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Glaucoma has been called the silent thief of vision, affecting almost 10% of us by age 75. **Patsy Westcott** reports on a revolution in treating the condition and explains why you must never miss an eye test

For years, eye drops have been the first line of treatment for glaucoma, but new options look set to transform life for the UK's half a million sufferers. First, is a simple, non-invasive procedure called selective laser trabeculoplasty (SLT) to repair the optic nerve, which is pain-free and takes a matter of minutes.

'It involves briefly focusing laser light through a contact lens on to the trabecular mesh, part of the eye's internal drainage system,' says consultant ophthalmologist Professor Gus Gazzard, director of Moorfields Eye Hospital's Glaucoma Service.

Patient Jenny Tripp Black, 67, says she was terrified when offered SLT for her glaucoma, which was originally discovered during a routine eye check. 'I needn't have worried, though, as it was incredibly straightforward,' she says. 'You put your chin on a rest like you do in an eye test.

I was chatting to the surgeon and saw some little green flashes, then he said, "That's one eye done." It couldn't have been easier. It was pain-free and I was in and out of surgery in minutes.'

SLT does away with the need for drops and reduces the need for surgery in 75% of people with mild to moderate glaucoma for at least three years, according to the multicentre LiGHT study (Laser in Glaucoma and Ocular Hypertension), of which Professor Gazzard is chief

investigator. Research not yet published shows that SLT is safer and its benefits even longer lasting than anticipated.

'These findings reveal that SLT's effects last up to six years for a significant number of patients and preserve sight even better than drops – the first time this has been shown,' says Professor Gazzard.

This will be welcome news to the many patients struggling with eye drops, eight out of ten of whom don't use them as prescribed because of side-effects, forgetfulness or just not recognising how important they are to prevent disease progression.

Professor Gazzard's team is one of three worldwide now investigating an experimental one-second laser treatment with no contact lens that could streamline treatment even further.

Glaucoma, caused by damage to the optic nerve, is the second leading cause of sight loss in the UK. It creeps up silently, which is why it's so vital to keep your eye test appointment. The optic nerve is made up of around 1.2 million nerve fibres that link the eye to the brain, and we lose these through life. In glaucoma, this happens faster than usual.

As well as the huge personal toll, glaucoma costs the NHS and social care services £94 million every year, according to new figures from the charity Fight for Sight, which puts the condition's overall annual cost to the economy at £747 million.

The figure is likely to have risen this year because the pandemic has meant delays in accessing treatment. 'We calculate that for every 100 people aged 50 to 54 with probable glaucoma who are treated up to a year late, five more will progress earlier than anticipated to moderate visual impairment, adding up to an extra cost to society of £28,098 a year,' says Sherine Krause, the charity's chief executive.

The medicines advisory body NICE was set to develop new glaucoma guidelines this year which, it was hoped, would recommend SLT as the first-line treatment. However, it too has been delayed by Covid. In the meantime, it's possible to get SLT on the NHS, although it depends on local provision.

New treatments aren't the only potential game changers, though. Experts are currently revisiting the underlying causes of optic nerve damage. For years, the main culprit was thought to be intraocular

£94 million
THE COST OF GLAUCOMA TO THE NATIONAL HEALTH SERVICE AND SOCIAL CARE EVERY YEAR, ACCORDING TO FIGHT FOR SIGHT



NEED TO KNOW

An estimated **500,000** people in the UK have glaucoma and almost **72,000** suffer moderate to severe sight loss.

Age is the biggest risk factor. By

75

almost 1 in 10 people have glaucoma.

Other risk factors include **family history** (such as mother, father, child or sibling); **ethnicity** (African-Caribbean or Asian origin); **short or long sight**; as well as **certain medical conditions and medications**.

Symptoms appear at a late stage when you may notice a **black patch in vision**. Before this, it creates **blank areas**, which are not noticeable until they develop close to the centre or in the lower half of the visual field.

Have an eye test at least every **2 years** and more often if you're high risk.

If you're diagnosed with glaucoma, close family members can have **free eye tests**.

pressure (IOP), when the aqueous fluid inside the eye drains too slowly or is produced in excess. But recent discoveries suggest that it is just one factor.

'Around a third to half of people with glaucoma have normal IOP yet still have optic nerve damage,' says Professor Gazzard. Scientists are homing in on other potential offenders, including irregularities in the shape of the optic nerve as well as impaired blood flow and age-related malfunction of mitochondria – the tiny 'batteries' that power our cells.

Moorfields' consultant ophthalmic surgeon and researcher Anthony Khawaja is investigating how genes may interact with lifestyle in increasing glaucoma risk: 'In a study of more than 100,000 people, we've identified some 100 or so randomly inherited DNA variations which we've been able to match with changes in eye pressure.' He anticipates that before long a simple DNA test could accurately predict who will develop glaucoma and how severely so that patients can be fast-tracked for screening and individually tailored treatments.

In the meantime, is there anything you can do to help prevent glaucoma or slow its progress? Until recently, there's been little evidence for anything much beyond general healthy lifestyle measures, but new research suggests vitamin B3 may protect the optic nerve from damage. Now that would really be an eye-opener.

Contact the RNIB on 0303 123 9999 or visit rnib.org.uk. Moorfields Eye Charity invests in innovation and research. See moorfieldseyecharity.org.uk.

