



## CAUSES OF OCCURRENCE AND METHODS OF TREATMENT OF STRABISMUS

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<b>Received:</b> October 6 <sup>th</sup> 2022	The article provides information on the modern classification system of strabismus causes of occurrence and methods of treatment in the practice of ophthalmology
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Strabismus or strabismus is a violation of the parallel position of the eyes or a deviation of the visual axis from the fixation point. Strabismus, which appears after the formation of stable binocular vision, is called strabismus in adults. In a sense, strabismus, which occurred in children from 6-8 years old, can be considered an adult.

Strabismus is a very common ophthalmopathology characterized by the deviation of one or both eyes from the joint fixation point of the line of sight. When the eyes deviate, not only a cosmetic defect appears, but also sensory mechanisms are disrupted in the brain that ensure the fusion of images perceived by each eye, as a result of which simple binocularity and visual acuity decrease, vision is impaired. precise localization of objects in space and movement in it is lost. Strabismus can be horizontal, vertical, mixed (horizontal-vertical). There are also atypical forms of strabismus. In the practice of Ophthalmology, the existing classification system is sufficient to say the presence of strabismus in the patient, but does not indicate the cause of the pathology that has arisen, the condition of the eyeballs. Since only a simple classification can be accepted for clinical use, attempts have currently not been made to reduce the entire variety of different forms of strabismus to a single scheme. At the same time, it is necessary to draw up a classification that indicates the cause of the pathological process, standardizes clinical signs and, above all, complex forms of strabismus. This will show the patient the tactics of treatment and the point of application of surgery. And this is one of the main issues of strabology. Today in the world there is no single classification of strabismus, which reflects all aspects of this very diverse pathology. Perhaps this is due to the complexity of the problem, since some types of eyeballs and its mobility

can be easily classified according to one principle, while other types require completely different approaches. According to its international classification, strabismus is divided into Co-and non-co-operative type. The main sign of strabismus in pregnancy is the invariability of the angle of deviation during eye movement. The sign of strabismus, which is not the same partner, is a similar symptom-a change in the angle of deviation when the pose of the gaze changes.

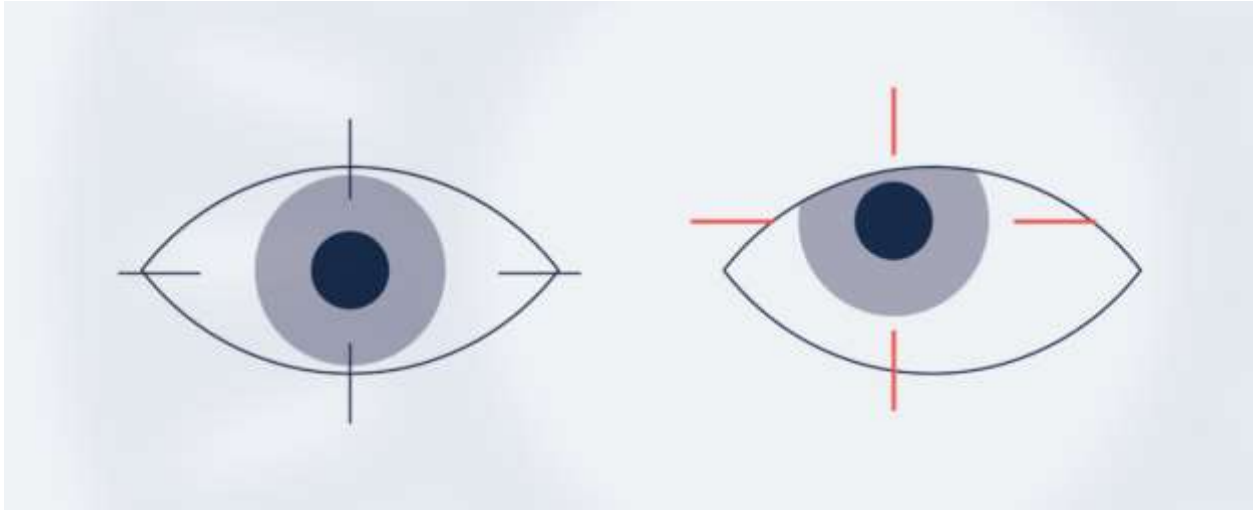
Causes of occurrence.

Many adults who have strabismus have suffered from it since childhood, but with appropriate monitoring and treatment, it can be compensated. Strabismus has a latent period, and for a certain time it proceeds asymptotically, but, in most cases, strabismus occurs against the background of concomitant diseases such as:

- Thyroid diseases (Graves' disease)
- Myasthenia gravis (neuromuscular disease)
- Traumatic brain injury
- Diabetes mellitus
- Tumors of the central nervous system
- Cerebrovascular disorders, heart attacks or brain hemorrhages.

Very rarely, deviation from the central axis and imbalance of the eye muscles can occur after surgical interventions on the eyes, for example, after cataract surgery, surgical treatment of retinal detachment, blepharoplasty, etc. This is due to unwanted damage to the external muscles of the eye during these procedures.

It should be noted that the deviation of the visual axis may also occur due to poor vision. This condition is called sensory strabismus, in which double vision does NOT occur and strabismus is a consequence of poor monocular vision and NOT its cause.



**Strabismus is a violation of the visual axis, in which both eyes cannot simultaneously focus on the same point.**

Symptoms

With the development of the deviation of the visual axis, the following symptoms appear:

- Visual fatigue
- Double vision (diplopia)
- Shifting of images (overlapping each other)
- Feeling of "heaviness" or pain in the eyes
- Difficulty seeing up close, for example, when reading

- Violation of the perception of depth and volume.

Many adults suffering from strabismus, in order to relieve symptoms, tilt their heads in different directions, which leads to ocular torticollis (ocular torticollis).

Methods of treatment

There are many therapeutic and surgical treatments that help correct strabismus. Depending on the form of strabismus, different methods of treatment are used, such as:

— Visual therapy

Special muscle exercises can be useful in the treatment of divergent strabismus, in which the eyes themselves cannot focus on nearby objects (visual work near, reading, etc.). This condition is called convergence insufficiency.

To see up close implies not only to focus the vision clearly, but to bring both eyes inward so that their axes coincide on the object of attention (books, the cursor on the computer screen, needle and thread, etc.). This coordinated movement and inward movement is called convergence.

— Prismatic glasses

Prisms can correct small angles of strabismus, which lead to slight or moderate bifurcation. A prism is

a wedge-shaped transparent lens that refracts the course of light rays and, consequently, the image. They do not change the position of the eyes, but align the images accordingly to the visual axis, help to get rid of bifurcation, but by themselves do not completely eliminate the main problem. Most often they are glued to the glasses (as a sticker: Fresnel prism) or during the visual acuity check, the optometrist includes them in the recipe.

Prisms do not compensate for large angles of strabismus caused by impaired muscle elasticity, or severe paralysis of the eye muscles.

— Injections of botulinum toxin

The injection is carried out into muscles with excessive activity (as a rule, because the muscle that performs the response function has suffered due to paralysis). In such cases, botulinum toxin stabilizes muscle function and helps alleviate the symptoms of strabismus. This toxin is a substance that is administered in small doses and temporarily relaxes the muscles. In the case of injections into extraocular muscles, the effect can persist for several months, which often leads to a permanent change in muscle function and helps to restore the parallelism of the eye position with the use of

— Plastic surgery of extraocular muscles

Surgical intervention can:

- Improve eye parallelism
- Reduce or eliminate double vision;
- Improve or restore binocular vision (the ability to see with two eyes at the same time)
- Reduce eye strain;
- Expand peripheral vision and binocular field of vision;
- Improve the appearance.

Strabismus surgery is usually performed on an outpatient basis using general or local anesthesia,



depending on the case. Postoperative discomfort is usually mild or moderate, and can be reduced with the help of general analgesics. Conjunctival inflammation (occurs frequently and this is normal), and can last for several weeks.

As a rule, the patient can resume his normal activities within a few days after the operation, although this depends on the degree of complexity of the surgical intervention.

It is important to note that a significant percentage of patients with strabismus who have undergone surgery may need more than one surgical intervention to obtain the desired results.

Is surgical correction possible at any age?

Contrary to general opinion, strabismus correction surgery is possible at any age, even in adults. In such cases, surgery will not correct amblyopia or "lazy eye", which appeared in the patient as a result of untreated childhood strabismus, although it significantly improves the patient's appearance, as well as his perception of space and field of vision.

In most cases, the only effective treatment for permanent strabismus is strabismus correction surgery.

If an optometrist detects strabismus in your child, he can refer you to an ophthalmologist who specializes in performing strabismus correction operations.

The success of strabismus correction surgery depends on many factors, including the direction and degree of displacement of the eye. In some cases, several operations may be required. The surgeon performing the strabismus correction operation will provide you with more detailed information about this during the preoperative consultation.

Such strabismus correction surgery can also be effective for adults with long-standing strabismus. However, in many cases of adult strabismus, a significant degree of amblyopia may persist even after proper alignment of the displaced eye. That's why early treatment of strabismus is so important.

The earlier the surgical intervention is performed, the higher the probability that the affected eye will develop normal visual acuity and both eyes will function smoothly.

For example, local ophthalmologists use two vertically installed Maddox sticks (red and white) in front of the eyes to check cyclodiviasis, determining the nature and degree of inclination of the right and left linear images depending on the light source. In this case, in one eye the Maddox mirror in the other, an ophthalmocompensator Prism is placed and, depending on the light, the point of intersection of the line is determined. But since a full-fledged vision in a child is not formed, and the test requires an answer to the

question, it does not allow this technique to be implemented. Therefore, in pediatric practice, the most useful and reliable methods for determining cyclodeviation, which do not require a patient's response, are needed. When checking the eye in a slit lamp, the assessment of index shifts provides the most accurate data. Usually the central Dimple of the retina and the disc of the visual nerve are both located in a horizontal position on one line. The displacement of the disc of the visual nerve from the Central Fossa up indicates the presence of excyclodiviation, and the downward displacement indicates the presence of incyclodiviation. Determining the nature of eye rotation or torso deviation can help with differential diagnosis and search for the affected muscle.

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