

# Good Practice Guide on Laser Eye Surgery

## Synopsis:

This document gives guidance to help train operators make decisions when applicants for employment, or existing staff, report that they have undergone laser eye surgery. It outlines the principal treatment methods currently available and the possible short- and long-term implications of laser surgery.

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## **1. Purpose**

This document gives guidance to help train operators make decisions when applicants for employment, or existing staff, report that they have undergone laser eye surgery. It outlines the principal treatment methods currently available and the possible short- and long-term implications of laser surgery for people employed for train operating tasks.

## **2. Introduction**

This document has been drafted for RSSB by its medical adviser.

Railway Group Standards GO/RT3251 "Train Driving" and GO/RT3255 "Train Working - Competence and Fitness" both include a paragraph that states:

*Surgical procedures for the correction of refractive errors are not acceptable for the purpose of meeting the visual acuity requirements.*

Although not expressly forbidden by the wording of the standards, the employment of individuals for train driving or train working has not been permitted following surgical correction of visual acuity.

A deviation (non-compliance pending change to standards) has been granted against both standards. In the case of train working (duties performed by guards, shunters and train dispatch staff), total non-compliance with the clause is now permitted. Non-compliance is also permitted for train driving, subject to certain conditions. In both cases the individual must still be able to meet the vision standard (with glasses if worn) and the other medical requirements.

The changes to the standards will align GB and European requirements (see section 9 of this document).

This guide has been compiled to help employers make risk-based decisions when cases of laser eye surgery are reported.

### **3. General points**

Laser eye surgery is unlikely to be a necessity simply for the purpose of meeting the visual acuity standards. Employers should not encourage or promote the use of eye surgery in these circumstances because the risks of surgery can be avoided by choosing to wear spectacles instead.

Of course, an employer cannot *prevent* an individual from having eye surgery, or any other treatment, if they choose to. However, it may be necessary to discuss the potential impact on their employment.

### **4. Laser treatment techniques**

PRK, LASIK and LASEK are acronyms for three different laser eye surgery techniques - they are not proprietary or trade names but generic descriptions:

- PRK - Photo-refractive keratotomy
- LASIK - Laser in-situ keratomileusis
- LASEK - Laser in-situ epithelial keratomileusis.

LASIK is by far the most popular treatment at present and is normally associated with rapid recovery and improvement of vision. Certain patients may be unsuitable for LASIK or choose not to have it because of some of the complications that may occur. LASEK is essentially a modified form of PRK and may eventually prove to be more popular than LASIK.

Treatment methods are constantly improving and the risk of complications is diminishing with better technology and skilled surgeons. It is likely that new treatment variations will emerge in addition to the three listed above.

### **5. Surgical and post-operative procedure**

Typically the patient will spend a day in hospital for treatment and will use antibiotic and anti-inflammatory eye drops for about a week. Artificial tears are used for a slightly longer period, sometimes up to six months.

After surgery the patient will be unfit for ordinary work for 3-7 days while useful vision recovers. However, vision often takes 1 to 3 months to become stable and in some complicated cases this process can take 3-9 months. People who depend on normal vision for their job (e.g. train drivers) will not be able to perform their duties until their vision becomes stable.

Normally only one eye is treated at a time so further periods of absence are possible.

Typical post-operative follow up might be at 1 and 7 days followed by checks at 1 and 3 months to establish that visual acuity is stabilising and no other problems are developing.

Patients with low or moderate degrees of short-sightedness do well after laser surgery with about 90% managing the 6/6 (normal) line and almost all managing 6/12 on the opticians chart without the use of glasses. Results are not quite so good for long-sighted or very short-sighted people.

## 6. Complications

The incidence of complications following laser corrective eye surgery is difficult to determine for a variety of reasons, including:

- Variability of the skill and experience of surgeons
- Variable techniques and equipment used
- Rapidly advancing knowledge and technology
- Variable definitions of success and failure
- Differences in the eyes that are treated
- Commercial pressures to quote low levels of complications.

Reports of complications range from 1-40% of cases, depending on the source. Many relate to issues of failure to correct the vision exactly to normal, a difference between the two eyes or problems reading. All of these can usually be corrected with re-treatment or glasses. Other problems relate to infection, comfort or sensitivity and tend to settle quite readily. Complications relating to the corneal "flap" in LASIK can often be corrected and serious sight threatening complications are very rare.

Complications of an occupational significance include:

- *Reduced visual acuity.*

As a rough estimate 3-4% of all treatments will result in a reduction of two lines of best-corrected visual acuity on the opticians chart (the best that can be achieved even with glasses or contact lenses). For LASIK, in patients with lesser degrees of short-sightedness this figure is probably closer to 0-1.2% and for LASEK it could be better than that.

- *Decreased night or low light vision.*

Patients may experience difficulty discerning detail in low light or low contrast conditions. Some report problems with halos, glare or starbursts around objects or light sources. These problems are often temporary and recover over a six-week period but in some cases the problem persists. Newer surgical techniques help to minimise this problem.

## **7. Assessment of Job Applicants**

The British Society for Refractive Surgery (BSRS) has published information concerning the assessment of job applicants with a history of refractive surgery.

An examination to consider the suitability of a refractive surgery patient for a particular profession should include:

- A slit lamp examination to confirm that the eye has returned to normal and that there is no significant loss of corneal transparency.
- Refraction, topographic examination and pachymetry to screen for keratectasia. The candidate should provide details of their pre-operative refractive error and if possible details such as their post-operative corneal thickness and the nature of any complications that may have occurred during or following the procedure.
- Candidates should have their visual performance assessed using a technique sensitive to the presence of scattered light and aberrations. The Snellen letter chart is inadequate alone but a low contrast logMAR chart or contrast sensitivity test provides some information.
- Candidates should not be considered until all medication has ceased.

These are specialist examinations that are likely to be outside the capabilities of most occupational health service providers. Current Royal College guidelines indicate that most of this information should be given to the patient and recorded in their notes. The employee could be asked to obtain a report from their ophthalmic surgeon. Alternatively an independent examination and report could be arranged. In any case an occupational physician with knowledge of the rail environment should review the information.

## **8. Long-term implications**

There is already a chance that the eyesight of workers who have *not* undergone laser eye surgery will deteriorate between normal periodic medicals and existing procedures take account of that. Furthermore, all employees have a duty to report to their manager if they believe they are unfit for work because of failing vision. Additional measures following laser eye surgery should be aimed at controlling any additional risk that arises as a result of the surgery.

Laser eye surgery techniques were introduced quite recently and they are rapidly improving. It is almost impossible to estimate the likelihood of long-term visual complications or deterioration of vision that would not be amenable to correction with glasses or other means. The indications are that the incidence of these problems will be very low but they may arise within a period that is shorter than the normal frequency for periodic medical examinations. Employers and their occupational health providers should have appropriate procedures for detecting these cases amongst train drivers following laser eye surgery.

## **9. European requirements**

The draft Conventional Rail TSI Traffic Operation and Management permits laser eye surgery for train drivers subject to annual examinations or according to a periodicity defined by the occupational doctor.

## **10. Summary**

Laser eye surgery is a matter of individual choice and can be associated with some complications so it should not be encouraged or required simply for the purpose of meeting visual standards.

Patients undergoing surgery will require a period of time off work and their visual acuity may take a number of months to stabilise. In a very small number of individuals the effects of surgery could make them unfit for driving in the long term or even permanently.

Employers may experience additional costs in the short term due to temporary unfitness and in the long term due to increased numbers of medical assessments or medical reports.

The effects on visual acuity may be variable in the months following laser surgery. It is important to have appropriate procedures to ensure that the risk of that variability affecting driving is controlled. These procedures are likely to involve assessment by an occupational physician, who will probably liaise with the ophthalmic surgeon responsible for post-operative follow up. Three months away from train driving may not be necessary in every case or for all types of treatment.

Employers should consider the operational implications where a return to work is delayed or impossible and employees should be advised of the possible consequences for their employment.

## **References**

The Catalogue of Railway Group Standards and the Railway Group Standards CD-ROM give the current issue number and status of documents published by RSSB. This information is also available from [www.rssb.co.uk](http://www.rssb.co.uk).

### **Documents Referenced in the text**

The Railway Group Standards Code

#### **Railway Group Standards**

GO/RT3251 Train Driving

GO/RT3255 Train Working – Competence and Fitness

#### **Other References**

##### *The Royal College of Ophthalmologists*

Two documents in pdf format:

A patient's guide to excimer laser refractive surgery.  
Standards for laser refractive surgery. December 2004.

<http://www.rcophth.ac.uk/public/laser.html>

##### *U.S. Food and Drug Administration*

LASIK Eye Surgery website

<http://www.fda.gov/cdrh/LASIK/default.htm>

##### *British Society for Refractive Surgery*

<http://www.bsrs2000.fsnet.co.uk/index.htm>

Report on the current status of refractive surgery (July 2002) Produced by the council on behalf of the British Society for Refractive Surgery

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[http://www.bsrs2000.fsnet.co.uk/new\\_page\\_6.htm](http://www.bsrs2000.fsnet.co.uk/new_page_6.htm)