

SLOW LOSS OF VISION

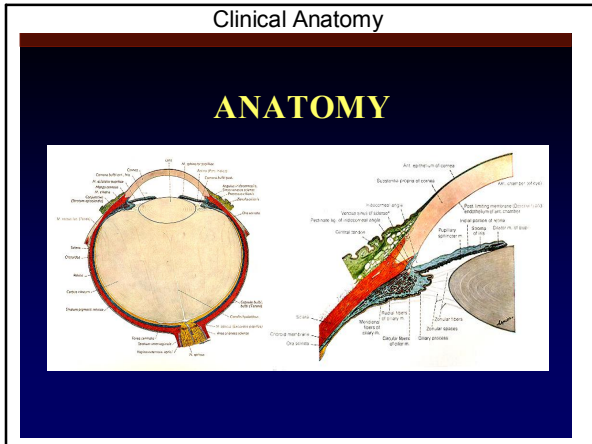
Stuart Fourman, M.D.
Department of Ophthalmology
Stony Brook University

SLOW LOSS OF VISION

- Glaucoma
- Cataract
- Macular Degeneration
- Amblyopia/Strabismus

Epidemiology of Glaucoma

- Major cause of blindness
- 1% of all Americans >40 increasing to 3% in those >70
- Another 3-6% of Americans at risk
- There are multiple forms of glaucoma
- Higher risk populations:
 - Elderly (those over 65)
 - Diabetes Mellitus
 - African-Americans
 - Those with myopia
 - Family history of glaucoma



Pathophysiology of Glaucoma

- Anatomy
 - Aqueous production and outflow
- Elevated intraocular pressure is a common, but not necessary, feature
- Damage
 - Optic Atrophy/Excavation
 - Visual Field Defects

Glaucoma

- Four Clinical Presentations
 - Primary Open Angle Glaucoma
 - Primary Angle Closure Glaucoma
 - Secondary Glaucoma
 - Congenital Glaucoma

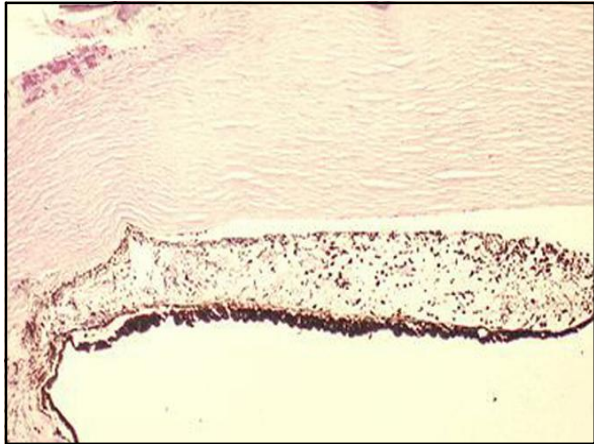
Glaucoma

- Primary Open Angle Glaucoma
 - Most common type (70% of all glaucoma cases)
 - Familial disease, hereditary
 - Bilateral
 - Caused by acquired impairment of aqueous drainage through the trabecular meshwork
 - Marked by progressive constriction of the field of vision, excavation of optic nerve head and often (but not always) elevated intraocular pressure (IOP); painless

Glaucoma

- Acute Angle Closure Glaucoma (“Narrow Angle”)
 - An ophthalmic emergency
 - Rare form of disease
 - Occurs when root of iris blocks the drainage mechanism in patients with anatomically shallow anterior chambers





Glaucoma

- Congenital Glaucoma
 - Relatively rare form
 - Caused by congenitally imperfect aqueous humor drainage mechanism
- Secondary Glaucoma
 - Result of damage to drainage mechanism by other intraocular disorders, e.g., inflammation, after surgery, traumatic, diabetes





Signs and Symptoms: Primary Open Angle and Acute Angle Closure Glaucoma

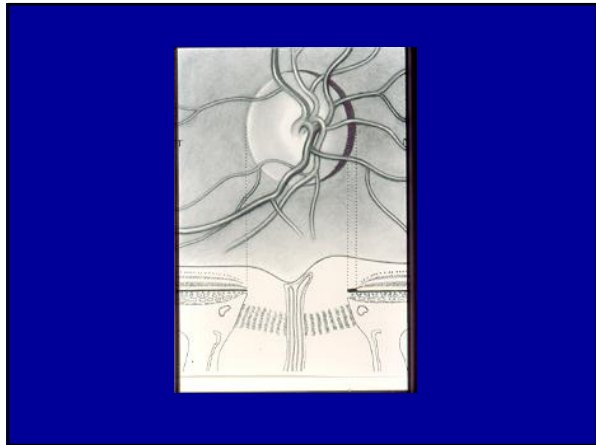
<ul style="list-style-type: none">• Primary Open Angle<ul style="list-style-type: none">- Painless, usually asymptomatic, progressive visual loss- Sx do not usually appear until late in the disease- Visual Field Loss- Increased cupping- +/- increase IOP- Occasional early sign: decreased vision in dark or at twilight	<ul style="list-style-type: none">• Acute Angle Closure<ul style="list-style-type: none">- Onset acute- Severely painful, red eye with blurred vision- Mid-dilated, unreactive pupil- Steamy cornea- Peri-orbital pain- +/- nausea/vomiting- Halos around light- Increased IOP- Think hyperopic patients
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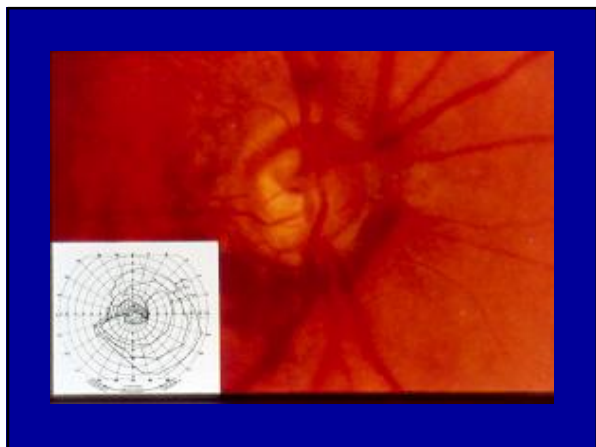
Signs and Symptoms: Congenital and Secondary Glaucoma

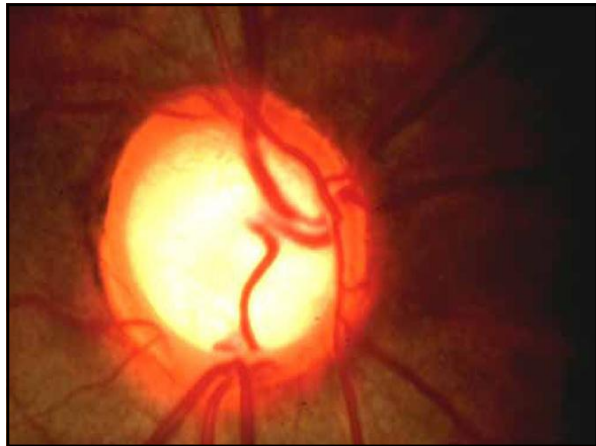
<ul style="list-style-type: none">• Congenital<ul style="list-style-type: none">- Tearing- Photophobia- Enlarged eye- Steamy cornea- Increased IOP	<ul style="list-style-type: none">• Secondary<ul style="list-style-type: none">- Onset acute- History of ocular trauma or other ocular diseases- Severely painful, red eye- Steamy cornea- Peri-orbital pain- +/- nausea/vomiting- Increased IOP
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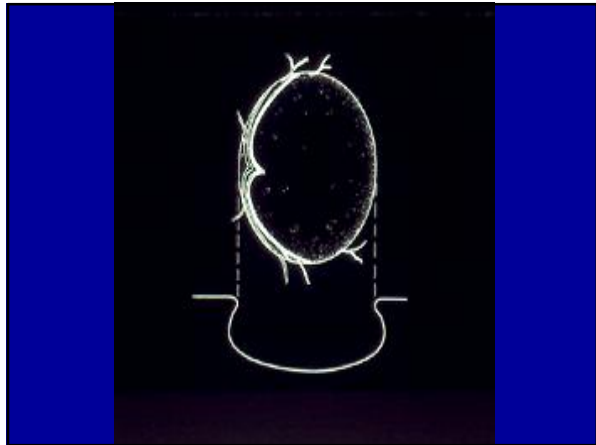
Examination for Glaucoma

- Intraocular pressure
- Ophthalmoscopy
- Visual Field Testing









Management of Glaucoma

- Management of all forms involves lowering the IOP
- Treatments Include
 - Medication (drops)
 - Laser
 - Surgery

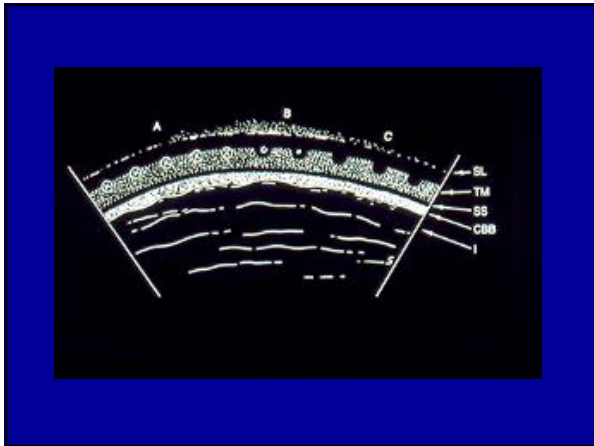


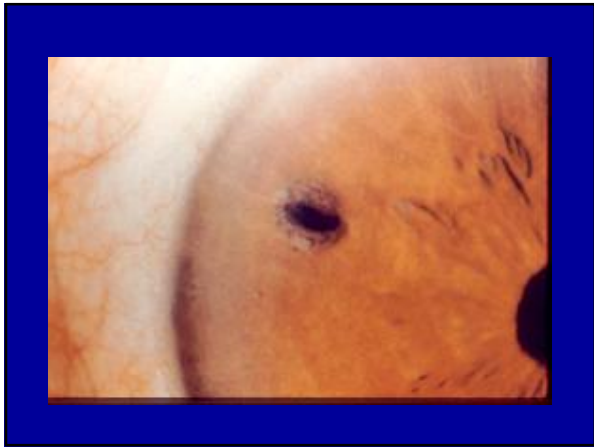
Glaucoma Medications

- Medications
 - GREEN: Parasympathomimetics
 - YELLOW, BLUE: Beta adrenergic blockers
 - ORANGE: Carbonic anhydrase inhibitors
 - PURPLE: Alpha-adrenergic agonists
 - CLEAR: Prostaglandins
 - SYSTEMIC (pills): Acetazolamide

Glaucoma Laser Treatment

- Trabeculoplasty
 - for open angle glaucoma
- Iridotomy
 - for angle closure glaucoma






Glaucoma Surgical Treatment

- Trabeculectomy
 - With and without antimetabolites
 - Seton valves
- Ciliary body destruction



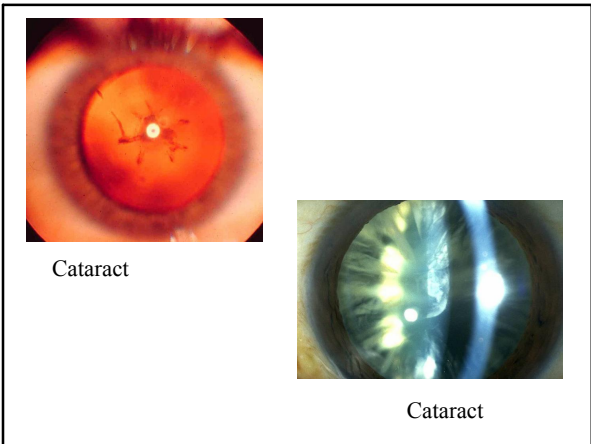
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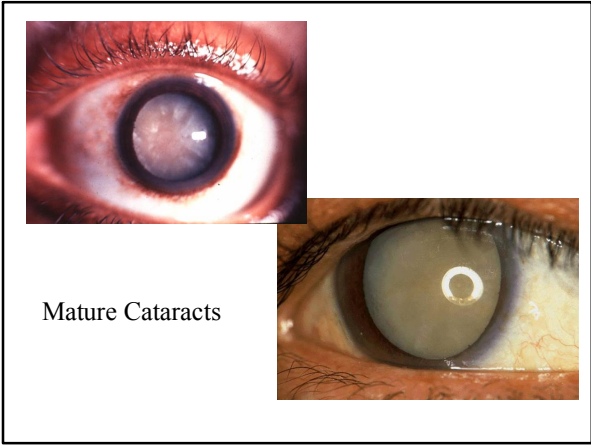
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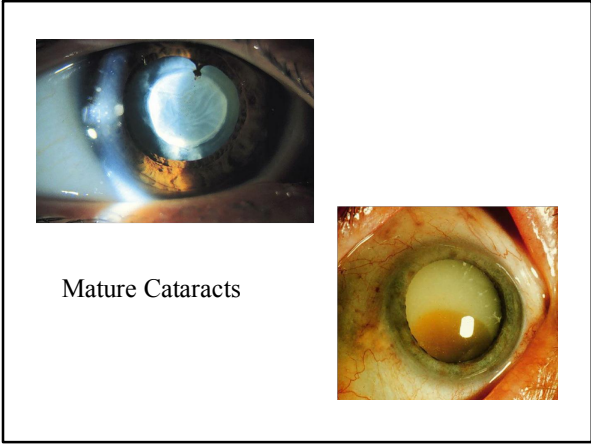


Cataract

- Definition
 - An opacity in the normally transparent focusing lens of the eye that, as it becomes denser, interferes with clear site
- Causes
 - Most common: aging
 - Less common: intraocular diseases, trauma, medications, and metabolic, endocrine, or congenital abnormalities







Cataract: Epidemiology

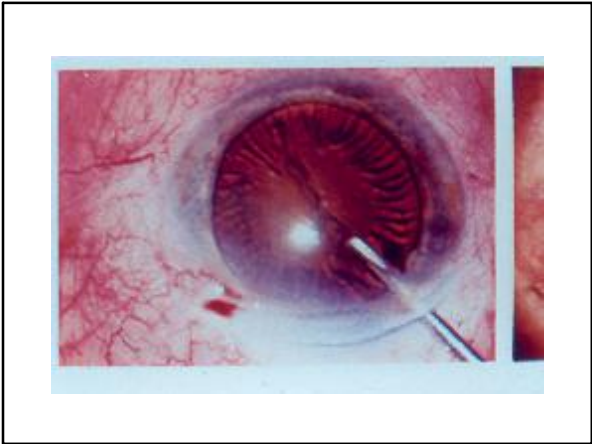
- Most common cause of *visual loss* in the adult population
- By age 65, >90% of all people have cataracts
- May develop at any age (essential to detect in neonatal period to prevent amblyopia)

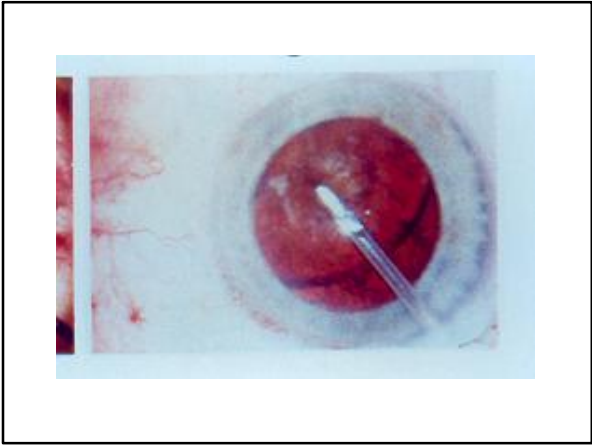
Cataract: Management

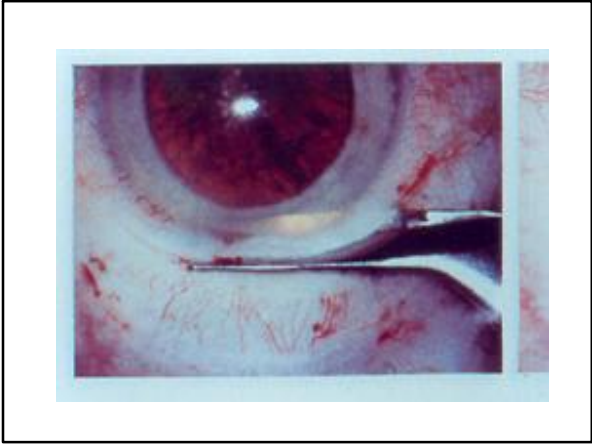
- Treatment is surgical removal
 - Surgery is often deferred until decreased vision interferes with patient's ability to perform ADL
 - Surgery not deferred for above reasons:
 - In neonates
 - When the cataract interferes with the diagnosis or treatment of other ocular diseases, e.g., diabetes mellitus or a tumor
 - When the cataract causes other eye diseases, e.g. uveitis or glaucoma

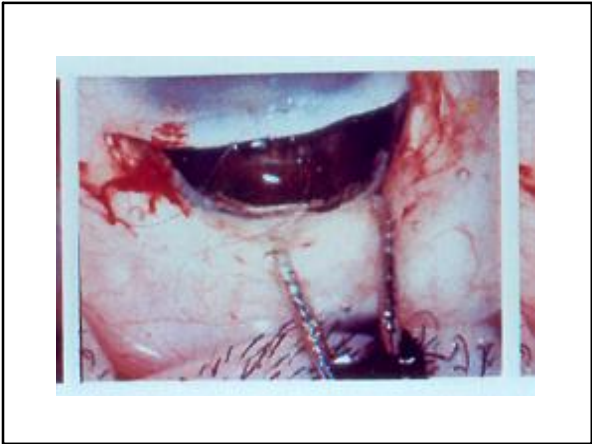
Cataract: Management

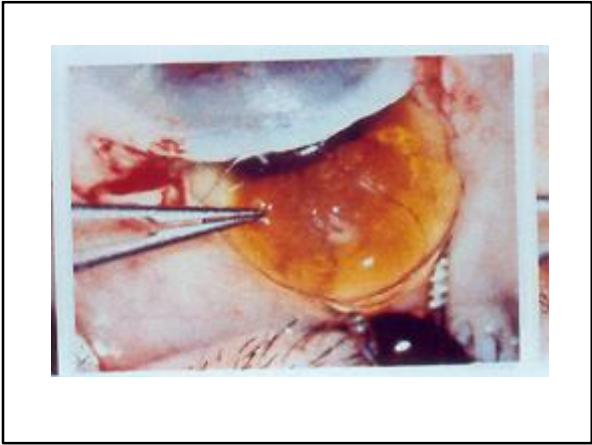
- Surgical removal
 - Most cataract surgery is done on an outpatient basis
 - Only the lens and anterior capsule are removed
 - After cataract removal eye is *aphakic* and optical power is restored by an intraocular lens, an eyeglass lens, or a contact lens
 - Visual acuity is restored to precataract levels in more than 99% of uncomplicated cases.

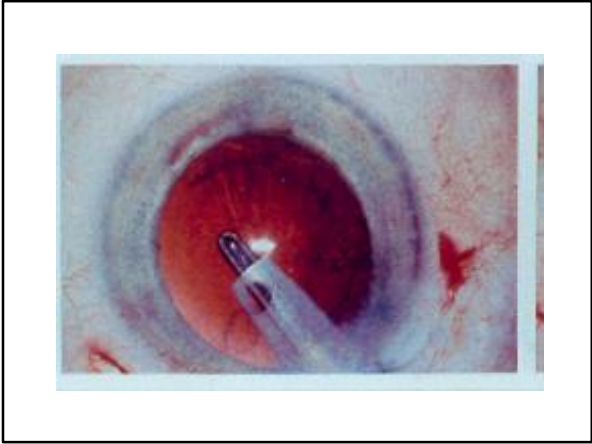


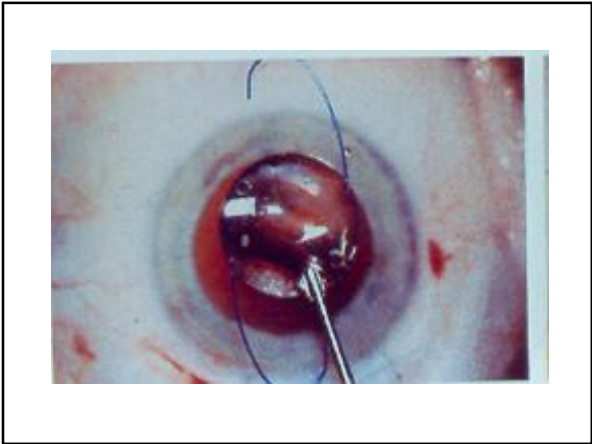


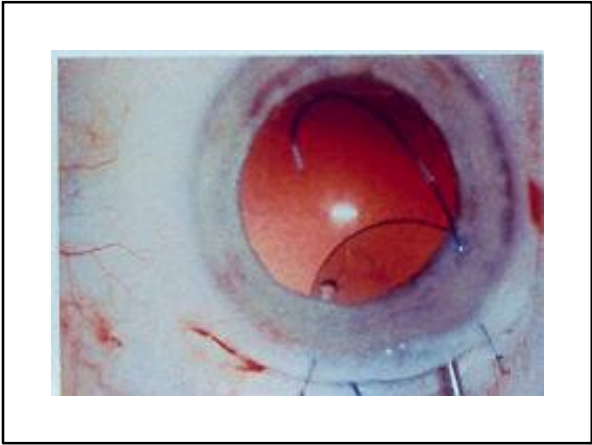


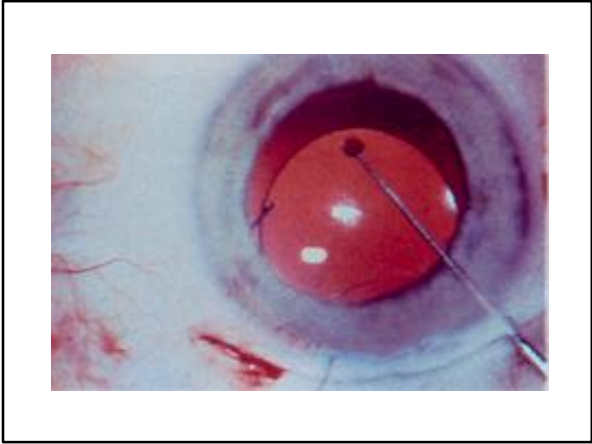










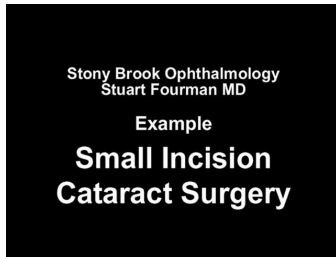


Complications

- Complications (rare):
 - Retinal detachment
 - Macular edema
 - Chronic Uveitis
 - Keratopathy

CATARACT SURGERY

- Let's go to the videotape



SLOW LOSS OF VISION

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Slow Loss of Vision

- Age-Related Macular Degeneration

- Etiology

- older age, women, family history, RPE atrophy

- Exam

- drusen-hyaline degeneration of RPE
 - break in Bruch's
 - choroidal vessels bleed
 - NO APD



Slow Loss of Vision

- Age-Related Macular Degeneration (AMD)

- Symptoms

- gradual/rapid loss of vision
 - metamorphopsia- Amstler grid
 - scotomata
 - no APD



Slow Loss of Vision

- Age-Related Macular Degeneration (AMD)

- Treatment

- vitamins-A, C, E, zinc
 - delays progression
 - fluorescein angiogram
 - laser
 - newer modalities of laser, intravitreal steroids, anti-angiogenesis agents

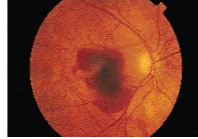


Slow Loss of Vision

- Age-Related Macular Degeneration (AMD)

- Keys

- will not go totally blind
 - 20/400 endpoint
 - use of low vision aids



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Slow Loss of Vision

- Amblyopia
 - “lazy eye”
 - suppression of vision in 2% of people
 - onset prior to age 7
- Strabismus
 - misaligned eyes, “crossed, wandering eyes”
 - affects 4% of children
 - esotropia-inward turning
 - exotropia-outward turning

Slow Loss of Vision

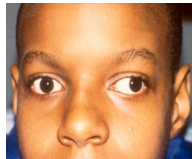
- Amblyopia
 - Block in normal visual development
 - Lack of binocular mapping of the environment
 - Decrease synapses within lateral geniculate body (even atrophy)
 - Lack of alignment of eyes
 - Lack of fusion, decrease stereovision

Slow Loss of Vision

- Amblyopia
 - Decreased vision, usually since birth
 - Strabismus (misalignment of eyes)
 - Visual preference, head tilt

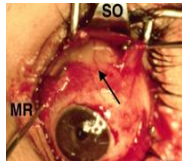
Slow Loss of Vision

- Amblyopia/Strabismus
 - Esotropia-in-turning eyes
 - Exotropia-out-turning eyes



Slow Loss of Vision

- Amblyopia/Strabismus
- Treatment
 - Correct refractive error/glasses
 - Treat ocular disease - cataracts
 - Occlusion
 - Surgery-move eye muscles



Slow Loss of Vision

- Amblyopia/Strabismus
 - Preventable cause of blindness
 - Critical period
 - Risk until age 10

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- Amblyopia/Strabismus
