Optic Nerve Hypoplasia

**Definition:**

For individuals with Optic Nerve Hypoplasia, ONH, the optic nerve is either nonexistent or did not develop properly. This prevents adequate information to reach the brain for processing. Many people with ONH also have malformation or absence of other structures of the midline of the brain that are near the optic nerve. Children with ONH can have abnormalities in the structure of the brain, its function, or both.

The optic nerve is composed of about one million optic nerve fibers. Some optic nerve fibers represent central vision, that part of vision used for reading, and other optic nerve fibers represent more side vision or peripheral vision. An individual with ONH can have poor central vision or poor peripheral vision, depending on which nerve fibers are missing.

**Causes:**

The exact causes of optic nerve hypoplasia are unknown. It is believed that some trauma event to the fetus during the time the optic nerve forms connections to the brain.

**Symptoms:**

During an eye exam the front of the optic nerve, or optic disc, appears smaller than normal.

ONH can be present in either one or both eyes. In some children, however, these abnormalities can lead to developmental delays and other challenges. Many of these challenges include difficulties with sensory integration, motor planning, academic skills, speech and language, and higher order communication and social skills. Other parts of the brain can be affected as well. These can be midline anomalies of the brain and hormonal insufficiencies, causing growth problems. Other visual characteristics may include lack of seeing detail, lack of depth perception, and difficulty seeing objects in the periphery.

**Treatments:**

When only one eye is affected, treatment may include strengthening of the weaker eye to prevent estropia, a turning in of the eye or amblyopia, lazy eye.

Some teaching strategies include:
- Increase size, contrast and lighting of visual materials
- Adjusting light levels to minimize light sensitivity
- Teaching the child to look for objects outside his visual field
- Develop depth perception through fine and gross motor activities

ONH is not progressive, inherited and cannot be cured.

**References:**


