Meet Angelina, Oscar and Alex

Angelina, who is eight, and her brother Oscar, who is five, were born with no irises in their eyes. Their pupils are always open to the maximum degree. Bright light is problematic for them, and they like to wear sunglasses and caps when they’re outdoors. Their acuities for close work are compromised, and eyeglasses do not help enough to make a difference. Angelina uses a high-powered magnifier for looking at pictures, and she uses a closed-circuit television to enlarge other print material. She is already good at using a computer keyboard without looking at the keys, thanks to instruction from her teacher of visually impaired students. Oscar likes to use his magnifier to look at bugs and worms in the school yard. He is learning to clean it and put it away carefully after each play period.

Alex is graduating from high school this year. He was born with very small eyes and wears synthetic shells over them to make his face appear more like his peers. The shells have holes through which he sees a bit, but his vision is used primarily for travel rather than for sustained reading or doing close work. He uses braille proficiently for schoolwork, but reads some signs in the community and bits of information on the whiteboard by using a monocular telescope.

Some types of visual impairment are caused by lack of formation of the eye or by underdevelopment of the eye. These conditions may be caused by damage during gestation or by genes which are inherited. Conditions that result from malformation of the eyes include anophthalmia, microphthalmia and aniridia. If you have studied Greek, you may already know what these words refer to, but for those who haven’t, let’s define them. People who have anophthalmia were born without eyes; the eyes did not develop at all. Microphthalmia means that the eyes developed somewhat, but they are very small, too small to provide the amount of information needed for visual processing in the brain. Aniridia refers to the condition of having no irises. (The iris is the muscle we see in the center of the eye that determines the color of the eye and allows more or less light to come in through the pupil.)

People who have no eyes obviously do not have vision. Often they wear prosthetic eyes. Modern prosthetic eyes are made of an acrylic plastic, the same material that is used for dentures. They are designed to fit the wearer. Some prostheses replace the whole eye and some are “scleral shells” which cover the existing eye. Sometimes scleral shells have a clear center to allow light to get into the eye. Scleral shells are often worn by people who have microphthalmia and have some usable vision.
Prosthetic eyes need to be replaced periodically as a child grows. Often they are changed each year. Adults can keep the same prosthesis for five to eight years if there are no changes in their eye socket.

Most people who wear prosthetic eyes leave them in all the time. Some people clean them with soap and water every three months or so, and some people clean them more often. It is important to use only mild soap to clean them, and to rinse them well. If there is a lot of build-up of old tears on the prosthesis, it is an indication that it does not fit properly. A visit to the ocularist who made it is in order.

Some people prefer to take their prosthetic eyes out when sleeping or swimming, for example. The eyes must be kept in a solution of salt water (1 cup water, ¼ teaspoon salt) or in a commercial contact lens solution. If the prosthetic eye is worn while swimming, it is wise to wear goggles over it to avoid having it slip out in the water.

Prosthetic eyes need to be checked and polished each year by the ocularist to maintain their cosmetic function, and to make sure they are still fitting properly.

People who have aniridia have no iris to regulate the size of their pupils. If you have ever gone outside on a bright day after having your pupil dilated by an eye care professional, you can imagine that having a pupil that is fixed to let the maximum amount of light in can be painful and can cause blurry vision in brightly lit situations. People who have aniridia may also be nearsighted. Wearing glasses, sunshades and hats with dark brims is important to increase visual acuity and to protect the retina from being damaged by too much sunlight.

Here is a list of accommodations you can provide for students who have microphthalmia:

- Facilitate preferential seating for close viewing;
- Enlarge materials as recommended by the teacher of visually impaired students;
- Ask the teacher of visually impaired students and the students’ families to develop a plan for caring for prostheses or scleral shells if they are removed during school time or if swimming is part of school program.

Here is a list of accommodations you can provide for students who have aniridia:

- Facilitate preferential seating for close viewing and to avoid facing light sources;
- Enlarge materials as recommended by the teacher of visually impaired students;
- Encourage the students to wear sunshades and/or a cap with a dark brim in brightly lit situations.
Resources
