

Researcher explores best treatments for glaucoma

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Researchers at Queen's University Belfast together with University of St Andrews and Aberdeen have found that the procedure used to remove cataracts is more successful than current standard treatments with laser in treating Primary Angle-Closure Glaucoma – a leading cause of irreversible blindness worldwide.

Professor Azuara-Blanco at the Centre for Public Health at Queen's led an international trial comparing two treatments for [glaucoma](#) – the standard treatment, or 'laser iridotomy', which uses a laser to open a tiny hole in the eye to allow fluid to drain away and reduce the increased [eye pressure](#) that causes glaucoma; and 'lens extraction with intraocular lens implantation', a surgical procedure to remove the eye's natural lens and replace it with an artificial plastic lens. The surgical technique of lens extraction and replacement with an artificial plastic lens has been used successfully for decades to restore vision in patients' with cataracts.

The Queen's-led Effectiveness in Angle-closure Glaucoma of Lens Extraction (EAGLE) study, supported by the EME Programme, an MRC and NIHR partnership, compared the outcomes for 419 patients - 208 of whom received lens extraction treatment and 211 of whom received laser iridotomy. The patients were treated at hospitals in the UK, Singapore, Malaysia, Hong-Kong and Australia.

The results show that at three years, initial clear lens extraction surgery is more effective than standard laser treatment in terms of patient reported health and vision and for lowering eye pressure. Less eye drops are

needed to control the glaucoma. Also, balancing costs and benefits, initial clear lens extraction surgery was more efficient for the NHS. The findings have been published in *The Lancet* Journal earlier this month.

What is glaucoma?

Glaucoma is an age-related and chronic eye disease typically associated with increased eye pressure and progressive optic nerve damage that may lead to blindness if untreated.

According to the World Health Organisation, glaucoma is the leading cause of irreversible blindness, with the current prevalence of 20 million expected to rise to 34 million by 2040, including 5.3 million with blindness.

Although most people with glaucoma do not become blind, many have substantially impaired quality of life due to restricted peripheral vision and the need for long-term treatment.

Primary angle-closure glaucoma

Explaining the condition, Professor Augusto Azuara-Blanco, from the Centre for Public Health at Queen's, who led the trial, said: "There are two major types of glaucoma, depending on the drainage channels that take the fluid outside the eye: open or closed angle glaucoma. Angle-closure glaucoma is less common but more severe. It is most prevalent among people of East Asian origin, and in the UK it accounts approximately for 2 out of 10 cases of glaucoma.

"In angle-closure glaucoma, the iris (coloured part of the eye) moves forward and blocks the drainage channels that allow fluids to drain away from the eye. When the drainage channels are closed the inner eye pressure increases, and this leads to damage and impaired vision.

"For many years, this has been treated by using lasers to open tiny holes in the iris of the eye and open the drainage channels, allowing fluid to drain away. But we have found that removing the eye's own lens opens up the natural drainage channels more effectively, and patients are happier because many do not need to use to use glaucoma eye drops and their vision is improved. This surgical technique has been used successfully for years to restore sight in patients with cataracts. Advances in technology and surgical techniques over the past decade mean that it is quite safe and it can now be used to treat people with this type of glaucoma. This trial is the first in which the two treatments have been compared."

Improved patient outcomes

Professor Azuara-Blanco continued: "Patients who received the lens extraction and implantation were more likely to report better quality of life and better vision. It is also more cost-effective than the current standard treatment. Both options appear to be equally safe.

"Vision loss is costly to individuals and society and can have a huge impact on an individual's quality of life. The superiority of clear-lens extraction in terms of patient outcomes and cost-saving , along with the absence of any serious safety issues with this technique, should help contribute to a case for this approach to be considered as the initial treatment for people with primary angle-closure glaucoma."

More information: Augusto Azuara-Blanco et al. Effectiveness of early lens extraction for the treatment of primary angle-closure glaucoma (EAGLE): a randomised controlled trial, *The Lancet* (2016). [DOI: 10.1016/S0140-6736\(16\)30956-4](https://doi.org/10.1016/S0140-6736(16)30956-4)

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