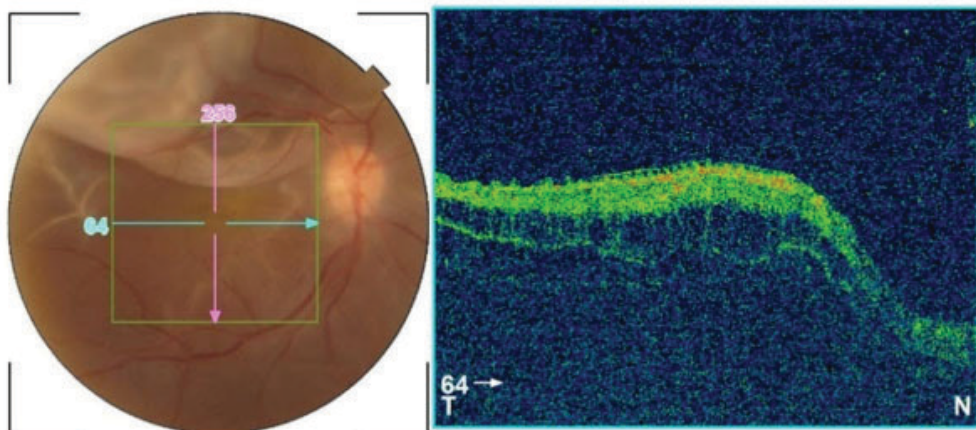


Figure 3a and 3b: Fundus photograph and OCT scan OD at discharge after the second course of treatment.