

Strabismus



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KEYWORDS

• Strabismus • Esotropia • Exotropia • Cranial nerve palsies

KEY POINTS

- Defining the type of strabismus creates a framework for work-up and management.
- Comitant esotropia is most commonly a childhood condition treated with glasses and surgery.
- Comitant exotropia is often a childhood condition that does require surgical correction.
- Microvascular disease is the most common cause of ocular cranial nerve palsies in adult patients.

INTRODUCTION

Patients with misaligned eyes often first present to a primary care clinician for evaluation. The misalignment may be intermittently present or subtle in character, making evaluation difficult. Strabismus is any misalignment of the visual axes and may be referred to as *squint*. A basic understanding of varying types of strabismus allows better communication with patients and parents as well as direct referral and treatment. Although strabismus may be referred to as *lazy eye*, the term is used in multiple diseases, such as amblyopia (decreased vision in an eye without signs of physical defect or pathology), ptosis, and strabismus. Strabismus affects 1% to 3% of children. It is seen more commonly in children with a history of prematurity; systemic diseases, such as cerebral palsy; genetic syndromes; and a family history of strabismus.¹

Parents are often convinced that their child has a single eye that is weak, but most commonly 1 eye is simply the dominant, or fixating, eye. If the deviated eye is forced to fixate by covering the dominant eye momentarily, however, then the deviation seems to switch eyes. This demonstrates that the neuromuscular imbalance is between the eyes and is usually not limited to 1 eye or the other. In patients with palsy of a cranial nerve or 1 muscle, the dominant eye continues to fixate even if it has the effected muscle.²

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The most common form of strabismus is in the horizontal axis. An eye crossed relative to the other is called an esotropia, whereas an outward drift of 1 eye is called an exotropia. In vertical deviations, the effected eye must be specified, because a left hypertropia is the same as a right hypotropia. More complex forms of strabismus have differing misalignment in various gazes. Deviations are further defined by their comitance. Comitant deviations are the same in all directions of gaze, and incomitant deviations vary depending on the gaze. Nevertheless, the basic approach to strabismus includes defining the type of strabismus, recognizing patterns of misalignment, and applying the appropriate work-up/treatment. This review covers the basic types of comitant esotropia and exotropia and misalignments seen in cranial nerve palsies. Special syndromes and systemic diseases that directly affect the extraocular muscles and restrictive processes are beyond the scope of this review.

Assessment of strabismus is performed by several different techniques. Various basic techniques are excellent for screening patients. The Hirschberg method involves shining a beam of light at the eyes and assessing the light reflex in the pupils. If the eyes are aligned, then the light is essentially centered within the pupil. If a child is looking directly at the light, and 1 light reflex is in the center of the pupil and the other light reflex is not, then strabismus is suspected. Another useful technique is the Bruckner technique. With the room lights dimmed and standing a few feet from the patient, the clinician holds the direct ophthalmoscope to his or her eye and directs the instrument light toward the child's face. The red reflex should be seen equally. If there is asymmetry of the red reflex, strabismus or other ocular pathology should be suspected. If the child is old enough to hold attention with a toy, then a cover test can be attempted. With the toy in front of the child, 1 eye is briefly covered while observing the motion of the uncovered eye. If the uncovered eye moves to find the toy, then strabismus is present. If there is no strabismus, then no refixation movement of either eye should be seen. The appropriate technique used depends on the comfort level of the clinician and the cooperation of the patient. Ultimately, if strabismus is manifest a majority of the time, the child loses binocularity and could become amblyopic. Adults with strabismus may have disabling diplopia.

ESOTROPIA

Esotropia is a type of ocular misalignment in which the deviating eye turns in medially, toward the nose (Fig. 1). In the first months of life, the visual and oculomotor systems are immature and still developing. Parents may think their child's eyes are crossed or drifting out, but the duration of the misalignment is generally brief, and realignment is established spontaneously. The eyes should achieve stable alignment for most



Fig. 1. Esotropia (crossing) of left eye. (Courtesy of Kammi B. Gunton, MD.)

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