

# Does my child have a squint?

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The family doctor plays a key role in the detection of strabismus, particularly in children who are too young to attend school or preschool. This article describes an approach to early recognition of the problem, with the goal of full development of visual function.

Parents will often ask the family medical practitioner whether a child has a squint or lazy eye. As an initial step, the terms used by the parent will need to be clarified: a 'squint' may refer to either strabismus (misalignment of the visual axes) or screwed up eyelids; a 'lazy eye' may refer to strabismus, ptosis or amblyopia.

Between 1 and 2% of children have manifest strabismus. The approach described in this article will enable the vast majority of cases to be identified.

## History

When you have confirmed that the parents mean strabismus, ask whether the problem is constant or intermittent. If it is intermittent, ask about the conditions under which the problem occurs. They may say that one of the eyes turns out on far-distance viewing, or that it turns in when the child is looking at pictures in books.

You should also include a history of general health, as well as perinatal, neonatal and developmental histories. A family history of strabismus or amblyopia is relevant, as is a history within the family of glasses worn as a child.

## Initial examination

The initial examination will provide the answer for the vast majority of children with suspected strabismus. If any of the tests of the initial examination is abnormal, referral to an ophthalmologist is indicated. If all of these tests are negative, true strabismus is unlikely to be present.

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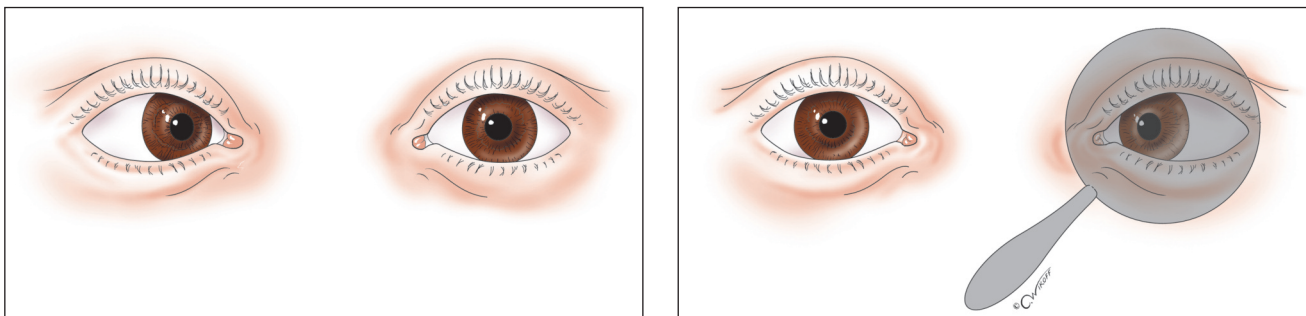
Figure 1 (left). A right head tilt caused by left superior oblique palsy.



Figure 2 (above). Right esotropia (convergent squint). The right corneal light reflex is displaced temporally.

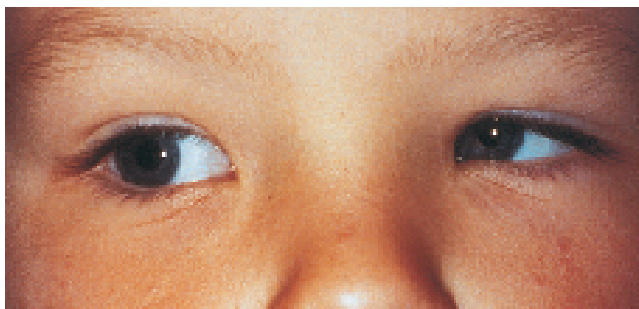
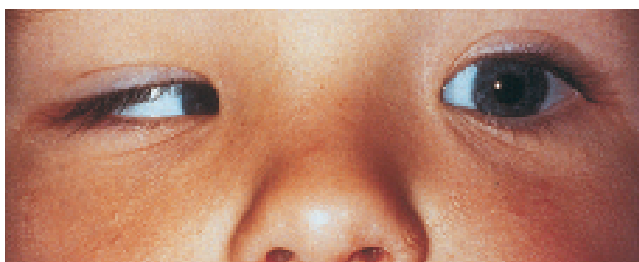
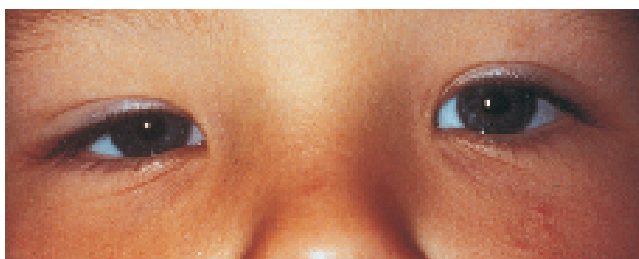


Figure 3 (above). Right exotropia (divergent squint). The right corneal light reflex is displaced nasally.



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Figures 4a and b. The cover test. a (left). Before covering one eye with an opaque cover, draw the child's attention to a detailed object. In the case shown here, the child's left eye has a normal position and the right eye turns in. b (right). Place an opaque cover over the left eye while observing the right eye. Any movement of the uncovered eye indicates that it was not properly aligned on the target – in this case, the right eye has moved to take up the normal position, indicating that it was not properly aligned on the target. Note that the covered eye has turned in.



Figures 5a to c. Bilateral Duane retraction syndrome. a (top). In the primary position (looking straight ahead), the eyes appear straight. b (middle). Abduction is more strongly reduced in the left eye than the right eye, leading to a convergent misalignment on left gaze. c (bottom). Misalignment occurs on right gaze also, but is not as severe.

### Head posture

Some forms of strabismus cause a characteristic abnormal head posture. An example is a head tilt with superior oblique palsy, usually to the side opposite the palsy, as shown in Figure 1.

Other ocular causes of an abnormal head posture include lateral rectus palsy, restrictive strabismus and other limitations of eye movements, and nystagmus with a null point in eccentric gaze. There are also neuromuscular causes for an abnormal head posture.

### Corneal light reflex test

The corneal light reflex test is especially useful in infants. When the observer is positioned in line with a light source to which the child's attention is drawn, the reflexes should be symmetrical. Often the reflexes are not exactly in the centre of the pupil but they must be symmetrical. Asymmetry usually indicates strabismus, and the direction of reflex displacement shows the direction of deviation of the eye:

- esotropia causes temporal displacement (Figure 2)
- exotropia causes nasal displacement (Figure 3)
- vertical deviations cause vertical displacement.

For two reasons, symmetrical reflexes do not absolutely exclude strabismus. First, accommodation is not controlled (that is, active focus on the light is not required) so accommodative esotropia may be missed. Second, the test is done from a short distance, and therefore strabismus that tends to be mainly or only present with distant fixation (especially exotropias) may not be detected.

### The cover test

The cover test should be performed for both distance and near fixation. Attention should be drawn continuously to the fine features of a detailed target, thus requiring the child to

accommodate accurately.

First, the examiner covers one eye while observing the uncovered eye (Figures 4a and b). Any movement of the uncovered eye shows that the eye was not properly aligned on the fixation target prior to introduction of the cover, and thus a manifest strabismus is demonstrated.

The direction of eye movement allows the direction of deviation to be identified:

- esotropia will cause the eye to abduct
- exotropia will produce adduction
- vertical deviations will produce vertical movements.

The cover test is then repeated for the other eye.

### The cover–uncover test

The cover–uncover test is identical to the cover test, except that the examiner observes the eye that is being covered. If a latent strabismus is present, the covered eye will drift out of alignment under the cover. This is a slow drifting movement, but the recovery movement on removal of the cover is usually quicker and easier to observe.

The cover–uncover test is indicated if the cover test shows no manifest deviation. The child may have a tendency to a deviation that is currently being controlled by the brain's fusion mechanisms. A positive cover–uncover test in the presence of a negative cover test demonstrates a latent strabismus or an intermittent tropia that is currently being controlled.

### Eye movements

Eye movements with both eyes open should be observed in the cardinal positions of gaze (right, left, up and down), as well as: up and right, up and left, down and right, and down and left.

For infants, the examiner may elicit these movements by sitting on a swivel chair, holding the child stationary and rotating the chair, so as to produce vestibulo-ocular reflexes. Some conditions cause eye movement defects in some positions of gaze which can result in the strabismus being present in these gaze positions only – Duane retraction syndrome is an example (Figures 5a to c).

### Further examination

A child with suspected strabismus who is referred to an ophthalmologist will be assessed for visual acuity, deviation and motility, and refraction. An examination of the fundus will also be performed.

### Visual acuity

Some assessment of the level of visual function of each eye will always be made. The method used will depend on the child's age.

### Deviation and motility

An assessment of the deviation and motility will usually include some of the tests described in the initial examination (especially cover tests), but quantification is added to the test. Most commonly, prisms will be used.

### Refraction

Cycloplegic refraction is mandatory. Cyclopentolate (Cyclogyl, Minims) is the most commonly used agent, but patients with darker coloured eyes may require homatropine (Isopto Homatropine, Minims) or even atropine (Atropt, Minims). There is no other way to be sure of uncovering the entire refractive error, especially hypermetropia, in young children.

### Fundus examination

Dilated fundus examination using cycloplegic agents is mandatory, enabling one to detect underlying causes of poor vision that may affect the prognosis for the strabismus itself, including media opacities (such as cataracts) and retinal or optic nerve anomalies (possible causes of sensory strabismus). The underlying cause may have genetic implications.

Retinoblastoma, a highly malignant retinal tumour, is a rare cause of strabismus. If found early the cure rate is high, but failure to diagnose it can have disastrous consequences.

### Conclusion

Strabismus is common in children. The role of the GP includes recognition of the problem and ophthalmological referral when a strabismus is recognised. Such referrals make up a large proportion of the patients attending most paediatric ophthalmology clinics.

The GP is also needed to reinforce the information and explanations that should be given to the child's parents by the ophthalmologist, with repeated explanations, if required. **MT**