

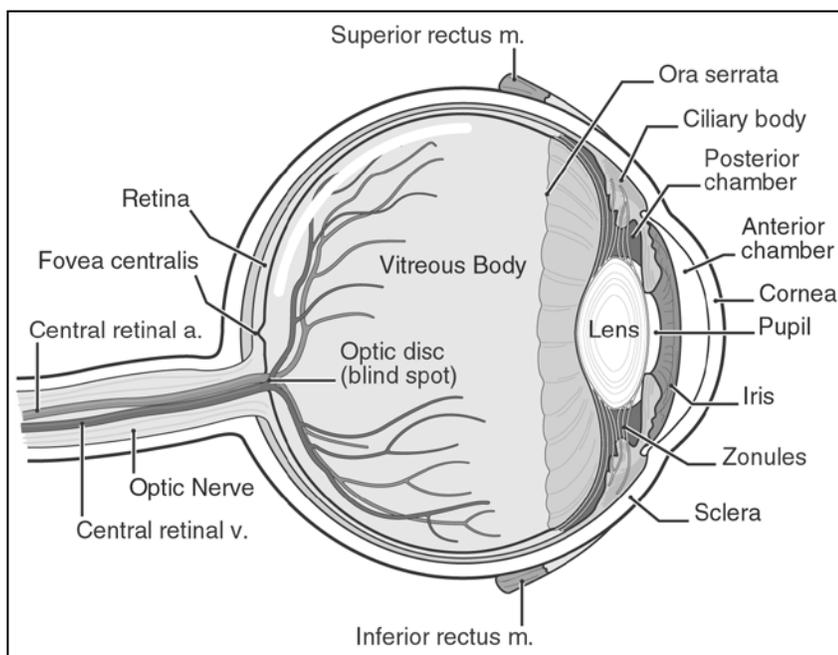
# What you should know about Nonarteritic Ischemic Optic Neuropathy

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Nonarteritic ischemic optic neuropathy (NAION) is a disease occurring in the blood vessels to the optic nerve, the nerve connecting the eye to the brain. In simple words, NAION is a type of stroke of the eye. Blood flow becomes inadequate in one of the blood vessels to the optic nerve, resulting in vision loss and nerve damage. In the United States population there are approximately 5700 cases of this disease per year, with the majority of affected patients being white. The visual loss symptom of this disease is usually first noticed by the patient (73% of the time) upon waking.

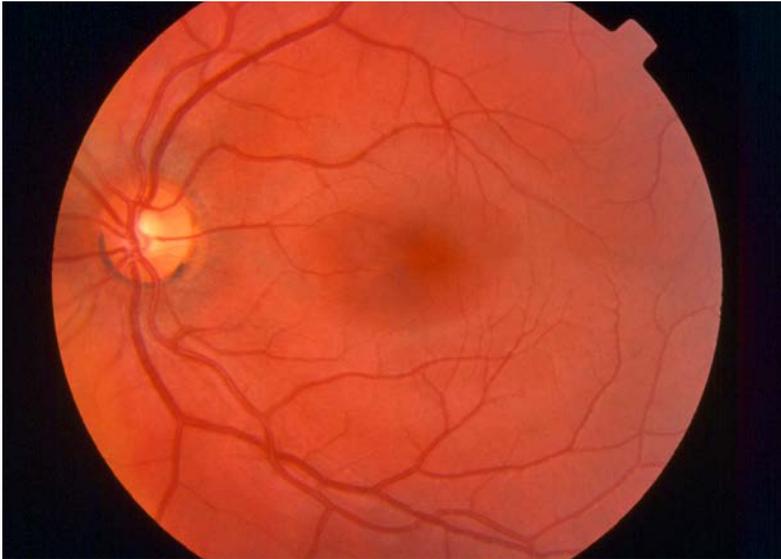
There are contributing factors that predispose a patient to this disease. Some of these are related to overall health of the body. The chances of developing this condition increase with age, high blood pressure, diabetes mellitus, bleeding peptic ulcer, chronically high cholesterol, sleep apnea syndrome, and smoking. Certain anatomic characteristics of the eye increase the

likelihood as well. The most important is an optic nerve with a small central cup, reflecting a small entrance hole in the sclera, the tough white shell framing the wall of the eye. The size of the optic cup is a congenital factor, not something the patient can control. Figure 1 shows the anatomy of the eye and some of the structures mentioned here.



**Figure 1. Anatomy of the Human Eye**

Finally, certain physiologic events can predispose a patient to NAION. A sudden loss of blood, for instance during an operation, can lead to this problem. A profound drop in blood pressure under general anesthesia can also be a cause. A gradual onset of anemia can predispose to NAION when coupled with a smaller drop in blood pressure, for instance, the drop commonly occurring during sleep. Sleep apnea, in which breathing pauses during sleep, can increase the chance of developing NAION. Taking certain types of medications, such as beta-blockers, may blunt the body's reflex adjustments to loss of blood and make the condition more likely. In many cases, more than one of these possible predisposing factors may pertain to explain the cause of the stroke. Figure 2 shows the inside of a normal eye, while Figure 3 shows an eye affected with NAION.



**Figure 2. View inside a normal, healthy human eye.**



**Figure 3. View inside a human eye with Nonarteritic Ischemic Optic Neuropathy (NAION).**

### **Distinguishing Nonarteritic (NAION) from Arteritic Ischemic Optic Neuropathy (AION)**

Strokes of the optic nerve can also occur from inflammation caused by an abnormally functioning immune system. In the elderly, AION can be a sign of temporal arteritis, which can lead to inflammation of blood vessel walls, frequently occurring first in the arteries to the optic nerve. The patient may first notice signs of this condition as the jaw getting tired when chewing, as weakness of the shoulders or thighs, or as headaches or double vision. Since the treatment for temporal arteritis, prednisone, is quite different from that of NAION, your doctor will order a blood test called erythrocyte sedimentation rate, which will show an elevated count in the presence of temporal arteritis. In cases that are uncertain, a biopsy of the temporal artery, found just below the

skin in front of the ear, may be recommended to make the distinction. Arteritic ION is much less common than NAION, accounting for only 6% of all cases of Ischemic Optic Neuropathy.

### **What can the patient do to help?**

If patients smoke, they can help themselves by stopping. Patients with diabetes can help themselves by keeping their blood sugar in the normal range. Patients with uncontrolled high blood pressure are treated with medicines to gradually lower blood pressure to the normal range. Patients with sleep apnea should start continuous positive airway pressure. Patients on too much blood pressure medicine may have some medications stopped. An aspirin daily or Plavix, a different medicine for preventing platelet stickiness and blood clotting, may be recommended. There is no treatment for the nerve that suffered the stroke. Healing occurs over one to two months and is monitored to determine the ultimate stable loss of visual field. The optic nerve looks paler after one to two months and a color picture of its final appearance may be obtained as a new baseline for later comparison.

### **What is the risk of developing NAION in the fellow eye?**

Although it is possible for a second stroke to occur in the same eye, it is rare (3/85 cases at 5 years in one study), usually because the first attack causes "uncrowding" of the nerve when many fibers died. Second eye involvement, however, is more common. Since the same factors that caused the problem in the first eye often cause it to occur in the second eye, patients are justified in their concerns. If a patient has sleep apnea, efforts should be made to treat this condition. If medications are taken that might be associated with the condition, consideration of changes needs to be given by the patient and the prescribing physician. The possibility of fellow eye involvement at a later date is the main motivator for lifestyle changes aimed at reducing the odds of this occurring. Statistically, the chances of the second eye having an identical problem are 19% at five years. However, for any particular patient they may be more or less than this figure.

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