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## Cataract Surgery by the numbers

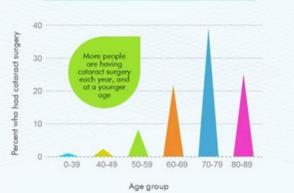
### Benefits to patients



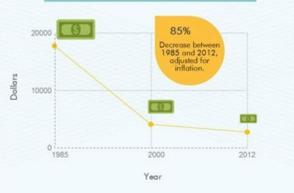
### Number of cataract surgeries done each year



### Age when people get cataract surgery



### Cost of cataract surgery



### The benefits of cataract surgery to society

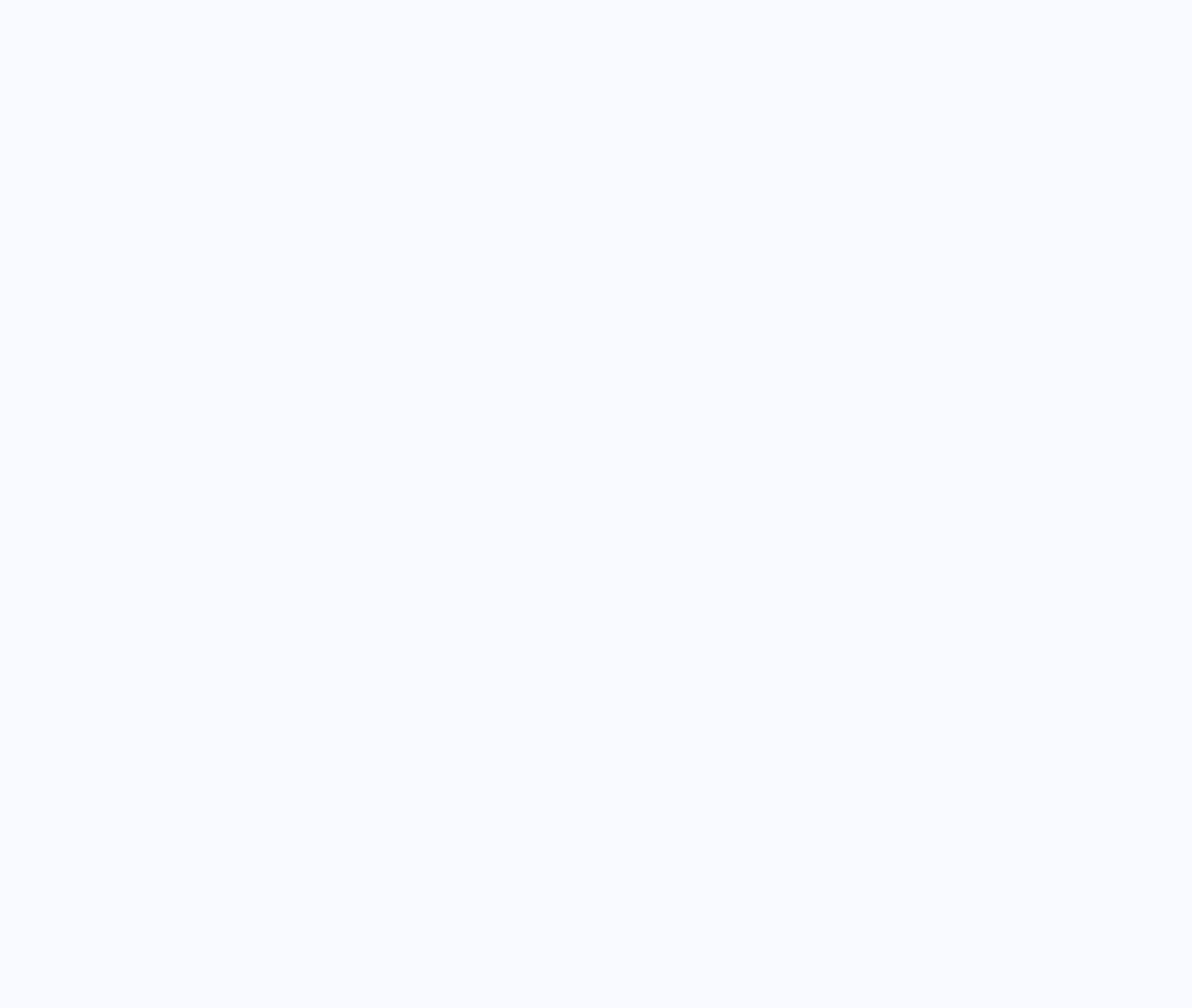


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Most people leave the hospital the same day, with minimal discomfort. 2015 Jan;26(1):16-21. They are the most commonly implanted due to their low cost. Sci Rep. The much smaller external incision (6.5 mm to 7 mm) with a larger internal incision (9 mm to 11 mm) leads to a natural seal. [PubMed: 20428883]10.Day AC, Gore DM, Bunce C, Evans JR. [PubMed: 11807385]21.Chang DF. The value of routine preoperative medical testing before cataract surgery. As many as 95% of patients will have a best-corrected visual acuity of 20/40 after surgery.[65] Patients report improvement in mental and emotional well-being, improved social interactions, as well as improvements in reading, watching television, and recognizing people.[66] Patients who undergo cataract surgery are also less likely to be involved in traffic crashes.[67] There is an overall mortality benefit to patients who undergo cataract surgery.[68] Finally, there is an economic benefit to cataract surgery with an ROI of 833% due to high costs associated with poor vision such as depression, injury, hospital admissions, necessary caretakers, and decreased employment.[69] Primary care physicians and providers (PCP) have an important role in identifying patients with decreased visual loss due to cataracts. [PMC free article: PMC6458014] [PubMed: 27387849]11.Sahay P, Goel S, Maharana PK, Sharma N, Thiyaj JS. Patients with nuclear cataracts can have good levels of Snellen acuity. Thousands of individuals receive treatment for cataracts each year, and modern surgery techniques make it a painless process. 2013 Mar;19(3):227-34. 2011 Jan;22(1):19-27. 2018 Oct 29;33(44):e275. [PubMed: 29697436]27.Alio JL, Grzybowski A, El Aswad A, Romaniuk D. However, with the advent of phacoemulsification and small incision surgeries, clinicians have since moved to local and topical anesthesia.[38][39]Intracapsular Cataract Extraction (ICCE): A technique that was discovered in the 18th century that involves removing the entire lens and capsule through a single incision. A systematic overview of the incidence of posterior capsule opacification. [PubMed: 2875707]54.Garg P, Roy A, Sharma S. Surv Ophthalmol. [PubMed: 30969521]66.Lamoureux EL, Fenwick E, Pesudovs K, Tan D. 2017 Feb;43(2):276-284. Use of topical anesthesia alone in cataract surgery. Short-term Dynamics after Single- and Three-piece Acrylic Intraocular Lens Implantation: A Swept-source Anterior Segment Optical Coherence Tomography Study. Pediatric cataracts can be hereditary, idiopathic, or part of multisystem syndromes, metabolic disorders, or maternal infection.[6] Age-related cataracts are thought to be due to oxidative damage to the lens[7] and are divided anatomically into nuclear, cortical, and posterior subcapsular. [PubMed: 22081033]64.Hood CT, Sugar A. Initially, the patient is asymptomatic but eventually begins to lose both peripheral and central vision. The crystalline lens is a biconvex structure that focuses light on the retina. 2014 Jul-Aug;24(4):520-6. 2012 Jan;23(1):7-11. 2015;134:169-201. 2018 Dec;44(12):1536. The incidence is highest among black Americans.[12]Diabetic Retinopathy: Presents in patients with both type 1 and type 2 diabetes. Trifocal versus Bifocal Diffractive Intraocular Lens Implantation after Cataract Surgery or Refractive Lens Exchange: a Meta-analysis. By continuing to use this website you are giving consent to cookies being used. Additionally, patients are more likely to develop early age-related macular degeneration, which is thought to be due to the loss of free-radical scavenging properties with the removal of the lens.[27] Patients are also more likely to develop open-angle glaucoma believed to be due to damage to the trabecular network from increased oxygen levels.[2] Postoperative Care: Typically, patients are prescribed topical antibiotics, corticosteroids, or non-steroidal anti-inflammatory drops for 1 to 4 weeks postoperatively. [PubMed: 18550876]16.Lundström M, Goh PP, Henry Y, Salowi MA, Barry P, Manning S, Rosen P, Stenevi U. Plate-type haptics can be inserted by a small incision, but have an increased risk of dislocation.[20] One-piece designs are also made from the same material as the lens but have open-loop haptic arms. Diabetic retinopathy. These symptoms are known as dysphotopsias and can be divided into positive and negative symptoms. Finally, the lens acts as an oxygen sink with some of the highest concentrations of the antioxidant glutathione (GSH) in the body. In the proliferative type, fibrous proliferation, new blood vessels, and macular edema can be seen.[13]Age-related Macular Degeneration (AMD): Dry AMD presents with worsening vision and more dependence on brighter lights or magnifying lenses. 2015 Sep;42(3):409-23. Patients are counseled to follow up the day after surgery, at 1 week, 1 month, and then 3 months postoperatively.[7]Complications can be divided into three time periods, i.e., intraoperative, early postoperative, and late postoperative. Intraoperative Complications: The most common include posterior capsule rupture (0.5% to 2.0%), intraoperative iris floppy syndrome (0.5% to 2.0%), or iris or ciliary body injury (0.6% to 1.2%).[7] Posterior capsule rupture can lead to retained lens fragments, corneal edema, and cystoid macular edema.[50] Posterior capsule rupture leads to a six-fold increased risk in endophthalmitis[51] and increases the risk of retinal detachment as high as 19 times.[52]Early Postoperative Complications: Some of the more common complications include transient elevated intraocular pressure, cornea edema, toxic anterior segment syndrome, and endophthalmitis.[7] Even in glaucomatous eyes, after one year, all patients will have IOP control, with some even having a decreased need for medication.[53]Endophthalmitis, while rare due to intracameral antibiotics, is one of the most severe complications post-ataract surgery. Patients with moderate to severe myopia are at even more of an increased risk for retinal detachment. [PubMed: 25425711]37.Thompson J, Lakhani N. Acta Ophthalmol. Typically, vancomycin 1 mg/0.1 mL with either amikacin 0.4 mg/0.1 mL or ceftazidime 2.25 mg/0.1 mL.[55] Even with treatment, outcomes can be severe, including permanent decreased visual acuity to no light perception, with the prognosis being highly dependent on the microbiologic etiology.[56]Late Postoperative Complications: Common complications that present later include posterior capsule opacification (0.3% to 28.4%), clinical cystoid macular edema, and retinal detachment (0.1% to 1.3%).[7]Posterior capsule opacification is the most common late complication. Foldable lenses were developed to fit into the small incision.[19] Advantages over ECCE include improved visual acuity, decreased risk of astigmatism, and decreased postoperative inflammation. J Cataract Refract Surg. The first generation formula, SRK, used a constant value for ELP, the second generation, Hoffer, formula used axial length to predict ELP; third-generation formulas (Holladay, SRK/T, and Hoffer Q) predict ELP using axial length and anterior corneal curvature; fourth and fifth-generation formulas use third-generation measurements and include anterior chamber depth.[32]The ophthalmologic evaluation includes a thorough ophthalmic history, with a focus on visual acuity as well as comorbidities, and slit-lamp examination. Premium intraocular lenses: The past, present and future. A three-part system for refining intraocular lens power calculations. [PubMed: 24120324]50.Hong AR, Sheybani A, Huang AJ. Incision sizes for foldable intraocular lenses. [PubMed: 9488275]56.Asbell PA, Duanan I, Mindel J, Brocks D, Ahmad M, Epstein S. Suture-related complications are also avoided.[42][46][Videos 1 & 2]Femtosecond Assisted Laser Cataract Surgery (FLACS): This technique, developed in 2008, uses a laser to microscopically dissect tissue, greatly reducing the risk of collateral damage.[47] The laser, originally used in LASIK, is used to create the capsulotomy and initial lens fragmentation. Laser-assisted cataract surgery versus standard ultrasound phacoemulsification in eyes with preexisting glaucoma. Treatments can include repositioning the IOL, secondary placement of IOL, and Nd:YAG laser anterior capsulotomy.[64]Cataract surgery is one of the most successful clinical managements in medicine with direct improvements in visual acuity as well as large improvements in activities of daily living and decreased mortality. [PubMed: 30489358]34.Scheiner OD, Katz J, Bass EB, Tsielsch JM, Lubomski LH, Feldman MA, Petty BG, Steinberg EP. [PubMed: 8784636]39.Nouvellon E, Cuvillon P, Ripart J, Viel EJ. 2002 Feb;13(1):24-9. Within surgery, ophthalmologists rely on anesthesiology, nurses, as well as scrub techs. While as many as 95% of patients will have improved visual acuity, cataract surgery does have complications. 1998 Feb;116(2):219-25. [PubMed: 30473094]61.Flach AJ. [PubMed: 3339543]31.Sahin A, Hamrah P. [PubMed: 2512792]28.Zvorničanin J, Zvorničanin E. A high-powered laser is used to break up the cloudy eye lens, and the surgeon will then remove them using suction. 1996 Jun;22(5):612-4. 2010 Sep;248(9):1221-3. There are many lenses to choose from, and your surgeon will advise you on which is best.Recovering From Your SurgeryYour surgery will take around 15 minutes, and you'll be able to leave soon after. 2005 Feb 12;18:365(9459):599-609. Clinical features, causative organisms, and visual acuity outcomes. Objectives: Review the pathogenesis of cataracts.Describe the various cataract surgery techniques as well as their advantages and disadvantages.Identify the most common and the most serious complications of cataract surgery.Outline the indications and contraindications of cataract surgery Access free multiple choice questions on this topic. 2013 Mar;28 Suppl 2:53-6. Single versus three piece acrylic IOLs. Br J Ophthalmol. You should wear your protective eyewear for a week after the surgery, and your doctor will give you eye drops. Endophthalmitis. Phaco-Emulsification and Aspiration: A New Technique of Cataract Removal: A Preliminary Report. K. Mo Med. Vision Loss in Older Adults. Aust N Z J Ophthalmol. With these later complications, ophthalmologists rely on primary care teams to recognize these later-term complications as patients might present in their clinic.Review QuestionsSurgical video demonstrating the technique of removing a dense white cataract. Extracapsular cataract extraction and posterior chamber lens implantation in eyes with preexisting glaucoma. Treatments can include repositioning the IOL, secondary placement of IOL, and Nd:YAG laser anterior capsulotomy.[64]Cataract surgery is a safe and highly effective treatment. Multifocal IOLs are used to correct refractive vision errors to decrease the need for glasses. 2013 Dec;120(12):2367-2376. Positive symptoms involve starbursts and halos, while negative symptoms include shadows or dark areas. One of the downsides of using lasers is the costs involved. 2014 Nov-Dec;59(6):579-98. StatPearls [Internet]. Cataracts can limit your quality of life, but with the right treatment, you'll make a full recovery. What Are Cataracts?Cataracts are most commonly associated with aging and are rare in individuals under 50. [PMC free article: PMC3753305] [PubMed: 23990980]52.Kim J, Ryu SY, Hong JH, Chung EJ. [PMC free article: PMC5538311] [PubMed: 26310155]2.Lim JC, Umapathy A, Grey AC, Vaghfeli E, Donaldson PJ. [PubMed: 6390763]19.Kohnen T, Lambert RJ, Koch DD. Intraoperative management of posterior capsular rupture. Differential Diagnosis GlaucomaDiabetic RetinopathyAge-related macular degenerationGlaucoma is a group of conditions that are characterized by progressive damage to the optic nerve. Increasing incidence of cataract surgery: population-based study. Am J Ophthalmol. Measurements will be taken to decide on the size and power of your lenses. The incision is large, usually 9 mm to 13 mm, to accommodate extraction, and sutures are necessary. 2013 Sep;39(9):1383-9. 1999 Jul;60(1):99-108. [PubMed: 26319346]38.Fichman RA. 2017 Aug 05;390(10094):600-612. Postsurgical inflammation after phacoemulsification and extracapsular extraction with soft or conventional intraocular lens implantation. [PubMed: 20030430]40.Sugihara K, Tanito M, Takai Y, Ohira A. Women are slightly more affected, with an average incidence of 26% and men 22.6%.51 In 2015, 3.7 million cataract surgeries were performed in the United States[4] with data suggesting that the incidence of cataract surgery will continue to increase.[3]A majority of adult cataracts are age-related with other etiologies suspected to be due to ultra-violet (UV) light exposure, smoking, diabetes, corticosteroid exposure, and other oxidizing drugs. 2018 Feb;44(2):226-230. 2014 Jan;12(1):10-16. Nutr Hosp. The Evolution of Cataract Surgery. Femtosecond laser-assisted cataract surgery: A review. In order to maintain transparency, the lens has a microcirculation pathway driven by sodium channels that deliver nutrients to deeper fibers through extracellular inward flow. Cost-effectiveness of femtosecond laser-assisted cataract surgery versus phacoemulsification cataract surgery. 1997 Aug;104(8):1277-86. The most common include posterior capsule opacification and cystoid macular edema. An Fam Physician. While one of the main functions of the lens is to focus light, it is not a passive optical element. 1988 Jan;14(1):17-24. Complications include uveitis, glaucoma, dislocation of the lens, which may lead to severely impaired vision or even complete loss of visual acuity.[11] Signs and symptoms of congenital defects depend on the stage of presentation, but white cataracts can be recognized by parents and pediatricians can notice the asymmetry of the red reflex, as well as signs of poor vision, i.e., failure to look at light sources, no tracking, and failure to make eye contact.According to the American Academy of Ophthalmology, the goal of diagnosis is to determine if visual complaints are due to the presence of cataracts, if a cataract is present, to understand the clinical significance, and to rule out other conditions that cause visual impairment.The evaluation includes:A comprehensive historyVisual acuity with correctionGlare testingAssessing pupillary functionExamining ocular alignmentExternal examinationMeasuring intraocular pressure (IOP)Slit-lamp examination of the anterior segment, lens, vitreous humoOphthalmoscopy of the macula, retina, and optic nerveOther tests that may be considered include, optical coherence tomography (OCT), to evaluate retinal or anterior segment disorder. [PubMed: 29098792]41.Minassian DC, Rosen P, Dart JK, Reidy A, Desai P, Sidhu M, Kaushal S, Wingate N. Cataract. Femtosecond lasers cost between \$300,000 and \$500,000, which significantly increases how much you'll spend on your surgery. Patel MD. FRCS Video illustrating the technique of manual sutureless cataract extraction. They will then close the incision and place a protective shield over your eye while you recover from the surgery. New Laser TechniquesMore clinics are turning to new laser techniques in place of more out-dated cataract removal methods. [PubMed: 1501087]47.Donaldson KE, Braga-Mele R, Cabot F, Davidson R, Dhallwal DK, Hamilton R, Jackson M, Patterson L, Stonecipher K, Yoo SH. ASCRS Refractive Cataract Surgery Subcommittee. 2009 Sep;87(6):602-10. Wet AMD will present with central visual disturbances that are clinically tested with line distortion known as an Amster grid.[15]Cataracts may occur in patients with glaucoma, diabetic retinopathy, or age-related macular degeneration. Effect of haptic material and number of intraocular lens on anterior capsular contraction after cataract surgery. Preoperative evaluation for cataract surgery. 2008 Mar;115(3):473-6. Recent studies show that 68.3% of US citizens over 80 have cataracts. While some cataracts, may be congenital, secondary to trauma, or drug-induced, most cataracts are age-related. Clin Microbiol Infect. [PubMed: 28242111]8.Vrensen GF. [PMC free article: PMC6035277] [PubMed: 29980770]25.Yoon CH, Shin IS, Kim MK. Corticosteroids are associated with posterior subcapsular cataracts. Patients typically present complaining of fluctuating vision, floaters, photopsia, and visual loss. These are associated with more posterior capsular opacification but fewer dysphotopsias.[21] Three-piece designs consist of the lens and two open loops, which can be made out of PMMA, polypropylene, or polyamide. Graefes Arch Clin Exp Ophthalmol. Cataract has secondary complications such as glaucoma and uveitis when it is allowed to progress on its natural course. [PubMed: 27661662]55.Durand ML. J Curr Ophthalmol. [PubMed: 29525614]30.Holladay JT, Prager TC, Chandler TY, Musgrove KH, Lewis JW, Ruiz RS. B-scan ultrasonnd can be done if cataract density prevents visualization of the posterior segment. If cataracts are visualized, or the PCP has a high degree of suspicion, they should refer to ophthalmology. Patients with severe hyperopia are more likely to develop choroidal edema. Anatomical risk factors include axial length greater than 26 mm and posterior vitreous detachment.[63] Symptoms typically include flashing lights, floaters, as well as peripheral vision loss with progression to complete vision loss. 2017 Mar;156:117-123. Cataract surgery cost utility revisited in 2012: a new economic paradigm. [PubMed: 10414631]15.Jager RD, Mieler WF, Miller JW. 2012 Jan;23(1):47-53. Vision loss is permanent. Common causes of vision loss in elderly patients. Cochrane Database Syst Rev. Retinal detachments are usually diagnosed with direct or indirect ophthalmoscopy, where edematous retinal folds with a loss of transparency can be seen. However, the small incisions of newer techniques like phacoemulsification necessitated foldable lenses of

acrylic and silicone, which are the materials used today.[19] Toric IOLs are used to correct astigmatism and also reduce the need for glasses.[7] Once in the capsular bag, IOLs must be fixed, which is accomplished by several haptic designs: plate-type, one-piece, and three-piece lenses. If you or a loved one has cataracts, then we have the information you need to understand cataract surgery and put your worries to rest. Monofocal aspheric IOLs correct for power lost by the removal of the natural lens. [PubMed: 19719805]9. Kuhn F. Plate-type is molded from the same material as the lens and appears as a rectangular shape. Causes of intracapsular cataract extraction, explanation of intraocular lenses and suture scleral fixation of intraocular lenses in the modern era. 2018 Jul;191:xxx-xl. Novel roles for the lens in preserving overall ocular health. Risk factors for acute endophthalmitis following cataract surgery: a systematic review and meta-analysis. The largest contributor of error is the estimated lens position (ELP). 2016 May;123(5):1019-26. [PubMed: 28366377]63. Haug SJ, Bhisitkul RB. While ophthalmology follows postoperatively for up to one year, some complications, like posterior capsule opacification, can present up to 3 years later. Clinically relevant biometry. Early cortical lens opacities: a short overview. Age-related cataracts are due to the opacification of the lens. Cataracts are the world's leading cause of remediable blindness. 2008 Jun 12;358(24):2606-17. 2019 Oct;257(10):2193-2202. Endophthalmitis after cataract surgery: epidemiology, risk factors, and evidence on protection. [PubMed: 9261314]20. Doan KT, Olson RJ, Mammalis N. The increased risk of endophthalmitis is reported in patients with Diabetes mellitus, advanced age (over 80), vitreous communication, and large incision ECCE.[54] Patients typically present within two weeks after surgery with decreased visual acuity, red-eye, and pain.[55] Hypopyon is commonly present, around 80% of the time.[56] Common organisms include coagulase-negative staphylococci and Staphylococcus aureus, which account for 80% of infections.[55] Management includes vitreous humor tap and injection of broad-spectrum antibiotics. The impact of cataract surgery on quality of life. The operation will affect the sensitivity of your eyes, and you'll be given sunglasses when you're out in the sun. Subjective complaints after cataract surgery: common causes and management strategies. It is transparent with a diameter of 10 mm and an axial length of around 4 mm. [PubMed: 24114262]45. Kelman CD. It's caused when the lens inside of your eye clouds and generates a loss of vision. Ophthalmic patients on antithrombotic drugs: a review and guide to perioperative management. [PubMed: 25333754]65. Nizami AA, Gulani AC. [PubMed: 31801354]49. Abell RG, Vote BJ. 2016 Jul 08;7:CD010735. 2020 Jan;3(1):74-79. Manual small incision cataract surgery. Arch Ophthalmol. 1999 Dec;25(12):1662-74. Intraocular lens materials and styles: a review. 2016 Jan-Feb;113(1):58-62. Three-piece IOLs are equal in visual outcomes to single-piece IOLs.[22][23][24]Intraocular lenses (IOL) can be monofocal, multifocal, and toric. 2018 Dec;30(4):287-296. With age, oxidative damage can accumulate, causing an opacification of the lens.[1][2]Regardless of the etiology, the treatment is cataract surgery when the visual function is affected. It can occur as many as 1 in 5 eyes in the three years following surgery with even higher rates in the following years.[57] Posterior capsule opacification is due to residual lens epithelial cells on the anterior capsule that then migrate to the posterior capsule after cataract surgery, decreasing visual acuity.[58] Patients can also present with blurred vision as well as complaints of glare. Rare but serious complications include endophthalmitis and retinal detachment.Cataracts are one of the most common ophthalmic pathologies characterized by the opacification of the lens. Survey of intraocular lens material and design. Manual small incision cataract surgery (MSICS) with posterior chamber intraocular lens versus phacoemulsification with posterior chamber intraocular lens for age-related cataract. Intracellular outward flow is maintained through gap junctions and is used to remove waste. For information on cookies and how you can disable them visit our Privacy and Cookie Policy. [PMC free article: PMC3550319] [PubMed: 23372373]24. Sato T, Shibata S, Yoshida M, Hayashi K. [PMC free article: PMC4539250] [PubMed: 23820302]4. Ianchulev T, Litoff D, Ellinger D, Stiverson K, Packer M. On slit lamp, pigment cells present in the anterior vitreous are a sensitive finding. Video by Prof. Acute-onset endophthalmitis after clear corneal cataract surgery (1996-2005). Patients with posterior subcapsular cataracts can present paradoxically, with poor vision in good lighting and improved vision in dim lighting. This has decreased the need for manual incisions as well as reducing the time and energy of phacoemulsification.[48] However, due to increased cost over phacoemulsification, with marginal benefit, many clinicians question the current practicality of FLACS.[49]Refractive Lens Exchange (RLE) RLE uses cataract surgery techniques to replace the lens of a patient with a high refractive error when laser ablation surgery is not possible or in patients with impending cataracts. Of the multifocal lenses, bifocal diffractive lenses provide better near visual acuity than monofocal lenses. 2017 Jan;28(1):67-72. [PMC free article: PMC6026180] [PubMed: 29959385]33. See CW, Ifikhar M, Woretta FA. Eur J Ophthalmol. Extended depth of focus intraocular lenses for presbyopia. 2013 Oct 10;(10):CD008813. Incidence and risk factors for retinal detachment after cataract surgery in Korea: a nationwide population-based study from 2011 to 2015. Glutathione scavenges reactive oxygen species, is a co-factor for repair enzymes, and is thought to be released into the aqueous humor to be used by the avascular tissues such as the cornea and trabecular network. Prim Care. Five generations of formulas have been developed to more accurately predict the lens position. Treatment of cystoid macular edema after cataract surgery. 2013 Nov;39(11):1753-63. [PubMed: 21088580]67. Schlenker MB, Thiruchelvam D, Redelmeier DA. 2020 May;30(3):417-429. Femtosecond laser-assisted cataract surgery. [PubMed: 9663224]58. Tetz MR, Nimsgrn C. Association of Cataract Surgery With Traffic Crashes. [PMC free article: PMC6142973] [PubMed: 29955857]68. Tseng VL, Yu F, Lum F, Coleman AL. Nuclear cataracts can present with decreased distance visual acuity, decreased ability to recognize faces and discriminate colors. Exp Eye Res. Curr Opin Ophthalmol. Some people are happy to wear glasses after their surgery, but others ask for a powerful lens to reduce their need for eyewear. Several measurements of the eye are then taken, including the anterior chamber depth, to determine intraocular lens refraction.[33] While thorough medical history should be taken before surgery, routine systemic preoperative tests do not need to be ordered.[34] Some institutions may require clearance from the primary care physician when patients have underlying systemic diseases. [35] Due to the low risk of bleeding, antithrombotic drugs can be continued.[36] The use of alpha-1-antagonists should be noted due to the risk of intraoperative floppy iris syndrome.[37]Anesthesia: Historically, general anesthesia and retrobulbar blocks were used for intracapsular cataract surgery. Femtosecond lasers reduce the needs for specialist tools and have recently been approved by the FDA. Bradley MD and Prof. Before your surgery, you'll have a full eye exam to identify the potential risks and determine if it's necessary to have the procedure. [PMC free article: PMC1298410] [PubMed: 10360304]62. Wielders LH, Schouten JS, Aberle VR, Lambermont VA, van den Biggelaar FJ, Winkens B, Simons RW, Nuijts RM. Part 2: Clinical findings. Estimation of intraocular lens position from full crystalline lens geometry: towards a new generation of intraocular lens power calculation formulas. J Korean Med Sci. While lasers are proving beneficial, it's unknown if they can speed up your recovery time, and you'll still need to wear protection after the surgery. Preparing For SurgeryMany people worry about undergoing a cataract procedure, but the specialist will prepare you for the operation. 2019 Jan;30(1):3-8. 2018 Jun 29;8(1):9829. [PMC free article: PMC1772187] [PubMed: 15148199]22. Chehade M, Elder MJ. 2018 Sep 01;136(9):998-1007. [PubMed: 26854033]69. Brown GC, Brown MM, Menezes A, Busbee BC, Lieske HB, Lieske PA. Bhopendra C. 2018 Jul 06;8(1):10230. [PubMed: 27282996]3. Collopy HE, Hodge DO, St Sauver JL, Erie JC. Intraocular lens power adjustment by a femtosecond laser: In vitro evaluation of power change, modulation transfer function, light transmission, and light scattering in a blue light-filtering lens. Most individuals complain of blurred vision and in the most severe cases, a complete deterioration of sight. Extracapsular cataract extraction compared with small incision surgery by phacoemulsification: a randomised trial. The lens consists of fibers that are derived from lens epithelium, a thin surrounding capsule, and zonular fibers that allow for accommodation in conjunction with the ciliary body. Note that the patient has an option to choose monovision as an outcome, where one eye has an IOL for distance vision while the other eye is for near vision. 2018 Jul;29(4):318-322. 2018 Mar;96(2):e262-e263. 1998 Jul;105(7):1213-21. Study of Medical Testing for Cataract Surgery. Other medications that can also cause cataracts include busulfan, amiodarone, and phenothiazine.[7] Cataracts caused by trauma require special attention as the damage is rarely limited to the lens alone, with nearly half of injuries damaging the posterior segment.[9]The type of cataract determines the initial presentation. Br J Ophthalmol. Modern techniques mean the procedure can be performed with small incisions, which means your eye will heal faster and there are fewer risks associated with the surgery. There are many techniques involved, but the outcome is better vision and less discomfort. 2016 Apr;123(4):723-8. The incidence, pathogenesis and treatment of cystoid macular edema following cataract surgery. [PMC free article: PMC6353242] [PubMed: 30616299]36. Kong KL, Khan J. Anaesthesia for cataract surgery. Be careful you don't get water in your eye while it's healing and get plenty of rest and relaxation. MORE FROM BLOG/LINES This website uses cookies. Gomez, Majid Moshirfar MD. [PMC free article: PMC6276729] [PubMed: 30555960]29. Nguyen J, Werner L, Ludlow J, Aliancy J, Ha L, Masino B, Enright S, Alley RK, Sahler R. Sequelae of neglected hypermature senile cataract. [PubMed: 15708105]7. Liu YC, Wilkins M, Kim T, Malyugin B, Mehta JS. Complications from this treatment include damaging the IOL, transient pressure elevation, cystoid macular edema, and retinal detachment.[59]Cystoid macular edema is due to leaky perivascular capillaries secondary to the release of proinflammatory cytokines.[60] Common complaints include decreased vision, central loss of vision, or distorted vision.[61] Treatment includes topical corticosteroids and nonsteroidal anti-inflammatory drug (NSAID) eye drops. [62]Increased risk of retinal detachment is reported in patients who are younger and male. Age-related macular degeneration. 1992 Sep-Oct;37(2):73-116. 1998;96:557-634. 2004 Jun;88(6):727-8. Today, an adaptation of ECCE, manual small incision cataract surgery, has comparable outcomes to phacoemulsification.[42]Manual Small-incision Cataract Surgery (MSICS): Instead of a large incision, MSICS uses a scleral tunnel that can self-seal. This activity presents the pathology of cataracts as well as the most common surgical technique, complications, and outcomes of cataract surgery. Traumatic cataract: what, when, how. 2015 Jan;26(1):45-9. Complications of intraocular lenses. 2013;9(6):e71731. 2016 Aug 01;94(3):219-26. Comorbidities should be managed appropriately. Indications for surgery vary by country but generally include poor visual acuity, visual difficulties, or both due to cataracts.[16] Formal assessments that can be used to assess for cataract surgery include the Catquest-9SF questionnaire or the Visual Functioning Index-14.[7]Contraindications to surgery include cataracts without visual impairment or medical/ophthalmic conditions that do not allow for safe surgical outcomes. Intraocular Lens (IOL) Before intraocular lenses were used, cataractous lenses were simply removed, and the patients would then need high-power spectacles or contact lenses to attain optimal visual acuity.[17] Originally, a clear lens of polymethyl methacrylate was placed in the posterior chamber.[18] The lens was rigid and worked well with the ECCE technique. 15 USD).[44]Phacoemulsification: This is a technique developed by Charles Kelman in 1967. 2019 Jan 08;1:CD007293. Cataracts. Majid Moshirfar MD, Dr. Trey Fanning, Dr. Orry Birdsong, Dr. Aaron T. In addition to cataract procedural risks, these patients are at a higher risk of retinal detachment due to cumulative risk over time. Ophthalmology. [PubMed: 24246824] The probe is then able to emulsify and aspirate the lens.[45] The smaller incision allowed for a self-sealing wound. Commonly, they will include seeing shadows, halos, glare, starburst patterns around lights, and hazy vision. 1997 Nov;25(4):255-63. On exam, microaneurysms, intraretinal hemorrhages, and hard exudates in the non-proliferative type. [PMC free article: PMC3299090] [PubMed: 22081032]32. Martinez-Enriquez E, Pérez-Merino P, Durán-Poveda S, Jiménez-Alfaro I, Marcos S. Comparison of cataract surgery techniques: safety, efficacy, and cost-effectiveness. [PMC free article: PMC1724033] [PubMed: 11423457]42. Jaggernath J, Gogate P, Moodley V, Naidoo KS. With patient complaints of decline in visual functions such as difficulty reading, difficulty recognizing faces, or smaller objects such as golf balls, glare, or worsening vision at night, a PCP should suspect cataracts and do a thorough history and physical exam. 2013 Feb;27(1):7-11. They can also have difficulty with driving during the day and reading.[10] If left untreated, hyper-mature senile cataracts can develop. It involves making a small incision of 2 mm to 3 mm and the insertion of an ultrasonic probe. The lens is then delivered through the V-shaped incision, and an IOL is inserted.[43] A Cochrane review published in 2013 found that while phacoemulsification may be superior in early postoperative uncorrected visual acuity, MSICS and phacoemulsification have comparable outcomes for long-term best-corrected visual acuity as well as postoperative complications. Cystoid macular edema after cataract surgery. [PubMed: 2523401]17. Davis G. [PMC free article: PMC6786222] [PubMed: 31546522]12. Pelletier AL, Rojas-Roldan J, Coffin J. Drugs Aging. PLoS One. 1986 Sep;10(49):1301-8. Romaset/Shutterstock Many dread hearing their doctor say "You have cataracts," but it's not a big deal. 2015 Aug;99(8):1025-30. Make sure you have someone to drive you home and wait for at least one day until you drive. Contributed by Prof. Incidence of age-related cataract: the Beaver Dam Eye Study. Other causes include metabolic disorders, maternal infection, trauma, and toxic effects. These include measuring corneal power with computerized videokeratography, axial length, A-constant, and gain.[31] Theoretical formulas are then used to calculate power. [PubMed: 24160384]48. Roberts HW, Day AC, O'Brant DP. Cortical cataracts may cause glare, difficulty reading, and light sensitivity. The lens also serves as a UV filter that protects the retina. [PMC free article: PMC3638360] [PubMed: 23438028]56. Lalwani GA, Flynn HW, Scott IU, Quinn CM, Berrcoal AM, Davis JL, Murray TC, Smiddy WE, Miller D. JAMA Ophthalmol. Prog Mol Biol Transl Sci. These symptoms can be caused by acrylic IOLs, and management for intolerable symptoms can include an exchange with a PMMA or silicone IOL. [PubMed: 24366765]43. Bernhisel A, Pettey J. N Engl J Med. [PubMed: 1455302]60. Gandhi JS. A historical and histopathological review. [PubMed: 29929630]46. Oshika T, Yoshimura K, Miyata N. Cataract surgery is the most effective, and currently, the only approved intervention for cataracts regardless of etiology. Although it is often associated with increased ocular pressure, the optic disc can be damaged with normal IOP. Trans Am Ophthalmol Soc. Indian J Ophthalmol. Treatment involves using a YAG laser to perform the capsulotomy. 2001 Jul;85(7):822-9. Your surgeon will explain the process and give you advice about recovery times. However, there is an increased risk of posterior capsule opacity. Age-related macular degeneration, and corneal edema when compared to phacoemulsification.[41] However, lower costs led to continued use of this technique throughout the world. Posterior capsule opacification. In 2013, the United States had more than 22 million people who had cataracts.[3] In 2020, that number is expected to reach 30.1 million. [4] Incidence increases with age; 43-year-old to 54-year-old patients have an incidence of 8.3%, while patients over 75 have an incidence as high as 70.5%. Risk factors for negative symptoms include small pupils, short distance to IOL, functional nasal retina, and an IOL with a high index of refraction. [PubMed: 31770166]44. Riaz Y, de Silva SR, Evans JR. They also make the procedure a lot quicker for surgeons and are less invasive. Korean J Ophthalmol. [PubMed: 23834047]14. Quillen DA. The reviewers did find that MSICS was significantly cheaper (70 vs. Lens Biology and Biochemistry. [PubMed: 18067969]57. Schaumberg DA, Dana MR, Christen WG, Glynn RJ. [PubMed: 25390858]51. Cao H, Zhang L, Li L, Lo S. [PubMed: 10639542]35. Keay L, Lindsley K, Tielsch J, Katz J, Schein O. Depending on the presentation, treatment can include laser-pexy, pneumatic retinopexy, pars plana vitrectomy, or scleral buckle.[4]Common complaints after surgery: even though cataract surgery greatly improves vision and quality of life, patients may continue to have subjective visual complaints. Age-related cataract. Trifocal diffractive lenses are intended to improve intermediate vision; although, current evidence of their effectiveness is inconclusive.[25] Another multifocal lens, extended depth of focus, was invented to focus light on a continuous plane which would eliminate halo effects and provide improved whole range vision.[26] Another type of lens, known as a light adjustable lens, when hit with UV light, will change shape and produce a different IOL power.[27] Accommodative IOLs are designed to move with contractions of the ciliary body.[28] Once a lens is in place, a new technique using a femtosecond laser is being developed as a way to adjust the power.[29]Before surgery, ophthalmologists take into account patient anatomy and other factors to determine the needed power of the intraocular lens.[30] Several instruments are used to calculate IOL power. Cataract Surgery and Mortality in the United States Medicare Population. 2000 Jan 20;342(3):168-75. Got it, thanks! Cataracts are the world's leading cause of remediable blindness. Video by Dr. Michael J. With age, the lens stiffens, leading to farsightedness known as presbyopia. Patel MD, FRCS 1. Hejtmancik JF, Riazuddin SA, McGreal R, Liu W, Cvekl A, Shiels A. [PubMed: 9395827]23. Kim SY, Yang JW, Lee YC, Kim SY. Due to lower complication rates with improved surgical techniques, ICCE is rarely performed.[40]Manual Extracapsular Cataract Extraction: In this technique, the lens is extracted through an incision, and the intraocular lens (IOL) is then inserted. [PMC free article: PMC6200906] [PubMed: 30369857]26. Akella SS, Juthani VV. An estimated three million surgeries are carried out each year, indicating how common cataract surgery is. Routine preoperative medical testing for cataract surgery. 1984 Jul-Aug;29(1):1-54. When the process is complete, your surgeon will insert a clear lens in place of the one that has been removed. 2019 Oct;67(10):1707-1708. [PMC free article: PMC6139750] [PubMed: 27039493]18. Apple DJ, Mammalis N, Lottfield K, Googe JM, Novak LC, Kavka-Van Norman D, Brady SE, Olson RJ. It's common to suffer from some light irritation and redness after the surgery, but it will disappear within a few days. 2010 Jan 01;27(1):21-38. 2015 Jan;122(1):31-8. StatPearls Publishing; Treasure Island (FL): Aug 1, 2021. [PubMed: 31388742]53. McGuigan LJ, Gottsch J, Stark WJ, Maumenee AE, Quigley HA. [PubMed: 10609214]59. Apple DJ, Solomon KD, Tetz MR, Assia EI, Holland EY, Legler UF, Tsai JC, Castaneda VE, Hoggatt JP, Kostick AM. Office-Based Cataract Surgery: Population Health Outcomes Study of More than 21 000 Cases in the United States. [PubMed: 26804760]5. Klein BE, Klein R, Lee KE. The operation is non-invasive, safe and has quick recovery time. The BasicsCataract surgery is usually performed on an outpatient basis, which means there's no need for an overnight stay. Lancet. Risk factors for retinal detachment following cataract surgery. Scotomas, difficulty reading, or driving might be noticed.[14] Drusen can be seen on examination. Nuclear cataracts are the most common, with an incidence of 13.1%.[5] With age, the lens adds new fibers that compress the nucleus, eventually leading to nuclear sclerosis.[6] While cortical cataracts are the second most common (incidence of 8.2%), they are the most likely to require surgical intervention.[5][8] Typically, they are present on examination as opacities within the cortex known as cortical spokes.[6] Posterior lens opacity is the least common (incidence of 3.4%)[5] and is due to opacification in the posterior cortex. Around half of congenital cataracts are genetic, and most genes are involved in lens development, including a, b, and g crystallin as well as lens cytoskeletal protein. The changing pattern of cataract surgery indications: a 5-year study of 2 cataract surgery databases. 1992 Jul;18(4):356-61. [PubMed: 27479624]13. Moreno A, Lozano M, Salinas P. Since the IOL corrects only one focal distance, glasses or contact lenses may be necessary for either distance or near vision.



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