



Systematic Review Of Cataract Drug And Treatment

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Abstract:

Contact lenses are thin, curved lenses placed directly on the surface of the eye to correct vision. They offer an alternative to eyeglasses, providing unobstructed peripheral vision and cosmetic appeal. Contact lenses can correct various refractive errors, including myopia, hyperopia, astigmatism, and presbyopia. A contract is a legally binding agreement between two or more parties that outlines the terms and conditions of a specific arrangement.

Keyword: CONTARACT DRUG Diagnosing Cataracts treatment Pharmacological Cataract surgery treatment

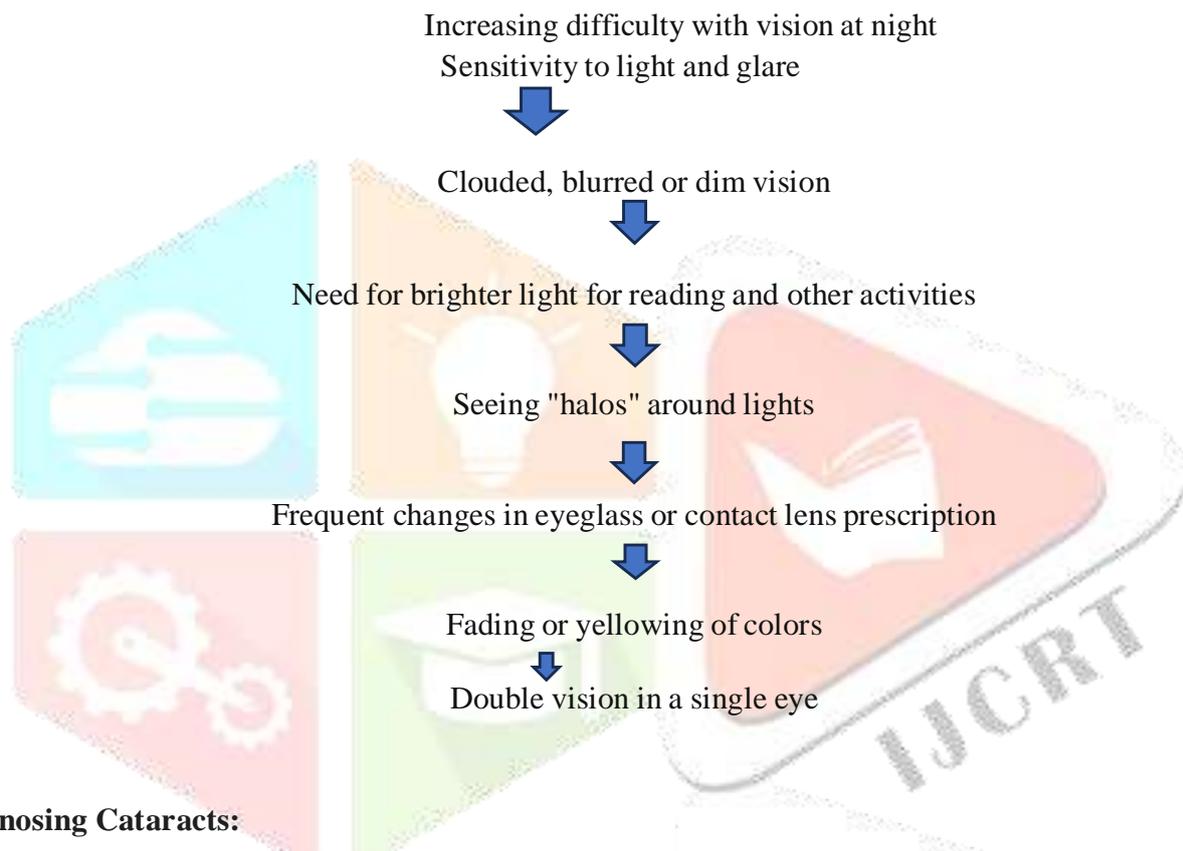
Introduction:

A cataract is a cloudy area in the lens of the eye that affects vision. It occurs when the clear lens in the eye becomes cloudy or opaque, preventing light from passing through and focusing properly on the retina. Surgery: The only effective treatment for cataracts. The cloudy lens is removed and replaced with an artificial lens. Cataract surgery is a common and highly effective procedure, restoring vision and improving quality of life. Thin, curved lenses placed directly on the surface of the eye to correct vision. Soft contacts, rigid gas permeable (RGP) contacts, daily disposable contacts, and colored contacts. To correct nearsightedness, farsightedness, astigmatism, and presbyopia. Medications manufactured and supplied by a pharmaceutical company under contract to a healthcare organization or government agency. To provide cost-effective, high-quality medications for specific patient populations. Generic medications, biosimilars, and branded medications supplied under contract.

Signs and symptoms:

Signs and symptoms of cataracts include:

Cataract treatments, including medications and surgical options, aim to address cloudiness in the eye's lens that impacts vision. Symptoms of cataracts can include blurry or dimmed vision, difficulty seeing at night, sensitivity to light and glare, frequent prescription changes, and faded or yellowed colors. Medications may be used to manage symptoms in the early stages, but surgery, which involves removing the cloudy lens and replacing it with a clear artificial lens, is often required for significant vision impairment. Signs of cataracts include gradual vision decline and noticeable changes in how one perceives light



Diagnosing Cataracts:

A comprehensive eye exam is necessary to diagnose cataracts. The exam typically includes:

1. Visual Acuity Test: Measures the sharpness and clarity of vision.
2. Refraction Test: Determines the correct lens prescription.
3. Slit Lamp Exam: Uses a microscope to examine the eye's structures, including the lens.

Causes:

Age-Related Cataract A 65-year-old woman presents with complaints of blurry vision and difficulty driving at night. Visual acuity test: 20/50 in both eyes. Slit lamp exam: Reveals a nuclear cataract in both eyes.
Diagnosis: Age-related cataract.

Traumatic Cataract A 30-year-old man presents with a history of eye trauma from a car accident 6 months ago.

- Visual acuity test: 20/200 in the affected eye.
- Slit lamp exam: Reveals a cortical cataract in the affected eye.
- Diagnosis: Traumatic cataract.

Congenital Cataract

A 2-year-old boy presents with a white reflex in the pupil of one eye.

- Visual acuity test: Not possible due to age.
- Slit lamp exam: Reveals a congenital cataract in one eye.
- Diagnosis: Congenital cataract. Secondary Cataract

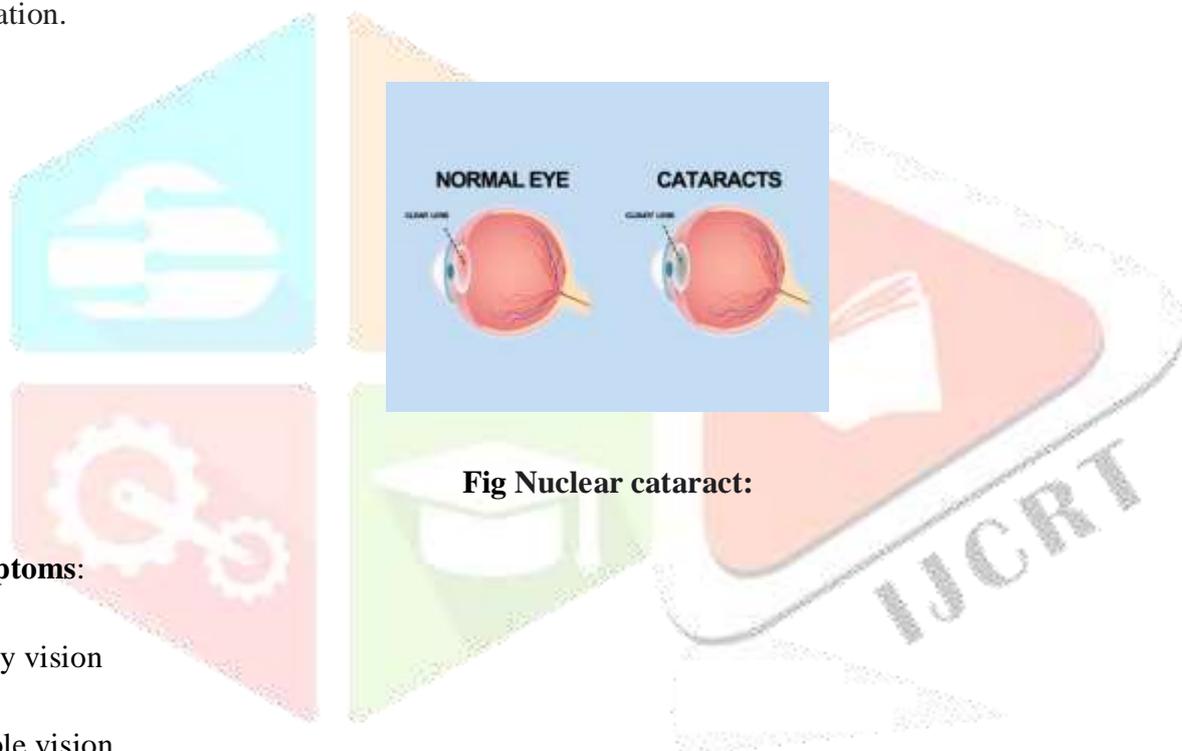
A 50-year-old woman presents with a history of uveitis and complaints of blurry vision.

- Visual acuity test: 20/100 in the affected eye.
- Slit lamp exam: Reveals a posterior subcapsular cataract in the affected eye.
- Diagnosis: Secondary cataract due to uveitis.

TYPES OF CATARACTS:

Nuclear cataract:

A nuclear cataract is a type of age-related cataract that affects the central or "nuclear" part of the lens. Aging: Nuclear cataracts are a common age-related condition. Oxidative stress: Accumulation of oxidative stress can damage the lens fibers. UV radiation: Prolonged exposure to UV radiation can contribute to nuclear cataract formation.



Symptoms:

- Blurry vision
- Double vision
- Faded colors
- Difficulty seeing at night
- Sensitivity to light

treatment:

1. Surgery: Phacoemulsification with intraocular lens (IOL) implantation is the most common treatment.
2. Cataract extraction: Removing the cloudy lens and replacing it with an artificial lens.

Cortical cataracts:

A cortical cataract is a type of age-related cataract that affects the cortex of the lens. Surgery: Phacoemulsification with intraocular lens (IOL) implantation is the most common treatment. Cataract extraction: Removing the cloudy lens and replacing it with an artificial lens. Cortical cataracts are a common age-related condition. Oxidative stress: Accumulation of oxidative stress can damage the lens fibers. UV radiation: Prolonged exposure to UV radiation can contribute to cortical cataract formation.

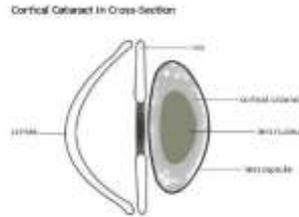


Fig Cortical cataracts

Symptoms:

- Blurry vision
- Double vision
- 3. Faded colors
- 4. Difficulty seeing at night
- 5. Sensitivity to light
- 6. Glare or halos around lights

Treatment:

1. Surgery: Phacoemulsification with intraocular lens (IOL) implantation is the most common treatment.
2. Cataract extraction: Removing the cloudy lens and replacing it with an artificial lens.

Posterior subcapsular cataracts:

A posterior subcapsular cataract (PSC) is a type of cataract that affects the back of the lens, specifically the posterior subcapsular region. PSC is a common age-related condition. Diabetes: People with diabetes are more likely to develop PSC. Steroid use: Prolonged use of steroids can increase the risk of PSC. Radiation exposure: Exposure to radiation can increase the risk of PSC. Family history: Some families may have a genetic predisposition to PSC. Surgery: Phacoemulsification with intraocular lens (IOL) implantation is the most common treatment. Cataract extraction: Removing the cloudy lens and replacing it with an artificial lens.

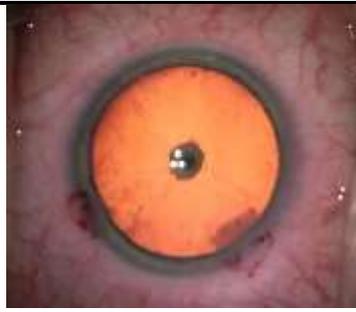


Fig Posterior subcapsular

Symptoms:

- Blurry vision
- Double vision
- Faded colors
- Difficulty seeing at night
- Sensitivity to light
- Glare or halos around lights
- Difficulty reading or performing daily tasks

Treatment:

1. Surgery: Phacoemulsification with intraocular lens (IOL) implantation is the most common treatment.
2. Cataract extraction: Removing the cloudy lens and replacing it with an artificial lens.

Congenital cataracts:

Congenital cataracts are a type of cataract that is present at birth or develops during childhood. Genetics: Family history of congenital cataracts Infections: Maternal infections during pregnancy, such as rubella or toxoplasmosis Metabolic disorders: Conditions like galactosemia or Lowe syndrome Trauma: Injury to the eye during birth or early childhood. Surgery: Phacoemulsification or extracapsular cataract extraction with intraocular lens (IOL) implantation Contact lenses or glasses: Corrective lenses to improve vision Patch therapy: Occlusion therapy to treat amblyopia (lazy eye)

Symptoms:

- White or cloudy pupil: A visible white or cloudy area in the pupil
- Vision problems: Blurry vision, double vision, or sensitivity to light
- Nystagmus: Involuntary eye movements
- Strabismus: Crossed eyes or misaligned eyes

Treatment:

1. Surgery: Phacoemulsification or extracapsular cataract extraction with intraocular lens (IOL) implantation
2. Contact lenses or glasses: Corrective lenses to improve vision

Cataract surgery:-

Small-incision surgery:

Small-incision surgery, also known as small-incision cataract surgery, is a minimally invasive surgical procedure used to remove a cataractous lens and implant an intraocular lens (IOL).

Benefits:

1. Reduced recovery time: Smaller incision results in less trauma to the eye, promoting faster healing.
2. Less discomfort: Minimally invasive procedure reduces post-operative discomfort and pain.
3. Improved visual outcomes: Smaller incision allows for more precise IOL placement, leading to improved visual outcomes.
4. Reduced risk of complications: Smaller incision reduces the risk of complications, such as infection, inflammation, and retinal detachment.

Large-incision surgery:

Definition: A surgical procedure that involves making a larger incision (typically 10-12 mm) in the cornea to remove a cataractous lens.

Procedure: The cataractous lens is removed through the large incision, and an intraocular lens (IOL) is implanted.

Indications: Typically used for patients with very hard or dense cataracts, or those with certain eye conditions, such as corneal disease.

- Disadvantages: Larger incision can lead to more post-operative discomfort, increased risk of complications, and longer recovery time.

Femtosecond laser surgery:

Definition: A minimally invasive surgical procedure that uses a femtosecond laser to create a precise incision in the cornea and break up the cataractous lens.

Procedure: The laser creates a precise incision, and then breaks up the cataractous lens, which is then removed and replaced with an intraocular lens (IOL).

- Benefits:

High precision, reduced risk of complications, and faster recovery time.

Indications Suitable for most types of cataracts, including nuclear, cortical, and posterior subcapsular cataracts.

Prevention of Cataracts:

- Quit smoking: Smoking is a significant risk factor for cataracts.
- Wear sunglasses: Protect your eyes from UV radiation by wearing sunglasses with UV protection.
- Eat a balanced diet: Consume foods rich in antioxidants, such as vitamins C and E, and omega-3 fatty acids.
- Maintain a healthy weight: Obesity is a risk factor for cataracts.
- Exercise regularly: Regular physical activity can reduce the risk of cataracts.

Eye Care:

- Regular eye exams: Schedule regular eye exams to detect cataracts early.
- Monitor blood sugar: If you have diabetes, monitor your blood sugar levels to prevent diabetic cataracts.
- Protect your eyes from injury: Wear protective eyewear when engaging in activities that could harm your eyes.

Other Prevention Methods:

- Avoid prolonged exposure to UV radiation: Wear protective eyewear when spending time outdoors, especially during peak sun hours.
- Manage chronic conditions: If you have conditions like diabetes, hypertension, or obesity, manage them effectively to reduce the risk of cataracts.
- Limit steroid use: Long-term use of steroids can increase the risk of cataracts.

Conclusion :-

Cataract remains one of the leading causes of vision impairment worldwide, primarily managed through surgical intervention. However, numerous drug-based and non-surgical treatments have been explored over the years to delay progression or provide alternative management strategies.

Pharmacological treatments, including antioxidants, anti-inflammatory agents, and other molecules, have shown some promise in preclinical studies and early clinical trials. However, results have been inconsistent, and more robust evidence is needed to confirm their efficacy in preventing cataract progression or improving vision. **Topical agents** like N-acetylcarnosine and **anti-cataract drugs** have demonstrated potential benefits, though their clinical application remains limited by insufficient long-term data. Furthermore, the development of **gene therapies** and novel biologics is still in early stages, with promising preclinical results, but these are not yet ready for routine clinical practice.

Non-surgical interventions*, such as lifestyle changes (diet, UV protection, and smoking cessation), have some evidence supporting their role in slowing cataract progression, though these factors cannot replace surgical treatment once the cataract has reached an advanced stage.

While surgical treatment (primarily phacoemulsification and lens replacement) remains the gold standard, ongoing research into drug-based therapies could potentially delay or complement surgery, especially in the early stages of cataract formation.

In conclusion, while no pharmacological treatments have yet proven to be a viable replacement for cataract surgery, ongoing research into drug therapies and alternative non-surgical treatments continues to offer hope for less invasive options in the future. Large-scale, well-designed clinical trials are needed to definitively assess the benefits of these treatments and their place in the management of cataracts.

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