

## Pediatric Ophthalmology

### Strabismus

Strabismus is an eye alignment condition when both eyes do not look at the same point at the same time. Strabismus most often begins in early childhood. It is sometimes called crossed-eyes, lazy eye or squint.

Strabismus also affects adults because of problem with muscles around the eyes or the nerves that control these muscles function.

Strabismus includes common conditions like **ESOTROPIA** (crossing) and **EXOTROPIA** (drifting out or “walleye”). Other types of strabismus involve vertical misalignment of the eyes, weakness of one or more of the six muscles on each eye or restrictions in the movement of the eye. Surgery is intended to realign the eyes, reduce restrictions and enhance power in the direction of a weak muscle. Young children with strabismus are at risk for **AMBLYOPIA**, a term used for weak vision in an eye from poor development of the vision centres in the brain. Older children and adults may have double vision with strabismus, known as **DIPLOPIA**.



There are different treatments for strabismus. Glasses (with or without prisms) and patching usually treat the smaller eye turns and are frequently used for children. Surgical treatment is usually used when the other modalities fail or the angle of turn is too large to correct with other treatment options.

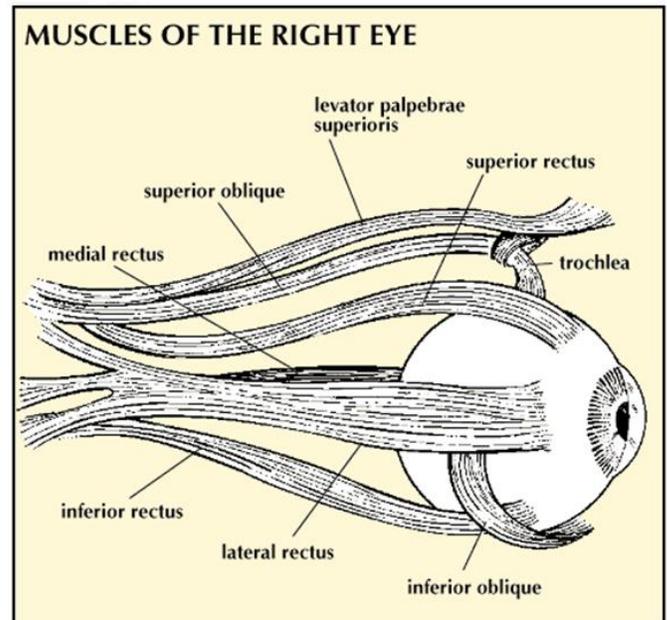


Before and after glasses

## Strabismus Surgery

Strabismus surgery is a day surgery done in hospital under general anesthesia.

There are 6 muscles around each eye, which control the eye movements. The white coat on the surface of the eye covers these muscles. During the surgery this white coat is opened and muscles are moved to correct the eye turn. Small absorbable stitches are used to close the coat at the end of the procedures.



After the surgery the eye might be red and irritated, which usually goes away in a few days. You will be prescribed antibiotic and anti-inflammatory eye drops for the first week. Cold compress are also very helpful.

Some double vision is often a part of recovery. If this is very disturbing the first day or two, cover one eye or the other.

You will be able to go back to work or school 3-5 days after surgery. A complete recovery time is variable and different for everybody.



Before and after surgery

## **Amblyopia**

Amblyopia, or "lazy eye" is the most common reason for vision loss in children. Amblyopia is a decrease in the child's vision that can happen even when there is no problem with the structure of the eye. The decrease in vision results when one or both eyes send a blurry image to the brain. If the brain receives a clearer image from one eye, it will suppress the blurry image, so the weak eye stays weak. Only children can get amblyopia. If it is not treated, it can cause permanent loss of vision.

There are several different causes of amblyopia: strabismus, refractive error (need for glasses) and structural problems of the eye. The end result of all forms of amblyopia is reduced vision in the affected eye(s).

### **Will glasses help a child with amblyopia to see well?**

Maybe, but they may not correct it all the way to 20/20. With amblyopia, the brain is "used to" seeing a blurry image with time; however, the brain may "relearn" how to see and the vision may increase. If glasses alone do not increase the vision all the way to 20/20, the normal eye is treated (with patching or eye drops) to make the amblyopic (weak) eye stronger.

### **What can be done if my child has high amounts of farsightedness and/or astigmatism and is diagnosed with bilateral amblyopia?**

Bilateral amblyopia is usually treated with consistent, early glasses, and or contact lenses with follow-up over a long period of time. If asymmetric amblyopia (one eye better than the other) occurs, then patching or eye drops may be added.

### **When should amblyopia be treated?**

Early treatment is always best. If necessary, children with refractive errors (nearsightedness, farsightedness or astigmatism) can wear glasses or contact lenses when they are as young as one week old. Children with cataracts or other "amblyogenic" conditions are usually treated promptly in order to minimize the development of amblyopia.

### **How old is TOO old for amblyopia treatment?**

A recent National Institutes of Health (NIH) study confirmed that some improvement in vision could be attained with amblyopia therapy initiated in younger teenagers (through age 14 years). Improvement in vision has also been reported in older ages, so there is no age limit. However, better treatment success is achieved when treatment starts early.

### **How is amblyopia treated?**

One of the most important treatments of amblyopia is correcting the refractive error with consistent use of glasses and/or contact lenses. Other mainstays of amblyopia treatment are to enable as clear an image as possible (for example, by removing a cataract), and forcing the child to use the nondominant eye (via patching or eye drops to blur the better-seeing eye).

Patching should only be done if an ophthalmologist recommends it. An ophthalmologist should regularly check how the patch is affecting the child's vision. Although it can be hard to do, patching usually works very well if started early enough and if the parents and child follow the patching instructions carefully. It is important to patch the dominant eye to allow the weak eye to get stronger.

### **Are there different types of patches?**

The classic patch is an adhesive "Band-Aid" which is applied directly to the skin around the eye. These may be available in different sizes for younger and older children. For children wearing glasses, both cloth and semi-transparent stickers (Bangerter foils) may be placed over or onto the spectacles. "Pirate" patches on elastic bands are especially prone to "peeking" and are therefore only occasionally appropriate.



### **Do drops work for all amblyopic children?**

Not all children benefit from eye drop treatment for amblyopia. Penalizing eye drops (such as atropine) work less well when the stronger eye is nearsighted.

### **How many hours per day of patching is enough when treating amblyopia?**

The mainstay of treating amblyopia is patching of the dominant (good) eye, either full or part-time during waking hours. Although classic teaching suggests that the more hours per day patching is performed, the greater the result, recent studies suggest that shorter periods may achieve similar results as longer amounts of patching in patients with moderate amounts of amblyopia.

### **Should patching be performed during school hours?**

In many instances, school is an excellent time to patch, taking advantage of a nonparental authority figure. Patching in school hours gives the class an opportunity to learn valuable lessons about accepting differences between children. While in most instances, children may not need to modify their school activities while patching; sometimes adjustments such as sitting in the front row of the classroom will be necessary. If the patient, teacher, and classmates are educated appropriately, school patching need not be a socially stigmatizing experience. On the other hand, frequently a parental or other family figure may be more vigilant in monitoring patching than is possible in the school setting. Parents should be flexible in choosing when to schedule patching.

### **What if my child refuses to wear the patch?**

Many children will resist wearing a patch at first. Successful patching may require persistence and plenty of encouragement from family members, neighbors, teachers, etc. Children will often throw a temper-tantrum, but then they eventually learn not to remove the patch. Another way to help is to provide a reward to the child for keeping the patch on for the prescribed time period.

## **Can surgery be performed to treat amblyopia?**

Surgery on the eye muscles is a treatment for strabismus – it can straighten misaligned eyes. By itself, however, surgery does not usually or completely help the amblyopia. Surgery to make the eyes straight can only help enable the eyes to work together as a team. Children with strabismic amblyopia still need close monitoring and treatment for the amblyopia, and this treatment is usually performed before strabismus surgery is considered.

Children who are born with cataracts may need surgery to take out the cataracts. After surgery, the child will usually need vision correction with glasses or contact lenses and patching.

## **What are appropriate goals of amblyopia treatment?**

In all cases, the goal is the best possible vision in each eye. While not every child can be improved to 20/20, most can obtain a substantial improvement in vision. Although there are exceptions, patching does not usually work as well in children who are older than 9 years of age.

## **What happens if amblyopia treatment does not work?**

In some cases, treatment for amblyopia may not succeed in substantially improving vision. It is hard to decide to stop treatment, but sometimes it is best for both the child and the family. Children who have amblyopia in one eye and good vision only in their other eye can wear safety glasses and sports goggles to protect the normal eye from injury. As long as the good eye stays healthy, these children function normally in most aspects.

## **Tear Duct Obstruction (Tearing Baby)**

The eye surface is constantly being washed with tears and tear drains down the tear duct into the nose.

Many children are born with blockage at the nasal end of this duct (nasolacrimal duct). The blockage causes tearing and eye discharge. In more than 90% of cases, the blockage opens up spontaneously by the age of 1 year.

If the tearing does not stop spontaneously, a probing procedure is required. This procedure is done under general anesthesia and is usually safe and short.

