



Retinopathy Of Prematurity

Premature babies are subject to blindness from retinopathy of prematurity (ROP), especially when the child is born before 31 to 32 weeks gestation. The basic problem has to do with abnormal growth of blood vessels in the retina. Normally it takes approximately nine months for the development of the blood vessels that supply nutrients and oxygen to the retina (the part of the eye that changes light rays into nerve impulses). These nerves collect at the back of the eye and go to the visual cortex of the brain via the optic nerves.

The blood vessels begin growing at the optic nerve in the back part of the eye and extend peripherally toward the equator of the eyeball. These blood vessels begin growing in the fourth month of pregnancy and extend to the most peripheral areas of the retina by approximately the ninth month of pregnancy. When an infant is premature, these blood vessels have only grown half the distance and must continue growing after leaving the womb. Usually this continued growth is in an orderly fashion like the twigs of a tree that becomes smaller as they extend to the end of the branches. However, they do not always grow in an orderly fashion, but rather have a helter-skelter proliferation of smaller capillary-like blood vessels. These abnormal blood vessels are predisposed to bleeding. The bleeding within the retina and into the vitreous jelly in the middle of the eye must be reabsorbed. Scarring replaced the clear middle of the eye, resulting in retinal detachment and blindness. Fortunately, blindness is unlikely to occur except in the most premature infants whose birth weight is well below two pounds. Oxygen aggravates this abnormal process, but **IT IS NOT THE PRIMARY CAUSE OF ROP**. The primary cause is the severe prematurity that requires such aggressive and heroic treatment. This is why the physicians in the intensive care nursery are always concerned about minimizing the use of oxygen as much as possible.

Other abnormalities can develop from prematurity even though a baby is not completely blind. These include abnormalities in the periphery of the retina that can lead to retinal detachments later in life. Also prematurely born children have a much higher probability of requiring glasses, often for significant near-sightedness or myopia. There is also a higher incidence of strabismus, where an eye often noticeably turns in. There is also an increased risk for amblyopia, or "lazy-eye" or weak vision that can result in the eye becoming legally blind without treatment.

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The purpose of a follow-up ophthalmology examination is to determine whether these vessels have grown to the entire extent of the retina, making the retina "mature when it comes to ROP. It is also important to determine if significant scarring has occurred in this area, and to evaluate the child's possible requirement for glasses if there is significant refractive error. In order to complete this examination, drops are placed in the baby's eyes to dilate the pupils and permit a thorough examination of the retina and a determination if the child is near-sighted or far-sighted. Most children who need this examination are those who were not examined prior to leaving the intensive care nursery, or those who did not have a completely mature retina when the infant was last examined. In infants born prematurely, it is common that the retinas are not "mature" and no longer at risk for ROP until many weeks to several months after the baby's "due date."

After the ROP is resolved and the retina is mature, the baby needs follow-up examination to ensure that the vision develops normally and to insure that strabismus (misalignment of the eyes), amblyopia (weakened vision or lazy eye), or significant refractive error does not develop.

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