

What You Should Know About Branch Retinal Vein Occlusions

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A branch retinal vein occlusion is a condition in which a clot develops in a vein in the retina. Because of this, the flow of blood to the involved area of the retina is decreased and this area of the retina may not be able to see. About 60% of patients develop leakage of clear fluid (edema) into the retina. This can be reversible. If the clot blocks the vein completely, all blood flow to the area may stop, leading to death of the involved area of retina. This is an irreversible change. About 20% of patients with vein occlusions develop abnormal growths of blood vessels in the area of damaged retina. These can bleed into the vitreous jelly filling the eye and cause a sensation of floaters, if the bleeding is minor, or severe loss of vision if the bleeding is major. The figure below shows what the retina looks like to the doctor looking into a normal eye compared to an eye with a branch retinal vein occlusion.

Normal Retina



Branch Retinal Vein Occlusion



What would I notice if a branch vein occlusion happened to me?

Upon covering the good eye, one would usually notice blurred central vision and some blurring of the field of vision either above or below the center (but not both). There is no pain associated with branch retinal vein occlusion.

What causes branch retinal vein occlusions?

There is no known single cause for branch retinal vein occlusions. However, there are risk factors such as aging and high blood pressure, which increase the likelihood of developing the disease. Higher eye pressure than normal may also be a risk factor. Persons with branch retinal vein occlusions are at increased risk for heart attacks and strokes. For this reason, all people who smoke are advised to stop and those with diabetes and high blood pressure should aim for normal blood sugar and blood pressure. Patients with high eye pressures should take medication (usually eye drops) to lower the pressure. Rarely, blood disorders such as leukemia or excess numbers of red blood cells or platelets can lead to branch retinal vein occlusions.

What can be done for branch retinal vein occlusion?

The first step is to modify any risk factors that pertain to a patient, as mentioned in the last paragraph. A baseline set of pictures to document the severity of the condition is usually taken. These include an optical coherence tomography (OCT) scan, which measures thickness of the retina, and a fluorescein angiogram in which two tablespoons of dye are injected into a vein in the back of the hand and photographs of the retina are made as the dye circulates through the eye. The dye is not the same as that used for x-rays and the pictures are not x-rays – they are standard black and white photographs. This test will allow the ophthalmologist to see if the decreased vision is due to fluid leakage or to closure of capillaries in the retina.

If there is macular edema, an injection of medicine into the eye can reduce the edema. The three drugs most commonly used are Avastin, Lucentis, and Eylea, which are anti-vascular endothelial growth factor drugs. In resistant cases, steroids may be injected into the eye. Occasionally, a type of laser treatment is recommended which can add to the benefit of the injections or decrease their frequency. A grid pattern of light laser burns is placed in the area of swollen retina. Expectations should be tempered, since few patients have return of vision to normal.

If new blood vessels develop after the branch retinal vein occlusion, injections of anti-vascular endothelial growth factor drugs into the eye can make them regress. In addition, a form of laser treatment called sector panretinal laser treatment can achieve the same goal with fewer visits and less expense. In this type of laser treatment, laser burns are applied over the part of the peripheral retina with impaired circulation. This usually causes the abnormal blood vessels to regress and helps prevent bleeding into the jelly filling the eye.

If laser treatment is recommended, the eye is anesthetized with an injection of lidocaine through the lower eyelid, not in the eyeball. Some treatments can be performed without injections. The laser treatment takes about 15 minutes. Patients wear a patch for several hours if an injection is given. Activities are not restricted. Improvement in vision occurs slowly over several months, not overnight.

Despite laser treatment, some patients experience bleeding into the vitreous, the jelly filling the eye. In these patients, an operation called vitrectomy can be done to remove the blood if it does not clear up spontaneously. This same surgery can be done if scar tissue develops, detaching or wrinkling the retina, a

complication occurring in approximately 1% of cases of branch retinal vein occlusion.

If you have questions after reading this document, further information is available at my website www.retinareference.com or at the website of the National Library of Medicine, Pubmed, found at www.pubmed.com, or you can call me at 704-295-3180.

References

1. Miwa Y, Myraika Y, Osaka R, et al. Ranibizumab for macular edema after branch retinal vein occlusion. One initial injection versus three monthly injections. *Retina* 2017; 37: 702-709.

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