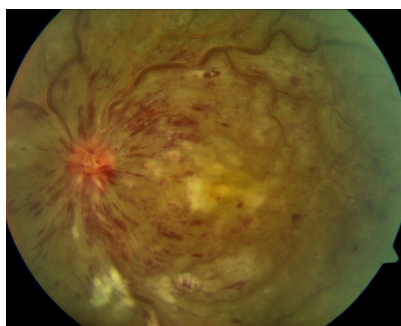


# Central retinal vein occlusion

The retina is fed by a system of blood vessels (arteries and veins) like a tree, with the trunk in the optic nerve and branches extending to the farthest edges of the retina. A central retinal vein occlusion (CRVO) is blockage of the large vein in the trunk thereby reducing blood flow to the entire retina. The retina is like film in a camera. A patient experiences CRVO as painless reduction of some or all of the visual field. Vision may be affected to varying degrees, and patients who present with relatively good vision tend to maintain good vision long-term.

## What causes central retinal vein occlusion?

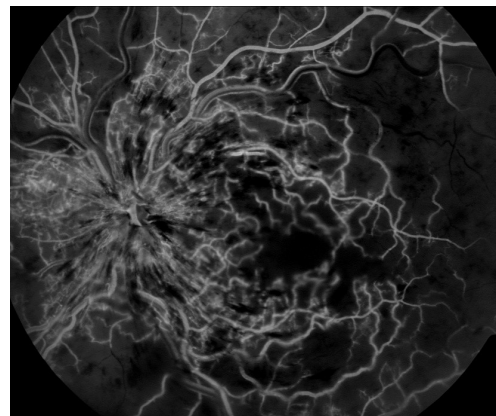


Central retinal vein occlusion occurs most often in patients with high blood pressure, diabetes, carotid artery disease, or high intraocular pressure (glaucoma). In some cases, no clear cause is found for CRVO, and in some cases CRVO is caused by rare conditions such as blood disorders or medications that cause spontaneous clotting. Your doctor will determine the appropriate medical workup depending on your age and medical history.

## Evaluation of central retinal vein occlusion

Blood flow in the retina may be damaged permanently to some degree. Swelling may occur in the central part of the retina (*macular edema*). In some cases, the eye may grow abnormal blood vessels. Abnormal blood vessels in the front of the eye may cause elevated eye pressure, or *neovascular glaucoma*. Imaging tests may be helpful in identifying these complications of CRVO.

Optical coherence tomography (OCT) is a non-invasive scan of the retina which measures and locates swelling in the retina. Fluorescein angiography (FA) evaluates blood flow in the retina with a series of photographs taken after intravenous injection of a dye (fluorescein).



▲ Fluorescein angiogram showing poor retinal blood flow and abnormal vessels in a central retinal vein occlusion.

**BayAreaRetinaAssociates**

*Diseases and Surgery of the Retina and Vitreous*



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## Treatment of central retinal vein occlusion

Treatment of CRVO depends on the findings on examination and diagnostic imaging. If swelling is present in the macula (macular edema), your retinal surgeon may recommend injection of one or more medicines into the eye. If the eye is growing abnormal blood vessels (neovascularization), your surgeon may recommend laser treatment. In some cases, surgery is recommended to remove blood from the eye or to treat macular edema that has not responded to any other treatments. In all cases, treatment of underlying medical conditions such as high blood pressure or diabetes is critical to preventing another retinal vein occlusion in the future.

### Treatments for macular edema from CRVO

<b>Kenalog (triamcinolone)</b>	This steroid is injected into the eye in the office after the eye is numbed. The medicine lasts several months. Some patients will develop cataracts or elevated pressure in the eye after injection. Kenalog has been safely used off-label in the eye for decades.
<b>Lucentis (ranibizumab)</b>	This clear medicine is injected into the eye in the office after the eye is numbed. The injection may be repeated every 4 weeks as needed. Lucentis is FDA-approved for treatment of this condition.
<b>Avastin (bevacizumab)</b>	This clear medicine is injected into the eye in the office after the eye is numbed. The injection may be repeated every 4 weeks depending on the response to treatment. Avastin has been safely used off-label in the eye since approximately 2006 and costs about 40 times less than Lucentis per treatment.
<b>Eylea (afibercept)</b>	This clear medicine is injected into the eye in the office after the eye is numbed. Eylea is FDA-approved for treatment of macular edema in CRVO and is repeated at intervals as needed.
<b>Ozurdex (dexamethasone)</b>	This medicine is injected as a solid pellet into the eye. The injection is given in the office after the eye is numbed. Ozurdex is FDA-approved for treatment of macular edema in CRVO.
<b>Micro-incisional vitrectomy surgery</b>	The vitreous gel that fills the back of the eye is removed using minimally invasive techniques in the operating room and a thin layer of tissue is peeled from the retina.

### Treatments for neovascularization in CRVO

<b>Peripheral retinal laser photocoagulation</b>	A laser is used to treat areas of retina with permanently reduced blood flow. This treatment stops the damaged retina from releasing hormones into the eye that cause swelling and abnormal blood vessel growth.
<b>Micro-incisional vitrectomy surgery</b>	If abnormal blood vessels grow and break, blood may collect in the back of the eye and block the vision. In some cases the blood must be removed in the operating room.

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Bay Area Retina Associates is a group practice of retinal surgeons. All members of the group are board certified by the American Academy of Ophthalmology and have completed fellowship training in vitreoretinal surgery. BARA surgeons have expertise in the treatment of retinal detachment, diabetic retinopathy, age-related macular degeneration, macular hole, epiretinal membrane, and retinal vascular disease. BARA physicians see patients in eight offices and perform surgery at several hospitals and surgery centers around the East Bay.