



## LASER EYE SURGERY

### The Issue

Thousands of Canadians are turning to laser eye surgery to correct their vision and replace their glasses or contact lenses.

### Background

The use of computers and other technology in medicine is growing by leaps and bounds. There are now a number of advanced surgical options available for people who need correction of their vision.

Laser eye surgery is most commonly used to correct three vision problems – myopia (near-sighted), hyperopia (far-sighted) and astigmatism (distorted vision when looking at objects at any distance).

These conditions are caused by problems with the way the eye focuses an image on the retina, which is the light-sensitive layer at the back of the eye. The ability to focus depends on three factors: the length of the eyeball from back to front, the lens, and the shape of the cornea. The cornea is the clear front surface of the eye that covers the pupil and iris. It is curved and provides about two-thirds of the eye's focusing power.

During laser eye surgery, a surgeon uses a device called an Excimer Laser to change the shape of a patient's cornea permanently. This laser produces a beam of ultraviolet light that is used to vaporize tissue. It is called a "cold" laser because it can remove targeted layers of tissue without causing heat damage to the surrounding tissue.

### Common Laser Procedures

The two types of laser eye surgery commonly performed in Canada are PRK (Photo-Refractive Keratectomy) first introduced in the early nineties, and LASIK (Laser Assisted in situ Keratomileusis) which was introduced in the mid-nineties.

PRK – the surgeon uses a laser beam, guided by a computer, to vaporize tiny amounts of tissue on the surface of the cornea. The procedure removes just enough tissue to reshape the cornea in a way that corrects vision. The healing process is complete in about a week.

LASIK – this surgery is more complicated. The surgeon first cuts a flap in the cornea, lifts it, and then, uses a laser which is guided by a computer to remove calculated amounts of tissue from the inside layers of the cornea. Afterwards, the flap is closed and the eye heals quickly by itself.

### Benefits and Risks of Laser Eye Surgery

Laser eye surgery is performed by highly trained specialists, and in most cases, the results range from satisfactory to excellent. Some patients feel their lives are vastly improved if they no longer have to deal with prescription glasses or contact lenses.

It is important to approach laser eye surgery with realistic expectations. If you are over the age of 40, you will probably need reading glasses after laser eye surgery. Also, your eyes will continue to change as you grow older, and you may need prescription glasses or contacts again at some point. There is a chance that you may need a second surgery if you don't get the right amount of correction during the first procedure.

After PRK surgery, during the healing process, some people may have hazy vision, this usually clears up quickly. Another possible problem is regression, which in some cases causes the eye to regress to its previous condition within about six months. If this happens, the patient either needs a second operation, or has to start wearing glasses or contacts again.

After LASIK surgery, healing is usually faster and there is less post-operative pain. However, since this procedure involves cutting the cornea, there is a greater risk of serious complications.

## To Minimize Your Risks

If you are considering laser eye surgery, the surgeon will give you an "informed consent" form. Read it thoroughly. Ask questions. The best way to minimize your risk is to thoroughly discuss your particular condition and situation with the surgeon before you decide to go ahead. After surgery, you can reduce the risk of complications by participating fully in the follow-up care recommended by your eye surgeon.

Fortunately, complications are rare. However, the risks go up significantly for people with certain conditions or lifestyles. For example, you may not be a suitable candidate for laser eye surgery if:

- You have a chronic condition (such as lupus or diabetes) or take medications (steroids or certain acne prescriptions) that could affect your ability to heal
- You have a history of eye disease (herpes simplex, glaucoma, dry eyes, eyelid infections)
- You play sports where you are likely to be hit in the face

In addition, people with large pupils under low light conditions often experience glare, halos or ghost images after laser surgery. This could interfere with your ability to drive at night.

## Other Considerations

Some occupations, such as police officer or pilot, have specific vision requirements. Laser eye surgery could affect your prospects for employment in a field you wish to pursue. Discuss this with your eye surgeon, and with current or future employers. Cost is also a factor as most health insurance plans do not cover laser eye surgery.

Health Canada advises that you are more likely to have a successful outcome with laser eye surgery if you:

- Choose your eye surgeon carefully – a referral from your own eye care professional to an eye surgeon is the traditional approach
- Discuss the risks, benefits, and your expectations with your surgeon to make sure you are a suitable candidate for laser eye surgery
- Make a commitment to participate fully in the follow-up care recommended by your eye doctor

## Need More Info?

For more details about laser eye surgery from a scientific perspective, refer to the article from the Canadian Medical Association Journal at:

<http://www.cma.ca/cmaj/vol-160/issue-9/1329.htm>