

WHAT IS PAEDIATRIC OPHTHALMOLOGY?

Paediatric Ophthalmology is a subspeciality of ophthalmology responsible for the study of both the normal development of the child's vision and its abnormalities.

Children's vision develops progressively throughout childhood, the early years being the most critical. It is crucial to achieve normal visual development that follows both their physical and intellectual growth.

Amblyopia or 'lazy eye'

We are born with eyes as light detectors. During growth, the brain learns to interpret the stimuli that the eye receives and thus the phenomenon of vision is developed.

Any obstacle or impediment that prevents the formation of clear images in a particular eye causes the brain (with which we ultimately see) to not interpret such images correctly, and so the brain 'decides' not to use them thus affecting the function and development of vision in the affected eye. Such alterations may be irreversible if appropriate measures are not taken at the developmental stage, resulting in an amblyopic or 'lazy' eye.

Untreated, the 'lazy' eye will never be able to see 100% with or without glasses.

The early diagnosis of ocular problems is determinant so that such defects can be corrected and lifelong consequences are avoided.

There are different causes of 'lazy' or amblyopic eye; the most common are:

Congenital cataracts:

Similar to those of the adult, but in this case the child is born with cataracts due to infectious, metabolic or genetic problems during gestation. The treatment is surgical, with the aim that both eyes receive the same light stimulus and do not compete with each other. As in the adult, the opaque lens is removed and a lens is placed in place to allow clear vision. (see cataract section). The right time to do the surgery, which is recommended at around 3 months of age, will be evaluated by your ophthalmologist.

Retinopathy of prematurity (ROP):

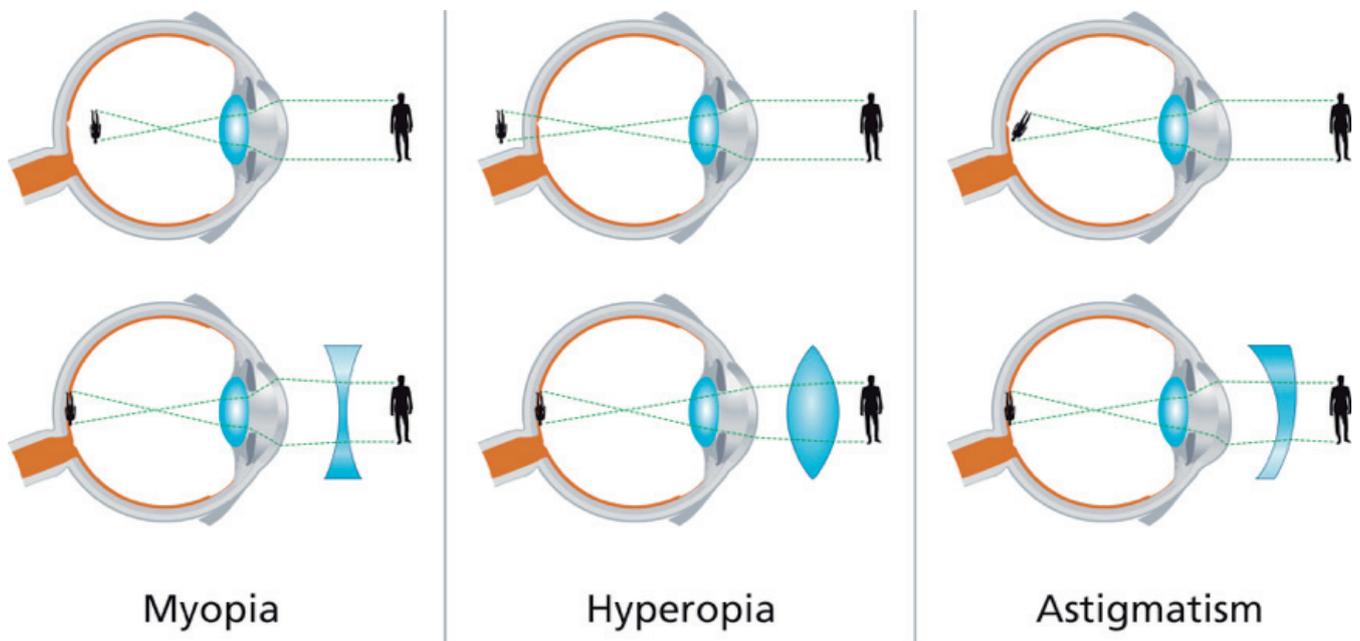
During the gestational period, while the fetus is developing, the ocular structures, including the retina and the blood vessels that nourish it, are also developing as part of their correct formation. If a child is born prematurely, that formative process is cut off, the normal growth of blood vessels stops and abnormal blood vessels may develop, these abnormal vessels can pull on the retina and in some cases may even produce retinal detachment and blindness. Not all preterm infants develop the disease, and even if they develop it, the evolution of the condition is variable, with spontaneous improvement in some cases. Therefore, all preterm infants having a predisposition towards developing ROP are checked. The treatment is by laser and/or intraocular injections by, or under the supervision of, the pediatric ophthalmologist.

Refractive defects:

such as myopia (nearsightedness), Hyperopia (farsightedness) or astigmatism. They prevent the image from being sharp by focusing the image in front of or behind the retina.



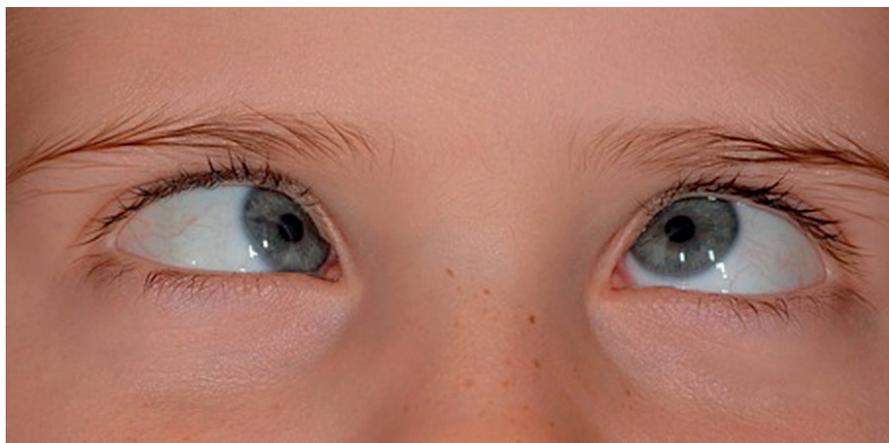
PEDIATRIC OPHTHALMOLOGY



Strabismus (Squint):

Is the misalignment of the eyes (they point in different directions). The eyes are uncoordinated, divergent or crossed; generally eliminating the vision of one of the eyes. Strabismus can be due to sensory causes (the image that reaches the retina is not adequate due to refractive problems, opacities etc), motor alteration (incoordination or abnormality of the muscles that move the eyes) or neuronal (nervous system problems). Correction of the refractive defect and/or elimination of any organic cause (if present) may be sufficient for the eyes to regain alignment and good function.

https://www.youtube.com/watch?v=dZCG-_VHOT0



Nystagmus:

is a constant repetitive and involuntary movement of the eyes that prevents a sharp image on the retina.

This can be horizontal, vertical, rotational, oblique or any combination of these and is associated with a malfunction in the areas of the brain responsible for controlling movement.

Patients with nystagmus often put their heads in an abnormal position to improve their vision, cancelling out as much as possible the effect of the eye movement.

The treatment of amblyopia or 'lazy' eye can consist of:

Optical correction: glasses or contact lenses

Occlusions or patches: When we eliminate the cause of bad vision, the brain will 'connect' again with the lazy eye, progressively recovering its activity to match the other.

○ VISUAL PROBLEMS IN CHILDHOOD

As many people know myopia (nearsightedness) or hyperopia (farsightedness) usually appear during infancy. In both, there is blurred vision of the environment, especially when we look at distant objects. In hyperopia we can use the eye focus system to see clearly from afar, but we will lack the ability to focus on nearby objects. Often this effort causes fatigue, headaches, itchy eyes, and can be a cause of problems in education because of difficulty in learning to read and in reading.



As the eye is growing, not all cases in which refractive defects are detected will be corrected with glasses as they may evolve with growth, and all children should be periodically checked for changes that may occur in their eyesight.

<https://www.youtube.com/watch?v=tNBIMQI8Hlc>

<https://www.youtube.com/watch?v=6YxffFmi4Eo&feature=youtu.be>

It is recommended to have an ophthalmological assessment at birth and follow this up with periodic checks by your pediatrician; if the pediatrician detects or suspects a defect, the child will be referred to the ophthalmologist for a more comprehensive assessment.

WHAT RESEARCH DOES GIMSO DO IN PAEDIATRIC OPHTHALMOLOGY?

The research group Miguel Servet Ophthalmology has been active for more than 15 years in the study of eye diseases and in the prevention of blindness.

In this long journey, we have studied different aspects related to the eye and eye diseases in childhood, this has allowed GIMSO, along with other professionals from other centers, to develop a test to evaluate children in the pre-verbal age (<https://www.ncbi.nlm.nih.gov/pubmed/25173177>) and continue to work to create new visual examination platforms.

We have also studied aspects such as:

Influence on the visual development of some habits of the mother during pregnancy.

"Effects of smoking during pregnancy on the optic nerve neurodevelopment"

<https://www.ncbi.nlm.nih.gov/pubmed/21353403>

Use in children of diagnostic equipment for eye diseases prepared for adults.

"Normal reference ranges of optical coherence tomography parameters in childhood"

<https://www.ncbi.nlm.nih.gov/pubmed/22328811>

Altered cognitive abilities in preterm infants.

"Pathways of neuronal and cognitive development in children born small-for-gestational age or late preterm"

<https://www.ncbi.nlm.nih.gov/pubmed/23836499>

