CONDITION

RLF

RLF is a prematurity-related eye condition in which abnormal retinal blood vessels may cause scarring and vision loss.

WHAT IT IS
Prematurity-related abnormal growth and scarring of retinal blood vessels

BODY SYSTEM
Eyes and vision

MAIN SYMPTOMS
Often none early, poor visual response, wandering eyes, white pupil

WHAT CAUSES IT
Interrupted retinal blood vessel development after premature birth

HOW IT IS DIAGNOSED
Dilated retinal examination by a trained eye specialist

MAIN TREATMENT
Retinal laser, anti-VEGF injections, or eye surgery

CAN IT BE CURED?
Sometimes - early changes may resolve or respond

IS IT AN EMERGENCY?
Sometimes - sudden flashes, floaters, or curtain-like vision loss

LONG-TERM OUTLOOK
From normal vision to permanent severe vision loss

Overview

RLF stands for retrolental fibroplasia , an older term connected with retinopathy of prematurity , or ROP. ROP is the term now used for the full condition. RLF traditionally describes its advanced, scarring stages.

The condition affects the retina, the light-sensitive layer at the back of the eye. Retinal blood vessels normally finish developing late in pregnancy. When a baby is born very early, this development must continue outside the womb. The vessels may grow abnormally, leak, or pull on the retina.

Mild changes often improve without treatment. More serious changes can form scar tissue and pull the retina away from the back of the eye. This is called retinal detachment . It can cause permanent sight loss.

RLF matters because early retinal changes usually cannot be noticed by looking at a baby. Timely screening is therefore essential for premature babies who meet local screening criteria. Treatment can protect vision when disease reaches a stage where it is unlikely to improve safely on its own.

Symptoms

Early ROP usually causes no visible symptoms. A baby may look at faces and lights normally even while retinal changes are developing. Screening examinations, rather than symptoms, are how the condition is found.

Signs of advanced disease or lasting visual problems can include:

A white pupil is not specific to RLF. Several eye conditions can cause it, and it needs prompt assessment.

People who had ROP in infancy may develop problems later in childhood or adulthood. These can include blurred distance vision, a squint, reduced vision in one eye, flashes, new floaters, or a shadow across part of the vision.

- Limited response to faces, lights, or moving objects
- Eyes that do not point in the same direction, called strabismus
- Repetitive, uncontrolled eye movements, called nystagmus
- A white or unusual-looking pupil
- Difficulty recognizing objects or moving safely as the child grows

Causes and risk factors

The main cause is incomplete retinal blood vessel development following premature birth. The earlier a baby is born, the less time those vessels have had to develop inside the womb.

After birth, changes in oxygen levels and the baby's overall health can affect how retinal vessels grow. Oxygen is often lifesaving for premature babies. The risk is linked to abnormal or fluctuating oxygen exposure, not simply to receiving medically needed oxygen. Neonatal teams monitor oxygen carefully to balance breathing needs with other risks.

Factors associated with a higher chance of ROP include:

These factors do not mean that a baby will develop severe disease. ROP can behave differently even in babies born at similar stages of pregnancy.

RLF is not contagious. It is not caused by anything a parent did during pregnancy, and it is not usually considered an inherited condition.

- Very premature birth
- Very low birth weight
- Serious breathing or circulation problems
- Infection or other major illness after birth
- A complicated or unstable neonatal course

Diagnosis

RLF and ROP are diagnosed by examining the retina. An eye specialist uses drops to widen the pupils and then views or photographs the back of each eye. The examination may be uncomfortable for a short time, but neonatal teams use measures to reduce discomfort and monitor the baby.

The specialist records where abnormal changes are located, how far they extend, and how severe they are. They also look for plus disease , which means that retinal blood vessels have become unusually widened and twisted. Plus disease can be a sign that the condition is active and more likely to progress.

Retinal imaging may support the examination, especially where specialists review images remotely. Imaging does not always replace a complete examination.

One normal examination may not be enough. Retinal vessels continue to develop after birth, so examinations are repeated until the specialist is confident that the risk period has passed. The schedule is based on what the retina looks like, the baby's age, and any treatment given.

Keeping every planned screening appointment is important. A baby can need another examination even if the previous result was reassuring.

Treatment and management

Mild ROP is usually observed closely because it may settle as retinal blood vessels mature. Observation still requires scheduled examinations. It does not mean the condition is being ignored.

Treatment is considered when the examination shows a meaningful risk of retinal detachment or vision loss. The main options are laser treatment and injections of medicine into the eye.

Laser treatment applies small laser spots to the outer retina where normal blood vessels have not developed. This reduces signals that drive harmful vessel growth. Laser can protect central vision, but it may reduce some peripheral vision and is associated with later short-sightedness.

Anti-VEGF treatment blocks vascular endothelial growth factor, a substance involved in abnormal blood vessel growth. The medicine is injected into the eye after pain control and antiseptic preparation. It can be particularly useful for disease toward the back of the retina.

After anti-VEGF treatment, abnormal growth can return later than it would after laser. Longer retinal follow-up is therefore important. Some babies need further injections, laser treatment, or both. The choice between treatments is based on the retinal findings, the baby's health, available expertise, and discussion with the family.

Advanced scarring or retinal detachment may require surgery. Procedures can remove material pulling on the retina or relieve tension around the eye. Surgery may preserve or improve some vision, but it cannot always restore vision once the retina has been badly damaged.

Children who have had ROP also need routine eye care as they grow. Glasses, patching for a weaker eye, or treatment for strabismus may help with related vision problems.

Complications

The main serious complication is retinal detachment. Scar tissue can shrink and pull the retina away from the back of the eye, interfering with its ability to detect light.

Other possible complications include:

Severe disease can affect both eyes, but not always to the same degree. Some people have useful vision in one eye and major sight loss in the other.

Development can also be affected when vision is limited. Early vision, developmental, and educational support can help a child use their remaining sight and take part in everyday activities.

- Short-sightedness, also called myopia
- Strabismus, in which the eyes point in different directions
- Amblyopia, meaning reduced development of vision in one eye
- Nystagmus, or repetitive eye movements
- Glaucoma, which damages the optic nerve
- Reduced peripheral or central vision

- Retinal tears or detachment later in life

Prevention

Premature birth and ROP cannot always be prevented. There is no action a parent can take at home to guarantee that RLF will not develop.

Good pregnancy care may reduce some causes of premature birth, but many premature deliveries happen despite appropriate care. When early delivery is likely, treatments given by maternity teams may help a baby's organs prepare for birth.

After birth, careful neonatal care is important. This includes monitoring oxygen within the baby's prescribed target range and managing infection, breathing difficulties, and other health problems. Oxygen should never be reduced or stopped by a parent because of concern about ROP.

Screening does not prevent abnormal vessel growth, but it can prevent avoidable sight loss by finding treatable disease before symptoms appear. Attending every scheduled retinal examination is one of the most important practical steps a family can take.

Living with it and what to expect

The course over the first months depends mainly on how premature the baby was and what the retinal examinations show. Mild disease may fade as normal vessels grow. Active disease can worsen over days or weeks, which is why follow-up intervals may be short.

After successful treatment, the immediate risk usually falls, but follow-up continues until retinal development is considered stable. Babies treated with anti-VEGF medicine may need monitoring for a longer period because reactivation can occur later.

Over the following years, some children have normal or near-normal vision. Others need glasses, patching, eye-muscle treatment, or support for reduced vision. Severe retinal damage can cause lifelong visual impairment. Treatment cannot promise normal sight, but it may preserve more vision than would otherwise have been possible.

Children with limited vision can still learn, play, attend school, and develop independence. Low-vision services can provide magnification, lighting advice, mobility training, assistive technology, and support for families and schools.

Adults who had ROP should mention this history during eye examinations. The retina may remain more vulnerable to tears or detachment, even if childhood vision was useful. Routine

long-term eye care helps identify changes before they cause major problems.

When to get medical help

Contact the neonatal or eye team promptly if a premature baby misses a scheduled retinal examination. Do not wait for symptoms. The team can arrange the safest next step based on the baby's age and previous findings.

Arrange a prompt eye assessment if a baby or child has:

Seek urgent same-day eye care for new flashes of light, a sudden increase in floaters, blurred vision, or a dark shadow at the edge of vision.

Go to an emergency eye service if part of the vision becomes covered by a curtain-like shadow or there is sudden major vision loss. These can be signs of a retinal tear or detachment. They are urgent even many years after the original condition.

Routine concerns, such as whether glasses remain suitable or how vision is developing at school, can usually be discussed at a planned optometry, ophthalmology, or developmental follow-up visit.

- A white or unusual pupil
- Eyes that suddenly stop moving together
- New repetitive eye movements
- An unexpected reduction in visual attention
- Increasing redness, swelling, discharge, or apparent pain after treatment

Common questions

Is RLF the same as retinopathy of prematurity?

RLF is an older name associated with ROP. It originally described the scar tissue seen behind the lens in advanced cases. ROP is now the preferred term because it includes early disease before scarring develops.

Will my premature baby definitely develop RLF?

No. Prematurity raises the risk, especially when birth is very early, but many premature babies do not develop severe ROP. Retinal screening is needed because appearance and behaviour cannot reliably show whether it is present.

Can RLF go away on its own?

Mild ROP often improves as the retina matures. Advanced scarring does not disappear in the same way. Repeated examinations show whether observation remains safe or treatment is needed.

Can treatment restore normal vision?

Treatment is mainly intended to stop progression and protect the retina. Some children retain good vision, while established retinal damage may be permanent. The result depends on the disease stage and how the retina responds.

Does oxygen treatment cause RLF?

The relationship is more complex than oxygen simply causing the condition. Prematurity is central, and unstable or excessive oxygen exposure can affect retinal vessel growth. Premature babies may need oxygen to survive, so neonatal teams monitor it closely rather than withholding necessary treatment.

Can retinal problems return later in life?

Yes. Reactivation can occur during infancy after treatment, and retinal tears or detachment can occur years later. Lifelong awareness and regular eye care are appropriate, particularly after severe or treated ROP.

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