# SPECIAL EDITION

## RETINAL VENOUS OCCLUSION

The Retina Club

NEPAL VITREO RETINA SOCIETY

The Official Newsletter of Nepal Vitreo Retina Society
Volume 2. Issue 1.

# TABLE OF CONTENTS


Words from the Editorial Team 01

NVRS Activities 2022 02

NVRS Executive Committee 2022-2024 04

RVO Management Guidelines By NVRS 05

Management of RVO 06

CRVO in the young: practical tips 07

Hear it from the experts : Investigating RVO 09

Hear it from the experts : Managing RVO and Its Complications 10

Hear it from the experts : Real World Experience with Lucentis 11

Angio -OCT in RVO 12

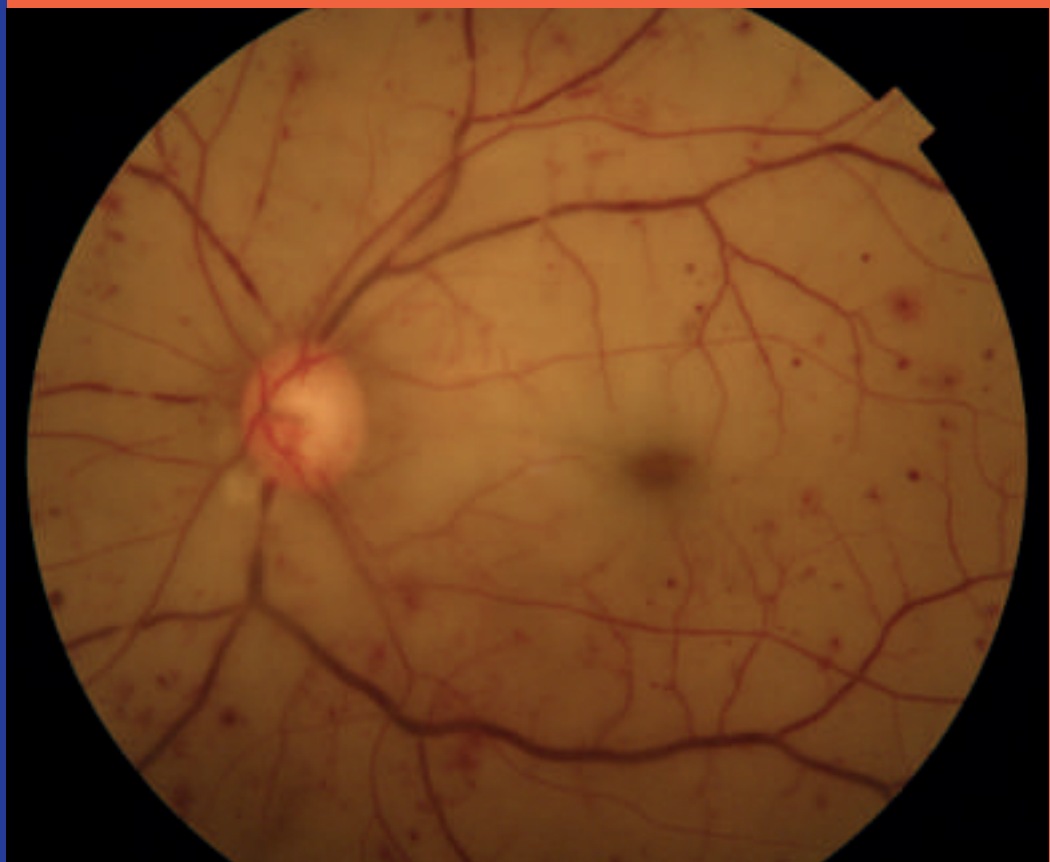
Clinical Vignette 13


## EDITORS OF THIS ISSUE



## EDITORIAL PANEL





# WORDS FROM THE EDITORIAL TEAM

Dr.Roshija Khanal Rijal

Dr. Samyukta Bista Karki

Dr. Simanta Khadka

Greetings from the editorial board!!

On behalf of the Nepal Vitreo Retina Society, we are proud to bring to you, much awaited second issue of the retina newsletter. This edition of the newsletter is mainly focused on retinal vein occlusion. It gives us immense pleasure to inform all our readers that we have finally come up with the "RVO standard treatment protocol" and is included in this newsletter. The protocol is expected to provide information on standardized diagnostic and therapeutic techniques in retinal veno occlusive disorders. We hope the newsletter will be able to impart knowledge and updates on various aspects of retinal disorders and will be a good read for the wider ophthalmic community as well. We would like to thank all the members of NVRS for your invaluable inputs in forming the much needed protocol. Also, we look forward to your guidance and support in the future.

**HAPPY READING!**

# NVRS Activities 2022



Nepal Vitreo Retina Society (NVRS) was founded in the year 2017 by a group of Vitreo-Retina specialists with a purpose to develop and expand health service related to retina through engagement and enhancement of retina specialists.

NVRS is a non-profit professional organization, and has been established under the Nepal Government Organization Registration Act 2034 BS. With seed concepts from Prof. OK Malla, Prof. DB Karki and Prof Jeevan K. Shrestha, NVRS was immensely conceded by President Dr. Eli Pradhan for

first 4 years (2018-22). With many activities during early phase of establishment, the momentum slowed down owing to COVID 19, although there has been continued events in webinars which kept activities alive.

On September 17, 2022, NVRS 6th AGM has been organized in Kathmandu. With common consensus from all NVRS members, Dr. Sanyam Bajimaya has been elected as a new President and Dr. Pratap Karki as a General Secretary of new executive committee. NVRS has actively involved in organizing its 2 sessions (Retina Session & ROP Session) at Nepal Ophthalmic Society's 24thAnnual Meeting at Bharatpur(October 14-15, 2022).

NVRS Founder President Prof. OK Malla, has served as a President of South Asian Academy of Ophthalmology (SAO/2020-22). During 15th Biennial SAO Conference at New Delhi (November 11-13), Prof. Malla has handed over SAO Presidency to Prof. Rajvardan Azad. During this SAO Conference, our NVRS delegates Dr. Eli Pradhan received Ava Hossain Lecture award, and Dr. Sagun Joshi, Dr. Sanyam Bajimaya and Dr. Purushottam Joshi received SAO Excellence Awards.

On November 29, 2022 our current President Dr. Sanyam Bajimaya has be nominated to serve as a country/Society's Liaison for Retina World Congress (RWC) to support global education of retina specialists.

# NVRS EXECUTIVE COMMITTEE 2022-2024

PATRON
PROF. DR. O.K. MALLA

PRESIDENT
DR SANYAM BAJIMAYA

IMMEDIATE PAST PRESIDENT
DR ELI PRADHAN

VICE PRESIDENT
DR RABA THAPA

GENERAL SECRETARY
DR PRATAP KARKI

TREASURER
DR IRINA KANSAKAR

JOINT SECRETARY
DR LALIT AGRAWAL

JOINT TREASURER
DR SIMANTA KHADKA

## MEMBERS

PROF. DR SAGUN JOSHI

DR PURUSHOTTAM JOSHI

DR KIRAN SHAKYA

DR SUBASH POKHREL

DR NITIN TULSYAN

# RVO MANAGEMENT GUIDELINES BY NVRS

**Symptoms**

- Painless dimunition of vision or complete loss of vision
- Metamorphopsia

**Suspect Retinal Vein Occlusion (RVO)**

**Identify Risk Factors**

- Age
- HTN, DM, Dyslipidemia
- Hematological abnormalities
- Prior ocular conditions
- Smoking, alcohol consumption
- Other significant medical history

**Ocular Finding**

**Branch Retinal Vein Occlusion (BRVO)**

Wedge shaped hemorrhage with apex directed towards site of occlusion

**Central Retinal Vein Occlusion (CRVO)**

Retinal hemorrhage in all 4 quadrants radiating outward from the disc

**Ischemic CRVO**

- ↑ Engorged, dilated, tortuous vessels
- ↑ Retinal hemorrhage, cotton wool spots
- Disc edema and macular edema
- RAPD +
- VA <6/60
- > 10 DD capillary non perfusion in FFA

**Non-ischemic CRVO**

- Relatively less tortuosity of vessels, retinal hemorrhage, cotton wool spots
- No RAPD
- VA > 6/60

---

**Causes of decreased VA in RVO**

- Macular edema
- VH secondary to rupture of thin friable new vessels

**Diagnostic tests**

- Fundus Photo (Color and red free)
- OCT (most reliable and non-invasive)
- OCT-A
- FFA ( rule out non-perfusion)
- USG B-scan (media opacity)
- Systemic evaluation ( preferred in CRVO)

# MANAGEMENT OF RVO

General Priority

Strategies for evaluation and management of systemic risk factors

Ophthalmic Management

- Mainly treated for macular edema and neovascular changes

1. Anti VEGF injection

Namely; Bevacizumab, Ranimizumab, Aflibercept (availability in Nepal)

Choice: Depends upon availability, cost, discretion of retina specialists

Strategies: Pro-re-nata PRN) or treat and extend

(Non responding macular edema: VA not improved by at least 5 letters and CMT not reduced after 3 consecutive monthly injection)

2. Corticosteroids

Modality

Intravitreal triamcinolone acetonide

Intravitreal dexamethasone implant

(Ozurdex: reserved for chronic and non responding macular edema, the frequency of intravitreal injection)

Intravitreal Flucinolone

N.B: Precation to be taken for cataract and IOP/ Glaucoma progression)

3. LASER treatment

# CRVO in the young: practical tips


## **Jay M. Stewart,** MD

Professor in department of ophthalmology

University of California, San Francisco (UCSF)
Chief of ophthalmology San Francisco Zuckerberg General Hospital and Trauma Center
Editor in chief, American journal of ophthalmology case reports


Central retinal vein occlusion (CRVO) is a serious, vision-threatening condition that results from a blockage in the venous outflow from the retina. Although we generally think of vascular problems as affecting older people, CRVO can also be seen in young patients. This condition typically presents with a suddenonset of painless blurred vision. The diagnosis can be made based upon clinical and imaging findings. Treatment generally consists of managing macular edema and the secondary neovascularization that sometimes develops. In young patients with CRVO, particular attention must be paid to the systemic workup in order to identify any treatable risk factors. Below are some key considerations to remember when evaluating CRVO in a young patient:

### *What to look for on clinical examination:*

- Tortuosity and dilation of veins in all four quadrants
- Intraretinal hemorrhages in all four quadrants
- Cystoid macular edema(CME) and even subretinal fluid in the macula
- Optic disc swelling
- Anterior segment (iris or angle) neovascularization.

### *Useful ophthalmic imaging tests:*

- Color fundus photography can be helpful to obtain at the time of initial presentation, so that it can serve as a baseline for comparison at subsequent visits. This can allow the examiner to track the resolution of intraretinal hemorrhages or optic disc swelling, for example.
- Optical coherence tomography (OCT)is the best way to detect and quantify cystoid macular edema, the main treatable cause of vision loss in CRVO. Paracentral acute middle maculopathy (PAMM), a marker of ischemia characterized by hyperreflectivity in the inner nuclear layer, may be noted. OCT angiography can provide insight into the degree of capillary dropout and nonperfusion in the macula.
- Fluorescein angiography is very helpful to demonstrate areas of peripheral nonperfusion as well as leakage from any posterior segment neovascularization, although the latter is unusual in CRVO. Particularly if a patient's presenting vision is poor, suspicion is elevated that there could be extensive peripheral ischemia.

In such cases, there is a greater risk of developing anterior segment neovascularization and neovascular glaucoma, so closer monitoring is warranted.

### *Treatment considerations:*

- Anti-VEGF injections are standard of care treatment for CME related to CRVO. Most physicians start with one or two monthly injections in order to determine whether a patient's edema will require ongoing treatment versus occasional injections. Fortunately, CME due to CRVO responds very well to these injections, and many times the vision can be improved significantly with treatment.
- Laser has a role in the treatment of CRVO patients. Peripheral scatter laser (panretinal photocoagulation) is used to manage patients who have developed iris or angle neovascularization. Many times with a full treatment the neovascularization will regress. The Central Vein Occlusion Study (CVOS) did not support a role for preventative laser treatment, so we customarily monitor patients for anterior segment neovascularization and only perform laser if needed. Similarly, the CVOS did not support macular laser treatment for CME, so this is not recommended.

### *Systemic workup:*

Studies have shown that about a quarter of patients aged 55 or younger will have a laboratory abnormality or associated medical condition that could be a risk factor for developing CRVO. It is important to identify these because of the continued risk to the second eye or other parts of the circulatory system. Therefore, it is recommended to perform a workup including the following components:

- Physical exam with measurement of blood pressure, oxygenation, and weight
- Hypercoagulability panel
- Diabetes screening
- Cholesterol levels
- Homocysteine level
- Lupus anticoagulant and possibly other inflammatory markers
- Screening for obstructive sleep apnea

Sometimes other modifiable risk factors exist in young patients, such as the use of medications that might be contributory, such as oral contraceptives, or lifestyle aspects such as marked dehydration. It is particularly important to ask young patients about these so that recommendations can be made in order to avoid further vascular events, either in the fellow eye or elsewhere in the body.

### *Conclusion:*

Young people can develop CRVO, and when seeing such patients, one must take a thorough history and perform a comprehensive examination, including laboratory workup. The examiner has the opportunity not only to help improve the patient's vision through proper treatment but also to forestall further morbidity by instituting proper therapy or lifestyle modifications according to each patient's risk factors.

# Hear it from the experts

## INVESTIGATING RVO

**Dr Purushottam Joshi,** MD
Vitreoretina Specialist
Mechi Eye Hospital

Retinal vein occlusion (RVO) is the second most common retinal vascular disease which can present as branch retinal vein occlusion (BRVO), central retinal vein occlusion (CRVO), and very rarely as combined arterial and venous occlusion. A detailed clinical examination requires documenting best corrected visual acuity, pupillary light reflex, slit lamp examination to look for NVI, IOP, gonioscopy for NVA and fundus examination to look for degree of retinal ischemia, level of occlusion and macular edema. Ophthalmic diagnostic tool includes fundus photography, OCT, OCTA, FFA and USG Bscan if there is presence of vitreous hemorrhage. It's not uncommon to see non ischaemic RVO turn into ischaemic RVO and thus making the management more complex. So, it becomes essential to document the initial findings, counsel the patients regarding the course of disease and identifying the etiology. There is battery of systemic investigations often needed to support RVO treatment. Though common risk factors include elderly group often with hypertension, diabetes, dyslipidemia, young can also present with RVOs. Proper workup along with physician consultation is required in these group to rule out myeloproliferative disorders, hypercoagulable states, inflammatory disorders. Monthly follow up is a must for all cases till signs of ischemia improve and macula is dry.

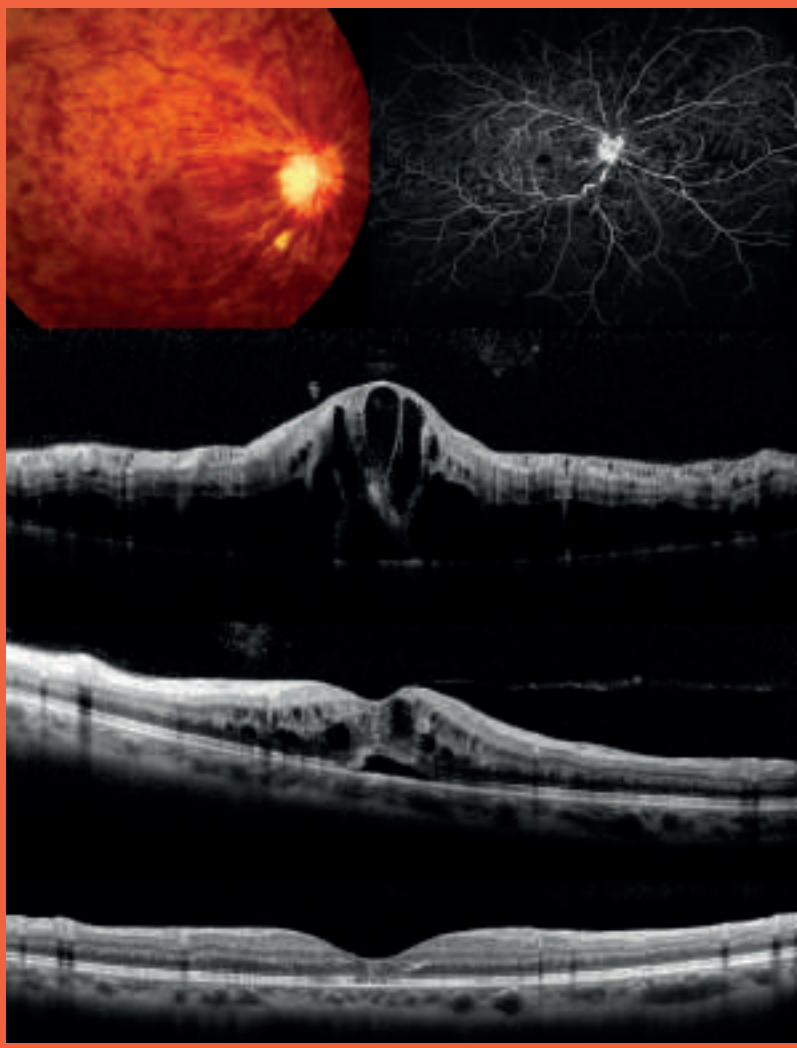


Image Courtesy by Dr. Anadi Khatri

# Hear it from the experts

## MANAGING RVO AND ITS COMPLICATIONS

**Dr. Raba Thapa MD,** PhD
Associate Professor (NAMS)
Vitreo-retina specialist
Tilganga Institute of Ophthalmology

Identification of underlying ocular and systemic risk factors and avoid or treatment of these conditions such as hypertension, diabetes mellitus, hyperlipidemia etc. is very crucial in managing RVO. Intravitreal Anti VEGF agent (Bevacizumab, Ranibizumab, Aflibercept, Brolicizumab etc) is the main drug used in treatment of macular edema. intravitreal steroids (Dexamethasone implant or triamcinolone) is the treatment of choice in case of chronic macular edema and cystoid macular edema. Ischemia induced neovascularization need prompt treatment with laser therapy. Sectoral scatter laser is required in BRVO and panretinal photocoagulation (PRP) in case of CRVO. Timely initiation of laser therapy helps in avoiding tractional retinal detachment and neovascular glaucoma. Tractional retinal detachment threatening to macula, extensive tractional retinal detachment, combined tractional and rhegmatogenous retinal detachment and
persistent vitreous hemorrhage requires surgical treatment with vitrectomy, endolaser and internal temponade agents like intravitreal gas or silicon oil depending on the extent and location of tractional retinal detachment. The visual outcome largely depends on the timely treatment ofvarious sequelae of RVO.

"The major causes of vision loss in RVO are secondary to persistent macular edema, vitreous hemorrhage, tractional retinal detachment and ultimately neovascular glaucoma in both branch retinal vein occlusion (BRVO) and central retinal vein occlusion (CRVO). Timely diagnosis and prompt treatment is very crucial to save the vision from RVO. "

Recurrence of macular edema is very common both in CRVO and BRVO. So, repeated intavitreal antiVEGF and or steroids are required in treatment of macular edema. The affordability by the patients and availability of these intravitreal injections is a major challenge in our part. Emphasis has to be given for regular eye check up with those of high risk cases and regular follow up of all cases of RVO for timely detection and treatment of resulting sequelae to avoid its irreversible blindness.

# Hear it from the experts

## REAL WORLD EXPERIENCE WITH LUCENTIS

**Raja Narayanan**
Anant Bajaj Retina Institute,
LV Prasad Eye Institute, India

Intravitreal injections of anti-vascular endothelial growth factor (anti-VEGF) are the standard of care for the management of neovascular age-related macular degeneration (AMD), diabetic macular edema (DME), retinal vein occlusion (RVO) and many other retinal diseases since more than a decade. Lucentis (Ranibizumab, Novartis) was one of the first anti-VEGF approved for the treatment of the above retinal diseases, and has helped improve the vision in millions of patients. MARINA and ANCHOR were the pivotal studies for nAMD which showed improvement in vision for the first time with any treatment, and more than 90% of eyes had stable vision with treatment after 2 years. The results of DME and RVO have been even more encouraging. However, long term studies have shown that these diseases are chronic, requiring treatment over many years.

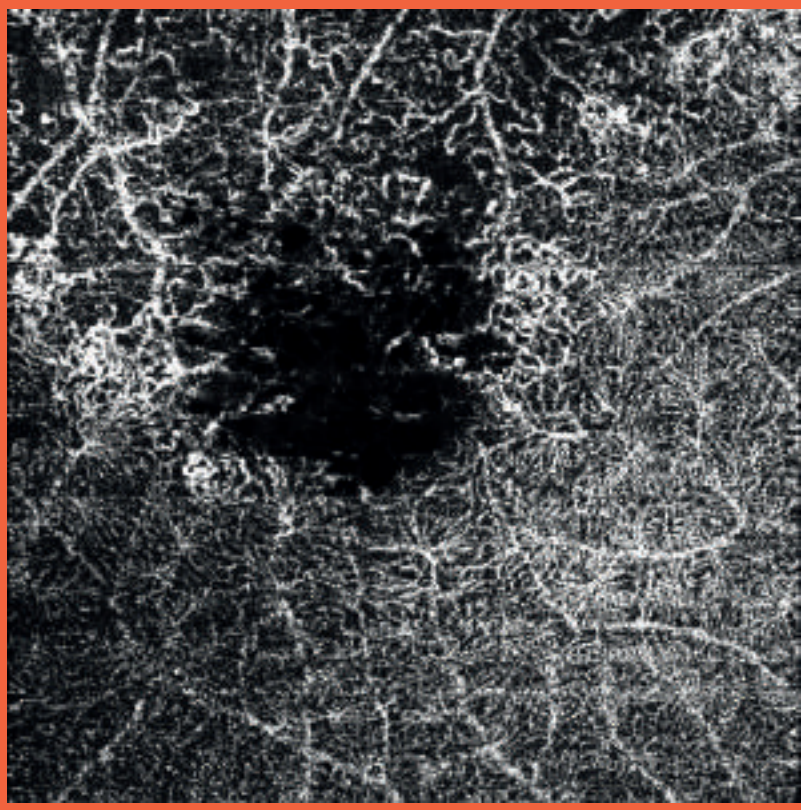
Real world data from countries around the world have shown that long term visual gain achieved in the initial few years is not maintained in patients treated with anti-VEGF. SIERRA-AMD study looked at long term vision outcomes in 98,821 eyes from 99,885 patients with nAMD in the US. The results showed that eyes with 4 year follow-up had a loss of -5.2 letter. A third of the eyes had persistent fluid at the last visit. This is mainly due to under treatment of patients. More injections over the long term correlate with better visual acuity. However, low rates of adherence to the treatment protocol would lead to loss of vision.

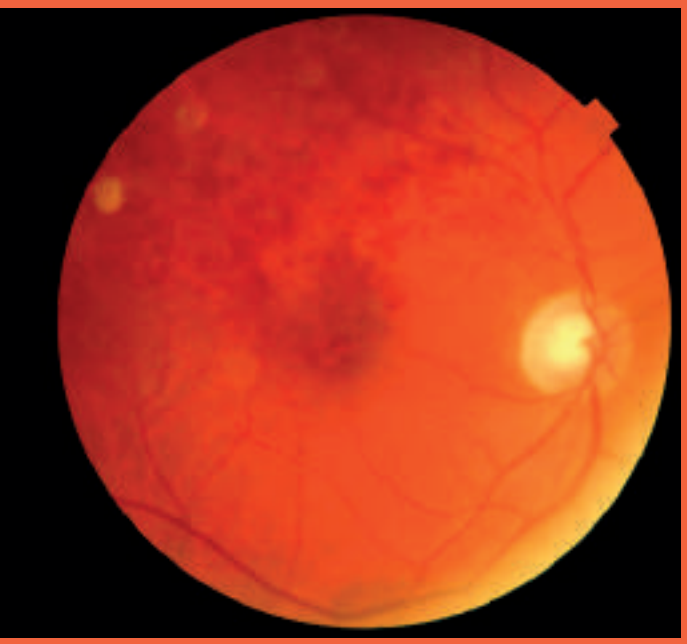
AMD, DME and RVO are diseases which continue to be active for many years after the initiation of treatment, and continuous treatment over the long term certainly leads to better visual outcomes compared to no treatment. Undertreatment remains the biggest cause of poor outcome. We should continue treatment as the injections delay the otherwise rapid deterioration of vision in untreated eyes. The future looks more promising with longer acting drugs, cost-effective biosimilars, and newer drug delivery systems.

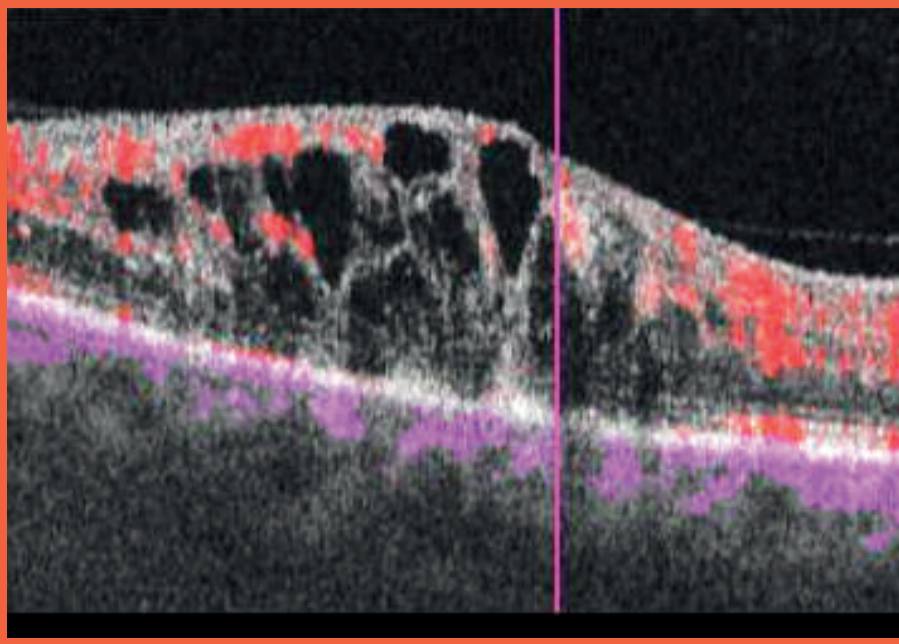
# Angio -OCT in RVO

**Dr Priya Bajgai,NEH**
**Dr Ramandeep Singh,PGIMER**

- Angio OCT is a non invasive imaging modality- helps detect vessel abnormality without dye injection.
- Useful for diagnostic work up of the vein occlusions-delineates the area of ischemia.
- Both Superficial and Deep vascular plexuses are visualized- FFA cannot do this.
- Shows the Foveal avascular zone which helps to prognisticate these cases- after anti VEGFS.
- Disadvantages- small scanning area,cannot detect leakage, artifacts.







Legends:

Figure 1-Colour fundus photograph of the right eye showing supero-temporal vein occlusion with macular edema

Figure 2- OCTA 6*6 mm, at the level of the deep capilllary plexus showing decreased vascular density and non perfusion areas. disruption of the perifoveal capillary plexus is seen.

Figure 3-OCT scan through the macula showing multiple cystoid spaces suggestive of macular edema

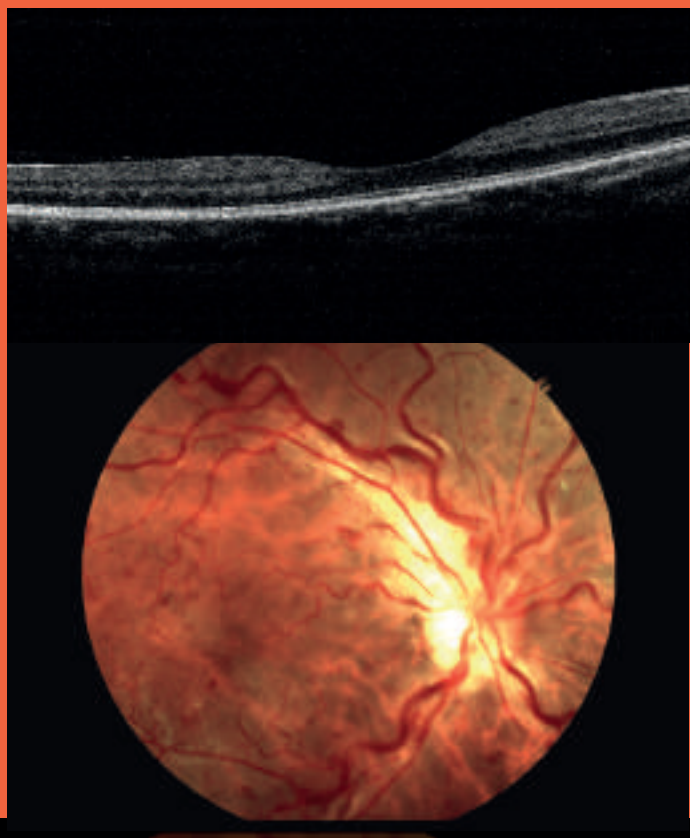
# Clinical Vignette

CRVO PRESENTS WITH DIMINISHED VISION AND CLASSIC FUNDUS FINDING OF DILATED AND TORTUOUS BLOOD VESSELS, RETINAL HEMORRHAGE AND MACULAR EDEMA ON OCT. WHEN THE MACULA IS DRY BUT THE CLNICAL PICTURE IS NOT IMPROVING, IT IS OFTEN WISE TO GET A DETAILED SYSTEMIC WORKUP AND CLOSELY MONITOR FOR ANY DEVELOPING SIGNS OF MACULAR EDEMA AND NEOVASCULARIZATION.

## CRVO WITHOUT MACULAR EDEMA: HOW TO PROCEED?

24 year old female presented with blurring of vision in mornings. Her visual acuity was 20/20 and on examination she was found to have CRVO but no macular edema. Also all baseline investigations and further tests for hypercoagulable states came out as normal. The patient was on monthly follow up with status quo for 3 months. She was then started on tab. Ecospirin 75mg od by the cardiologist and her symptoms and fundus picture improved drastically over few weeks' time.

Though rare, it is not uncommon to encounter such cases. Detailed evaluation with needed investigations is a must in all cases.



1 MONTH OF STARTING ECOSPIRIN

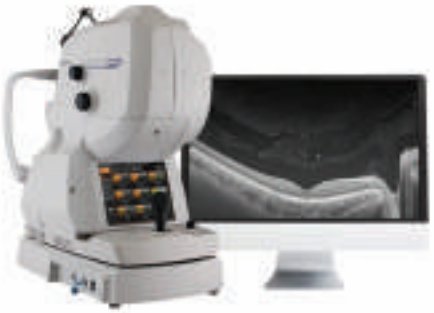
VESSEL TORTUOSITY AND CALIBRE APPEARING NORMAL

Case Courtesy by Dr. Roshija Khanal Rijal

# Maestro2

Robotic OCT and Color Fundus Camera

TOPCON



Triton™

Henson 9000

Multi-functional,
Non-Mydriatic Retinal Camera

Topcon Harmony®
Clinical Data Management

CA-800

OMS-800

KR-800

MYAH

TRC-NW400

OMS-90

CT 800