

# **A PARENT'S VIEW OF A TURNED EYE**

## **Introduction**

It is perfectly natural as a parent for you to feel anxious and a little upset by the fact that your child has a turned eye. One of your concerns will be that your child doesn't look nice with the eye turned. You may have also notice that your child doesn't perform certain visual and eye-hand tasks as well as expected because of the eye turn. I'm also sure that you will be getting lots of so called "helpful" advice from friends and relatives as to what you should be doing about the turned eye.

The following information is presented to you to alleviate some of your anxieties and fears and to answer some of the questions you may have about your child's condition. I've tried to write this without becoming too technical or using jargon but if you have any questions that aren't answered here, or any point you want clarified please don't hesitate to ask your optometrist.

## **1. Understanding the Condition**

The first thing to remember is that the turn doesn't worry your child very much. They're not in any pain or discomfort and as far as they're concerned they can't see what all the fuss is about. This is because when the eye is turned the brain does not pay attention to that picture so that your child isn't seeing two. Sometimes when a turn is first developing the child will get intermittent times of doubleness but the brain learns very quickly to turn one of the pictures off. This is called suppression and if it occurs long enough then the eye that's being turned off won't function as well in terms of eyesight (seeing clearly), eye movement skills, or eye processing (perception) abilities. When the eyesight becomes poor this is called amblyopia and this will have to be treated first before we can get the brain to pay attention to that eye.

If it's any consolation about 7% of children between the ages of 6 and 17 years have some type of eye turn. Of these about 80% have an eye turning inwards and 20% have an eye turning outwards. There is often a strong family tendency towards eye turns (47%). This means there's a genetic factor that may have made your child predisposed to developing the condition.

## **2. But Why did My Child Develop an Eye Turn**

A very small percentage of children are actually born or develop an eye turn very soon after birth (in the first 2 to 4 months). Usually this type of turn is an inward eye turn and is called a congenital turn. Often the actual underlying cause is not found and surgery maybe used in the hope that the child will establish normal two-eyed vision. Sadly this is rarely the case (less than 15%). The good news is that the majority of eye turns aren't this type and develop after the age of 6 months. Research suggests that often these children develop turns due to one or more of the following situations.

- A). A significant refractive error. This means that one or both eyes are very longsighted or shortsighted. Simply stated the child has a focus problem not an eye muscle problem. The brain focuses the eyes on objects to see things clearly and this results in stimulation of the muscle, which pulls the eyes in. Eventually the brain learns to adapt to this by leaving one eye in constantly and turning that picture off. Often this type of turn is first noticed when the child is becoming more involved in close work (ages 2 to 4 years). This is because close work requires a greater focusing effort to keep things clear hence a greater pull inwards of the eyes. The turn may also be precipitated by illness or fatigue again due to the fact that there is an increased effort involved in keeping the world clear under these situations. Again, there can also be genetic predisposition for this to occur.
- B). Some individuals seem to have an excessive stimulation of the inner muscles that pull the eye inwards when the eyes try to focus. This is called a high accommodative convergence ratio. Hence, even with relatively low degrees of long sightedness or little near work demand the eyes get excessive stimulation for an inward position. Eventually the brain learns to leave one eye in and turn it off to alleviate the stress and demand of pulling both eyes out.

Some children have a combination of both A and B conditions. Either way it is important that you understand that rarely is an eye due to a muscle problem. If there is a congenital defect in a muscle or a neural system affecting the eye muscle then often visual therapy and or surgery has limited success at alleviating the condition.

### **3. What's Going to Happen in the Future**

Unfortunately very rarely will a child grow out of an eye turn. Usually exactly the opposite occurs in that the turn will get worse if left untreated or, as the child gets older. There may be times however that you do notice the turn appears worse depending on how tired the child is, how much close work they've been doing, if they're ill or upset etc. Having said that even if the eye is turned only a little the child will still be making the same adaptations to the problem. That is, the brain will be turning the picture off in the eye that is turned. So there are two problems we must address, the first is the cosmetic problem of the eye looking unsightly when it's turned as well as the second and more significant visual problem that the brain isn't paying attention to both eyes. When it does pay attention to both eyes your child will have one 3D picture. This is called binocular vision. The fact that your child doesn't have binocular vision doesn't mean they're going to fall over constantly or bump into things. There are a lot of one-eyed people in the world who survive very well. What it does mean however is that your child won't have the fine control over spatial judgments such as depth perception and eye-hand skills that they would otherwise have if they were using two eyes. Research has also shown that they may be more susceptible to visual fatigue as well as having difficulty in learning through their visual system (e.g. reading).

#### **4. How Do We Straighten the Eye?**

By now you will have realized that it isn't a matter of fixing an eye muscle to pull the eye straight. This may well give us a cosmetic improvement but fails to address the underlying cause of the turn and hence will fail to develop the mechanism in the brain to maintain the eye straight with normal binocular vision. To achieve this functional cure we have 3 means at our disposal.

##### **A. Spectacle Lenses**

##### **B. Visual Training**

##### **C. Surgery**

##### **A. Spectacles**

If you go back to the most common reasons for eye turns you will appreciate why spectacle lenses work so well to help straighten an eye turn. As a matter of fact research shows that 80% of cases, spectacle lenses combined with visual therapy will achieve a functional cure. Spectacles help us remove the reason why the eye turned. They help compensate for the long sightedness and relieve the drive to pull the eyes in. In some cases this is all that has to be done.

##### **B. Visual Training**

Visual training isn't just eye exercises. Visual training is about teaching the child how to straighten their eye and developing the mechanism by which they can maintain the eyes straight. It is not something we do to the patient but rather something we do with the patient. A child is never too young for visual training. Just the type of training will be different at different ages. For a very young child training will be applied to help prevent some of the adaptations the brain will make to eye turned such as amblyopia. This, with the application of spectacles, is sometimes all we have to do to help the young child to develop normal binocular vision. The majority of cases however will need more than this with visual training therapy over 6 to 18 months before stable binocular vision is established.

##### **C. Surgery**

If your child has a congenital eye turn as mentioned earlier or a true muscle defect then surgery may be recommended very early. Unfortunately your child will still only have a small chance of achieving a full functional cure. Research has also shown that there is little advantage in having this surgery prior to 12 months of age. In other cases when there is a very large degree of turn, which is not responding well to spectacle, lenses and visual training then surgery may also be utilized. These cases do not have as high success rate in achieving a functional cure. This success rate however is further improved by post surgical training. About 30% of all children who have eye surgery require multiple surgeries (2 to 3 operations). As you will already appreciate surgery will not be treating the underlying reason for the eye turn but rather lengthening or shortening the muscle of the eye in the hope of straightening the eye. With any surgery there is a degree of risk. One child every 2 years dies on

the operating table having eye surgery (USA). For this reason and the reasons we've mentioned above surgery is the last alternative to consider in achieving a functional cure for your child's eye turn.

## **5. Is There Anything Else I Should Know About**

As progress is made we will expect your child to demonstrate some variable eye or head turn behaviour. For example we may notice sometimes as the eye turn improves the good eye now starts to turn. Your child may not like their spectacles because it will change their visual world. They may feel dizzy, sick or be visually confused. When they start establishing using both eyes they may even complain of double vision. Some parents will also notice that their child's school performance suffers during therapy. These symptoms in themselves are not bad and should be viewed as the visual system changing for the better. Either way these symptoms will be short-term experiences only.

As mentioned earlier as your child improves their spectacle correction may be required to be changed. Before treatment commences it is very difficult to predict how often this will occur. Bifocal lenses are also often used in the treatment to eye turn. These are especially useful when the degree of eye turn is different when the child is viewing in the distance as against looking at near. Children do not have the adaptation problems that adults have getting used to bifocals. Many different types of bifocals nowadays are virtually invisible in the frame so that neither you nor the child will even know that they have them on. Initially upon taking their spectacles off the eye turn will recur. The same may be true when the child is very upset, sick or tired. Once binocular vision is established however these episodes of intermittent eye turn will get less and less. It will always be important that your child has regular visual examinations throughout their schooling.

## **6. Where Do I Go From Here**

Your first job is to digest all this information. I hope it's gone a long way to alleviating any fears or anxieties you may have. I'm sure it's generated some questions so please don't hesitate to ask. Lack of compliance to optometric therapy is the main reasons why therapy fails. You can't comply if you're not committed and you can't be committed if you don't understand.

Once you've committed to optometric therapy the first step will be to provide our child with spectacle lenses. Your role then will be to help train your child to wear their spectacle lenses. Once we've got spectacle compliance, which may take 4 to 6 weeks we will then commence visual training.