Cataract
Vision loss, treatment and the role of the GP in patient assessment and care

PAUL H. HUGHES BSc, MB BS, DO, FRACS, FRANZCO
CHRIS HODGE PhD, BAppSc

Modern cataract surgery is relatively routine, yet the decision to proceed to surgery may be complex. GPs can recognise potential problems and help to guide patients' postoperative expectations as they are faced with options for improving their vision and gaining independence from prescription glasses.

Cataract remains the leading cause of reversible blindness worldwide,[1] and the functional and economic impact of vision loss is significant.[2] Cataract surgery has been shown to be highly effective in improving visual acuity and contributing to increased social mobility and a reduction in anxiety, depression and overall all-cause mortality.[3-6] As primary healthcare provider, the GP can play a pivotal role in disease detection and perioperative assessment and counselling of patients with cataract.

MedicineToday 2016; 17(12): 43-46

Dr Hughes is an Ophthalmic Surgeon in private practice at Vision Eye Institute, Sydney, NSW. Dr Hodge is Clinical Research Co-ordinator at Vision Eye Institute; and an Honorary Associate of the Graduate School of Health, University of Technology Sydney, Sydney, NSW.

Functional signs and symptoms of vision loss

Reduced vision is an independent risk factor for physical and functional disability in the elderly.[3] Although severe vision loss due to cataract is relatively rare in the general Australian population, moderate change may still cause significant functional impairment and loss of independence. It is expected, therefore, that people who have cataracts will become increasingly reliant on their family or care providers. Studies have shown that visual acuity of 6/12 or worse may have a negative impact on mobility and social activity and lead to difficulty in many routine activities such as housework and shopping.[7,8] Patients with moderate to severe vision loss are at least three times more likely to have difficulty managing medications and preparing meals.[8] Of consideration for GPs, for every line of vision lost, the likelihood of patients reporting mobility issues increases by about 10%.[9]

A number of presenting symptoms may suggest the presence of cataract. These may include a patient reporting their glasses no longer improve vision, a loss of general contrast, a requirement for significantly more light to function in dim conditions, or a perceived loss of colour vision with objects looking 'washed out'. Often, the initial sign on a patient presenting to their GP is increased difficulty with night driving due to the scatter from oncoming headlights. These symptoms are distinct from those associated with retinal or macular disease, which often include distorted vision or irregular central vision loss.

Aetiology and types of cataract

Cataracts have been shown to be significantly associated with a number of systemic conditions including diabetes, carotid artery disease, peripheral vascular disease, hypertension, ischaemic heart disease, congestive heart failure and hyperlipidaemia.[10]

Figures 1a to c. Different types of cataract. a (left). Nuclear cataract. b (centre). Cortical cataract. c (right). Posterior subcapsular cataract.

There are three common types of cataract (Figure 1). A nuclear cataract forms deep in the central zone (or nucleus) of the lens and results from the long-term compacting of inner lens layers. Nuclear cataracts are therefore usually associated with ageing, although smoking is also a potential factor.[11] On presentation, the lens may appear yellow. Because of the increased lens density, nuclear cataracts often lead to changes in colour perception and contrast. Nuclear cataracts may further lead to refractive changes (index myopia). As a result, some patients may state that they have recently become less reliant on reading glasses.

Cortical cataracts are characterised by white, wedge-like opacities that start in the periphery of the lens and work their way to the centre in a spoke-like fashion. Symptoms are related to how close the opacities are to the centre of the visual axis. Risk factors for cortical cataracts include diabetes, vascular disease and hormonal factors in women. The likely contribution of ultraviolet radiation has been shown in a local New South Wales population.[12]

Posterior subcapsular cataracts represent opacities located in the most posterior cortical layer, directly in front of the lens capsule. This type of cataract tends to occur in younger patients. Progression can be variable but is usually more rapid than with nuclear cataracts. Glare and difficulty seeing in bright light dominate symptoms in this cataract type because of light scatter, and near vision is often more affected than distance vision. Patients with diabetes or those taking high doses of steroid medications have a greater risk of developing a subcapsular cataract.

The decision to proceed to surgery: preoperative counselling and postoperative expectations

Corrected visual acuity of 6/12 or better (and adequate field of vision) is the legal requirement for driving and therefore represents a practical benchmark.[13] The decision to proceed to earlier surgery may, however, be influenced by additional factors including the patient's own perception of visual function, type of cataract and overall ocular health.

A patient of working age may be more distressed by a lesser visual change than an older patient with moderate visual demands. Posterior subcapsular cataracts may cause patients to experience significant problems with glare despite minimal visual acuity loss. The normal, age-related growth of the crystalline lens can be associated with a shallowing of the anterior chamber, crowding of the angle by the peripheral iris and elevation of intraocular pressure, thereby increasing the risk of glaucoma. Cataract surgery reduces this concern and may represent a valid early option for patients at risk of glaucoma. As cataracts may lead to refractive changes, it is important that the patient's refraction is checked to optimise their current vision before a decision is made to proceed with surgery.

Cataract surgery is now perceived as refractive surgery; that is, surgeons can offer a range of options not only to improve patients' vision but also to increase their independence from prescription glasses after surgery. Standard intraocular lenses (IOLs) are termed monofocal IOLs and can provide clarity at a single, fixed distance. Patients receiving monofocal IOLs often request optimised distance vision so they will still require glasses to help with near vision. Multifocal IOLs provide a range of good near, intermediate and distance vision without glasses.[14] The lens design, which features either a series of concentric rings or segments to direct the light entering the eye to different focal points, can be associated with glare symptoms and a minor reduction in overall visual quality compared with monofocal IOLs. This must be discussed with patients before a final decision is made (Figure 2). Toric IOLs are designed to correct for astigmatism, providing surgeons with an additional option to improve unaided postoperative vision. Astigmatism corrections may be incorporated in both monofocal and multifocal lens types.

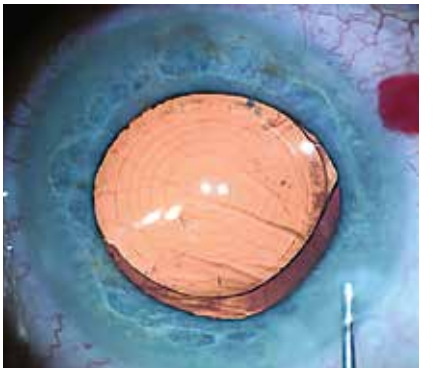


Figure 2. Multifocal intraocular lens in situ. The concentric rings allow the lens to refract the light rays entering the eye to different focal lengths, providing the patient with a range of good near, intermediate and distance vision without glasses.

Patients with concurrent ocular disease may have limited visual potential and it is imperative this is discussed before surgery to establish realistic expectations. This may affect the choice of lens. In particular, retinal disease such as macular degeneration often reduces visual quality. Optimising visual quality is of primary importance to a person's ongoing daily function, so the use of multifocal IOLs, which may further inhibit quality of vision, is a relative contraindication in these patients.

Practically, occupational requirements must also be considered. For example, civil

aviation legislation currently limits the use of either multifocal IOLs or monovision in Australian professional pilots. Monovision is the use of a single focus lens to provide clear distance vision in the dominant eye and residual myopia in the non-dominant eye. This is to provide a measure of reading ability without glasses. Similarly, heavy vehicle licenses require adequate vision in both eyes; therefore, blending the post-operative target to provide unaided near vision remains unacceptable under most circumstances. The GP is in an excellent position to understand the patient's daily vision tasks and can be an essential information source.

Preparation for surgery

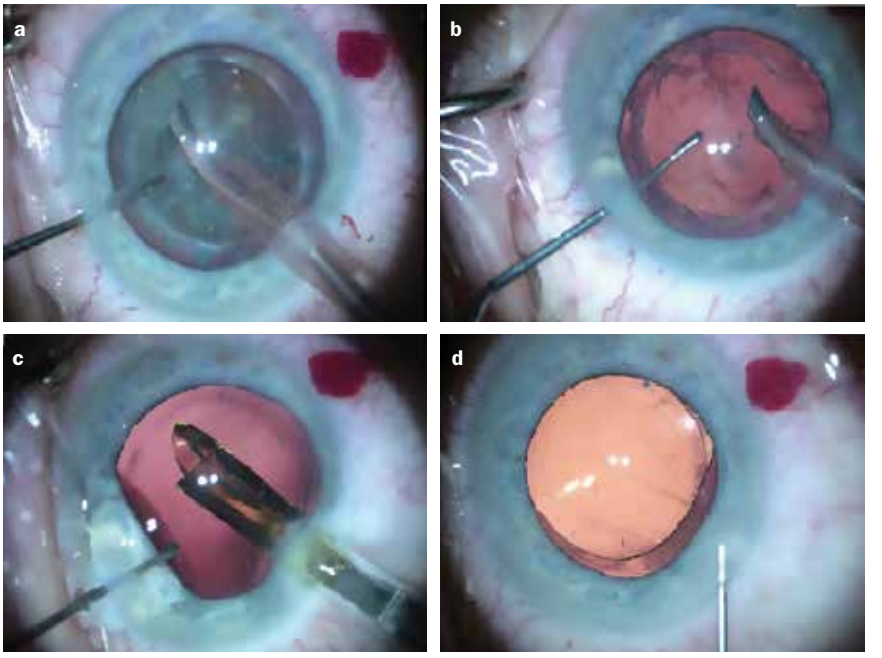
Because cataract has been shown to be significantly associated with a number of systemic conditions, a patient's general health before surgery is a concern. Surgery should not be performed unless any concurrent systemic condition is relatively stable. The surgeon will recruit the GP in the preoperative care of the patient to stabilise these conditions if appropriate.

A complete drug history is also essential. Certain medications such as systemic corticosteroids (including those that are inhaled) and antipsychotic drugs can be associated with cataract.[15] Some medications may increase the risk of intraoperative complications. For example, alpha$_1$ adrenergic blockers including tamsulosin may predispose a patient to intraoperative floppy iris syndrome. With prior knowledge, steps can be taken during surgery to reduce such risks. Blood-thinning agents are not cause for particular concern, as current surgical technique involves an incision through the predominantly avascular cornea.

Surgery: what to expect

Cataract surgery is routinely performed under local anaesthetic with the patient supine and awake. The operation takes between 30 and 40 minutes; however, allowing time for recovery, a stay of several hours at the day surgery centre is required.

The surgeon first makes a small incision at the peripheral cornea to access the lens capsule. The anterior portion of the capsule is then removed, providing access to the cataract (capsulotomy). The cataract is broken down using ultrasound (phacoemulsification) before being removed through the same corneal incision. After the natural lens has been entirely removed, the new lens may simply be inserted into the vacant lens capsule. This process remains similar regardless of lens type. An IOL is foldable and may be passed through the existing incision. The surgeon centres the new IOL before sealing the wound by corneal stromal hydration. Sutures are rarely required (Figure 3).



Figures 3a to d. The four steps of cataract surgery. a (top left). Breaking up the natural lens with an ultrasound tip. b (top right). Removing all lens matter before intraocular lens (IOL) insertion. Note the central, round opening to allow access to the lens (capsulotomy). c (bottom left). Insertion of the foldable IOL through the existing peripheral corneal incision. d (bottom right). Stromal hydration of the corneal incision to seal the eye and prevent wound leakage. Note the well-centred IOL.

Recently, femtosecond laser technology has been used to facilitate the surgical process. To date, there is no evidence that outcomes differ between conventional small incision and femtosecond laser-assisted surgery, and the latter is usually more costly. There is some evidence of benefit of femtosecond laser-assisted surgery in potentially difficult cases.[16,17]

Perioperatively, most surgeons have patients continue on their regular medication, including warfarin or aspirin; however, this decision may necessitate consultation with the GP. Diabetic medications are usually withheld on the morning of surgery only. Any sign of infection immediately before surgery will result in postponement of the operation.

Recovery: postoperative considerations

Visual recovery is usually rapid, with most patients who undergo routine surgery expecting visual acuity of 6/12 or better at day one. Patients may complain of glare and minor irritation in the immediate few days after surgery but this subsides rapidly. Mild redness and epiphora are also common initially. Antibiotic and anti-inflammatory medication are titrated over the initial two to four weeks after surgery. Surgery on the second eye can be carried out one to two

weeks after the first eye, although in many cases cataract is asymmetrical and second-eye surgery can be delayed. A patient with significant refractive error may note an 'imbalance' (anisometropia) between procedures because of the new disparity between eyes and should be given appropriate warning. Driving should not be contemplated after cataract surgery until the surgeon has confirmed vision requirements have been met.

Postoperative complications of cataract surgery are rare. The major complication that GPs should be aware of is endophthalmitis. This can develop during the first week after surgery. The patient presents with rapid loss of vision, ocular pain that has the quality of an ache, increasing redness of the eye and photophobia. The incidence of infection after cataract surgery is about 0.05%, and patients with immunosuppression, diabetes or significant concurrent medical illness are at higher risk.[18] Retinal detachment is extremely rare in the postsurgical period. Patients may notice reduced visual acuity, increased floaters and a peripheral scotoma (visual field loss) and should be warned to report such symptoms immediately. Patients with any significant symptoms such as loss of vision or significant pain should be referred immediately to their ophthalmologist.

Conclusion

Modern cataract surgery usually results in significant improvements in vision and quality of life. Although cataract surgery is relatively routine, a number of factors can have an impact on surgical outcomes, and GPs are in a position to recognise potential problems and complications. MT

References

A list of references is included in the website version of this article (www.medicinetoday.com.au).

COMPETING INTERESTS: None.

Who wants your opinion? We do.

Did you find a particular article in this issue helpful in your practice? Do you have something to say about an article we have published or some of the opinions expressed? Write and tell us, and we will consider your letter for publication. We are more likely to print short letters (no longer than 250 words), so please be succinct.

Write to: Medicine Today, PO Box 1473, Neutral Bay NSW 2089 or editorial@medicinetoday.com.au

Cataract

Vision loss, treatment and the role of the GP in patient assessment and care

PAUL H. HUGHES BSc, MB BS, DO, FRACS, FRANZCO; **CHRIS HODGE** PhD, BAppSc

References

1. Rochtchina E, Mukesh BN, Wang JJ, McCarty CA, Taylor HR, Mitchell P. Projected prevalence of age-related cataract and cataract surgery in Australia for the years 2001 and 2021: pooled data from two population-based surveys. Clin Experiment Ophthalmol 2003; 31: 233-236.
2. Gimbel HV, Dardzhikova AA. Consequences of waiting for cataract surgery. Curr Opin Ophthalmol 2011; 22: 28-30.
3. Umfress AC, Brantley MA Jr. Eye care disparities and health-related consequences in elderly patients with age-related eye disease. Semin Ophthalmol 2016; 31: 432-438.
4. Mundy KM, Nichols E, Lindsey J. Socioeconomic disparities in cataract prevalence, characteristics, and management. Semin Ophthalmol 2016 ; 31: 358-363.
5. Tseng VL, Yu F, Lum F, Coleman AL. Cataract surgery and mortality in the United States Medicare population. Ophthalmology 2016; 123: 1019-1026.
6. Meuleners LB, Hendrie D, Fraser ML, Ng JQ, Morlet N. The impact of first eye cataract surgery on mental health contacts for depression and/or anxiety: a population-based study using linked data. Acta Ophthalmol 2013; 91: e445-e449.
7. Swenor BK, Muñoz B, West SK. A longitudinal study of the association between visual impairment and mobility performance in older adults: the Salisbury Eye Evaluation Study. Am J Epidemiol 2014; 179: 313-322.
8. Li Y, Crews JE, Elam-Evans LD, et al. Visual impairment and health-related quality of life among elderly adults with age-related eye diseases. Qual Life Res 2011; 20: 845-852.
9. West CG, Gildengorin G, Haegerstrom-Portnoy G, Schneck ME, Lott L, Brabyn JA. Is vision function related to physical functional ability in older adults? J Am Geriatr Soc 2002; 50: 136-145.
10. Nemet AY, Vinker S, Levartovsky S, Kaiserman I. Is cataract associated with cardiovascular morbidity? Eye (Lond) 2010; 24: 1352-1358.
11. Tan JS, Wang JJ, Younan C, Cumming RG, Rochtchina E, Mitchell P. Smoking and the long-term incidence of cataract: the Blue Mountains Eye Study. Ophthalmic Epidemiol 2008; 15: 155-161.
12. Rochtchina E, Mitchell P, Coroneo M, Wang JJ, Cumming RG. Lower nasal distribution of cortical cataract: the Blue Mountains Eye Study. Clin Exp Ophthalmol 2001; 29: 111-115.
13. Austroads. Assessing fitness to drive for commercial and private vehicle drivers: medical standards for licensing and clinical management guidelines. Fifth edition. Sydney: Austroads; 2016.
14. Lawless M, Bali SJ, Hodge C, Roberts TV, Chan C, Sutton G. Outcomes of femtosecond laser cataract surgery with a diffractive multifocal intraocular lens. J Refract Surg 2012; 28: 859-864.
15. Li J, Tripathi RC, Tripathi BJ. Drug-induced ocular disorders. Drug Saf 2008; 31: 127-141.
16. Roberts TV, Lawless M, Bali SJ, Hodge C, Sutton G. Surgical outcomes and safety of femtosecond laser cataract surgery: a prospective study of 1500 consecutive cases. Ophthalmology 2013; 120: 227-233.
17. Martin AI, Hodge C, Lawless M, Roberts T, Hughes P, Sutton G. Femtosecond laser cataract surgery: challenging cases. Curr Opin Ophthalmol 2014; 25: 71-80.
18. Creuzot-Garcher C, Benzenine E, Mariet AS, et al. Incidence of acute postoperative endophthalmitis after cataract surgery: a nationwide study in France from 2005 to 2014. Ophthalmology 2016; 123: 1414-1420.