



## POLICY STATEMENT

### Adult Strabismus Surgery

A Joint Statement of the American Association for Pediatric Ophthalmology and Strabismus and the American Academy of Ophthalmology

#### Policy

Strabismus is a condition in which binocular alignment is abnormal. Adult strabismus surgery seeks to restore/reconstruct normal ocular alignment. Indications for surgical intervention in adult strabismus include:

1. **Diplopia.** Diplopia, which is the perception of the same image in two different visual directions, is debilitating. It causes a reduction of reading, driving, and vocational skills. Diplopia may occur when an adult has strabismus related to a medical or neurological condition, such as diabetes,<sup>1</sup> thyroid/Graves' disease,<sup>2,3</sup> myasthenia gravis, brain tumor, head trauma, or stroke.<sup>4,5</sup> Diplopia can also develop in an adult who has had childhood strabismus. In children, strabismus is associated with suppression, in which an area of the visual field of the deviating eye is not recognized by the brain. This prevents diplopia in stable childhood-onset strabismus.<sup>6</sup> However, after the visual system has matured, the brain can no longer develop suppression. Diplopia may result if the direction or amount of the misalignment changes or if fixation is switched to a previously non-dominant eye. Restoration of ocular alignment often relieves diplopia, thereby allowing the patient to resume normal visually directed activities at home and at work.<sup>1,7,20</sup>

2. **Visual Confusion.** Strabismus in adults may also cause visual confusion, the perception of two different images superimposed onto the same space. This symptom can result from newly acquired strabismus or from a change in the angle of strabismus in adults who had childhood strabismus.<sup>8</sup> Visual confusion is particularly debilitating when driving. The affected individual may describe a car "crossing over the center line and coming straight at me." Surgical correction or reduction of the ocular deviation will usually relieve visual confusion.

3. **Restoration of Binocular Vision.** If the eyes are not aligned, there is loss of binocular vision or fusion that enables perception of depth in three-dimensional space. Disorders of binocular vision are associated with an increased risk of fractures, falls, and musculoskeletal injuries in elderly patients. Binocular vision can be restored by strabismus surgery. Even some adults who had childhood strabismus can regain fusion following strabismus surgery.<sup>1,7,9,20</sup>

4. **Intolerance of Prism Glasses or Patch.** A small degree of ocular misalignment may be treated with prism glasses. Prism glasses may relieve diplopia and visual confusion and/or restore normal depth perception. This benefit occurs only while the prism glasses are worn. Prism glasses compensate for but do not "cure" strabismus. If the size of the deviation is large, prism glasses may be insufficient or optically distorting. Also, if the amount of ocular misalignment changes in different gazes (incomitant strabismus), prisms will not correct diplopia in those gazes because the degree of prismatic correction does not change when the eyes move. Most adult strabismus is incomitant,<sup>7</sup> and therefore not usually amenable to treatment with prism glasses. Patching can relieve diplopia by obscuring the vision in one eye. However, this approach precludes all binocular function, limits the peripheral field, and can be socially uncomfortable for the patient. Use of a patch is usually a temporizing measure until spontaneous resolution or definitive treatment (i.e., surgery) occurs.

5. **Restoration of Visual Field.** Adults who are esotropic (ocular deviation is toward the nose) have a reduced field of vision on the side of the deviated eye. Adult patients with esotropia have a significant expansion of the binocular visual field after surgical realignment of the eyes.<sup>14,15,20</sup> regardless of the presence of amblyopia. Visual field expansion can have a significant impact on the patient's life since peripheral vision is recognized as an important prerequisite for safe driving and other daily activities. Loss of visual field can be a contributing factor in motor vehicle accidents.<sup>11-13</sup>

6. **Elimination of or Improvement of Abnormal Head Posture.** Strabismus in adults is frequently associated with a face turn or head tilt that permits the person to eliminate and/or reduce diplopia. The compensatory head position is frequently associated with neck muscle contractures that can be improved with eye muscle surgery.<sup>22</sup>

7. **Psychosocial Function/Vocational Status.** Strabismus can have a negative impact on an individual's quality of life. Strabismus has been shown to have a negative impact on an individual's likelihood to obtain employment, receive a promotion, or find a partner because of the inability of the strabismic patient to maintain normal eye contact, interfering with communication and interpersonal relationships.<sup>16-21</sup> In addition, adults with strabismus have an increased risk of mental illness such as depression, anxiety, and social avoidance, and this has been shown to improve after surgery.<sup>23</sup>

## Summary

Adult strabismus results in visual, physical, and psychosocial disabilities. Affected individuals may not be offered appropriate surgical treatment because of misconceptions about adult strabismus. Successful strabismus surgery can relieve diplopia and visual confusion, restore or establish depth perception, expand the visual field, eliminate an abnormal head posture, and improve psychosocial function and employability. Adults with strabismus should consult their ophthalmologist about the relative risks and benefits of surgery. Recommendations in this policy statement do not indicate an exclusive course for treatment or procedure to be followed. Alternative treatments that take into account individual circumstances may be appropriate and should be considered.

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### Approvals

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