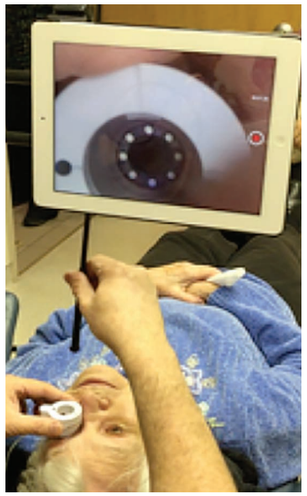
Making the impossible, possible.

Corneal Laser Clear K® CPV Treatment For Age-Related Macular Degeneration and Other Retinal Disorders with Central Vision Loss

BOCHNER EYE INSTITUTE

Enhancing vision and life through clinical innovation.

How can a corneal procedure result in improved vision for patients with age-related macular degeneration (AMD) and other conditions with central vision loss?



It may seem hard to believe that almost all patients treated with a new corneal laser had a positive outcome in terms of lines gained of vision and/or quality of life improvement. For the patient, enhanced quality of life can mean greater independence.

Over 3 years ago, we were introduced to this new corneal procedure by Olivia Serdarevic, MD, who, together with Michael Berry, PhD and Donald Heller, PhD, invented this new corneal laser, laser-corneal interaction and corneal photovitrification (CPV) procedure for macular degeneration and other retinal disorders. International clinical experience over the past three years has shown improvement in vision for dry AMD.

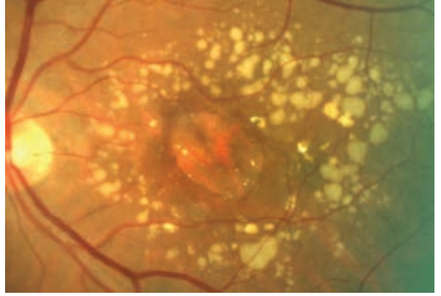
More than one and a half years ago, we were able to view live procedures as well as examine and interview patients who had undergone the corneal laser treatment at postoperative periods of six months, one year, and two years out. We were very surprised with the positive outcomes.

At the Bochner Eye Institute, we have been involved in several innovative laser procedures over the years, including Photorefractive Keratectomy (PRK) in 1991, LASIK in 1994, Femtosecond Cataract Surgery in 2010, and now Clear-K® CPV in 2018. We are very excited by the patient benefits of Clear-K® CPV for dry AMD and other macular conditions.

Low vision glasses and magnifiers can make a difference but the visual improvement is often limited. Patients with wet AMD will need intravitreal injections to turn the macula in to a dry state, but where do these patients go from there? Results with this unique corneal laser appear to offer the best chance of enhancing visual functioning and improving quality of life. The treatment is easy for patients to undergo and the safety profile appears to be superior to any other surgical treatment in ophthalmology.

An exciting new surgical procedure.

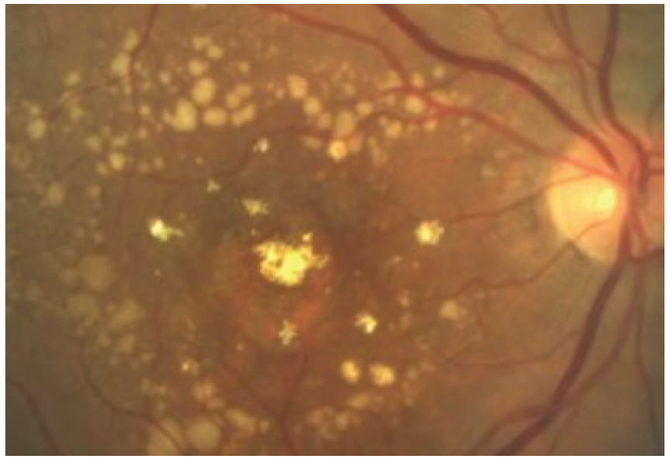
We are delighted at Bochner to be invited to be the first clinical site in North America following the recent approval by Health Canada. Our clinical and research team includes Dr. Fatimah Gilani (our in-house retina specialist), Ghani Salim (our Director of Clinical Research), Dr. Albert Cheskes (Medical Director) and myself. We are currently accepting patients for consultation to Bochner at any of our four facilities: Downtown Toronto, East End Location (Scarborough), West End Location (Oakville), North End Location (Unionville).



Raymond Stein, MD, FRCSC
Medical Director, Bochner Eye Institute
Associate Professor of Ophthalmology, University of Toronto and Vision Sciences
Cornea, Refractive, and Cataract Surgery

How does the Clear-K® CPV laser for AMD and other retinal conditions enhance vision and quality of life?

The secret for success is the use of a low energy Clear-K® CPV laser that alters the cornea to relocate images to areas outside of the blind spots to functioning retinal areas. The procedure allows residual functioning retinal cells to provide improved sight. Neural processes, including neuroadaptation, allow vision to continue to improve over years.



Retinal photograph showing AMD in a patient with a central blind spot.

Following Clear-K® CPV, the patient had significant improvement in vision by the redirection of the image to an area of functioning retinal cells.

Treatment of both eyes allows for further improvement in neuroadaptation.

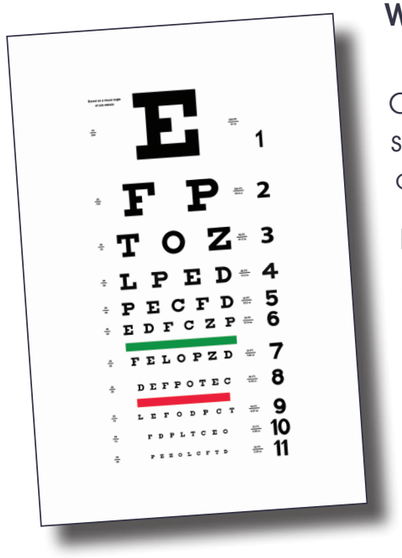
FREQUENTLY ASKED QUESTIONS

Who is a candidate for this Corneal Laser Procedure?

Low vision patients with central vision loss and a best-corrected visual acuity between 20/60 and 20/800 are potential candidates for this new procedure.

The best candidates are those with dry AMD, Best disease, and Stargardt disease. Other potential candidates are those with macular holes that were unsuccessful with prior surgery, and those with reduced central vision from macular scars.

Future conditions to be evaluated include dry diabetic maculopathy, glaucoma with central loss of vision, as well as for a lazy or amblyopic eye.



What is the range of improvement in best-

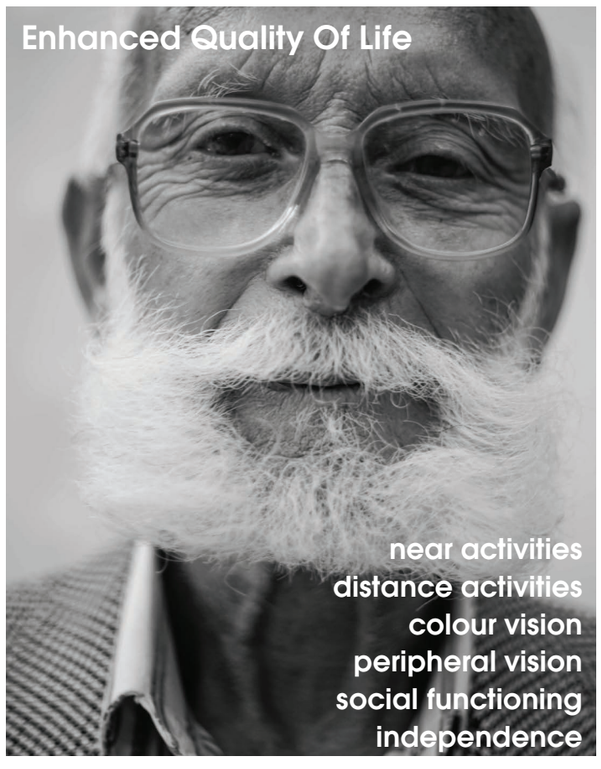
Clinical studies over the past three years have shown significant improvements in vision, as well as quality of life.

For the average patient, the improvement in vision provides enhancement of daily activities requiring both distance and near vision. Patients have also noted
improvements in colour, peripheral and night vision, together with disappearance or diminution of pre-existing blind spots or wavy lines.

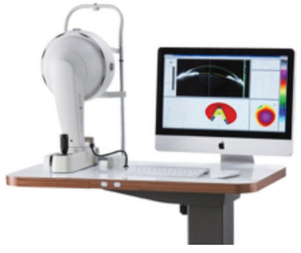
How does the improvement in vision compare to other surgical modalities?

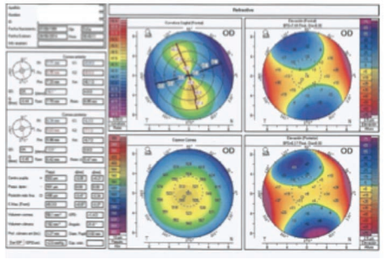
The National Eye Institute Visual Function Questionnaire (VFQ-25) is a reliable measure of patient related quality of life functioning in patients with AMD.

On average, the results have shown significant improvement in the 25 category scores after treatment with Clear-K® CPV.



What testing is performed to determine if someone is a good candidate?





At the Bochner Eye Institute, we determine the best-corrected vision for both distance and near. Sophisticated corneal imaging tests are performed - including computerized elevation of the front and back of the cornea, curvature maps, and thickness tomography. The line of sight is determined, referred to as Angle Kappa, under both normal light and dim light using wavefront technology. Potential visual acuity testing is performed to estimate the amount of improvement that can be achieved with treatment.

Do patients with neovascular AMD still require intravitreal injections?

Yes, patients with neovascular age-related macular degeneration will still require intravitreal injections to turn a wet macula into a dry form. Patients with dry macular degeneration have had no surgical options for vision improvement until the development of this innovative laser technology.

How long can one expect the procedure to last?

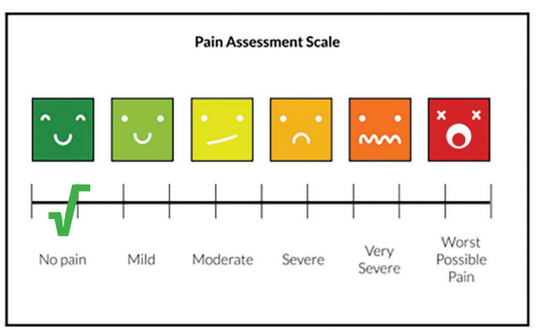
The first patients that were treated specifically for AMD are now out over three years, and best- corrected visual acuity and quality of life has continued to improve or has plateaued. The improvement in vision over time is related to neural processes including neuroadaptation.

Is the treatment area visible to the naked eye?

The laser treats very small and superficial areas in midperipheral regions of the cornea outside the pupillary zone. These faintly translucent circular spots can be visualized only with a high powered microscope that eye doctors use, referred to as a slit-lamp. Treated areas cannot be seen by the naked eye and, therefore are not of cosmetic concern.

Is the Corneal Laser procedure easy to undergo?

This procedure is much easier to undergo than any other eye surgical procedure. There has been no reported discomfort during or after the laser procedure.



THE SURGICAL PROCEDURE

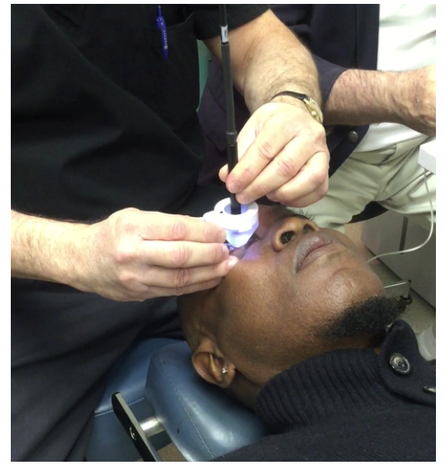
How is the procedure performed?

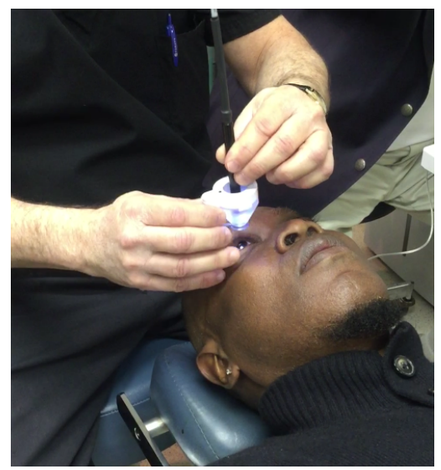
Anesthetic drops are instilled to freeze the front of the eye. No other medications are required.

The patient sits on a motorized chair, which is then reclined. The laser beam is checked by the surgeon to be sure the energy level and other variables are within a specific range.

A suction device with a built-in cross-hair is centered over the pupil, and then a vacuum is activated to secure the suction device to the front surface of the eye. A laser head is placed in the centre of the suction device. The surgeon then activates the laser beam to create a corneal treatment outside of the pupillary zone. The vacuum is released and then the suction device is removed from the eye.

If both eyes are to be treated, then the procedure is repeated for the other eye. The chair is repositioned and then the patient can walk out of the operating room.





What is the postoperative care?

No postoperative drops or oral medications are needed after surgery. Patients are typically very comfortable after the procedure. Patients are seen postoperatively at one month, three months, six months, and twelve months following treatment. Follow-up visits can be done at one of the Bochner facilities or by the referring eye doctor.

AFTER THE SURGERY

What has been the satisfaction level of patients that have been treated?

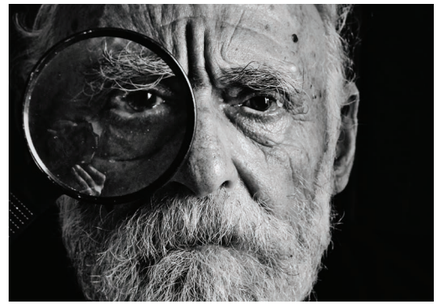
Satisfaction levels have in general been very high. It is often important for patients to understand their level of vision prior to treatment and then compare that to the way they are seeing after the surgery. Similar to postoperative cataract patients, some low vision patients forget what their vision was like prior to treatment.

Why are the results better than wearing glasses with prisms?

A prism only relocates images to one location. Alternatively, the Clear-K® CPV laser procedure relocates images to several locations and, therefore, has a higher probability of stimulating functional retinal cells.

Why are the visual outcomes better than simple magnifiers?

Magnifiers simply enlarge the image on to the macula. The laser technique shifts the focus of the image to different retinal locations that potentially have improved visual function.



What are the risks?

The safety profile is excellent with a low energy level laser and a superficial treatment in the cornea. The laser wavelength only penetrates very superficially into the cornea. This means there is no risk to the intraocular structures of the eye such as the deeper layers of the cornea, iris, crystalline lens, retina, or optic nerve. There have been no reported complications.

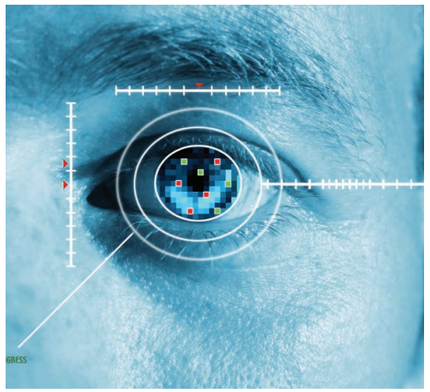
Why is this technology a major breakthrough?

This is the first noninvasive technology that can help patients with dry AMD and other retinal disorders with central vision loss. Invasive procedures that are performed in other countries include removal of the crystalline lens and replacement with a prismatic intraocular lens implant or an intraocular miniature telescope.

What is the cost of the procedure?

The total cost to the patient is $4,500 per eye, which includes the following:

1. Per-procedure payment to the manufacturer (Optimal Acuity Corporation, Texas): $2,000
2. Bochner consultation and counseling: $250
3. Preoperative evaluation and wavefront imaging to determine best-corrected vision for distance and near: $250
4. Computerized tomography (corneal elevation of the front and back, curvature, and thickness), measurement of angle kappa, GM Potential acuity testing: $500
5. Surgeon fee to perform Clear-K® CPV procedure: $250
6. Surgical Facility fee: $750
7. Postoperative care at the Bochner Eye Institute or by the referring eye doctor at one month, three months, six and twelve months: $500



Why does the Ontario Health Insurance Program (OHIP) not cover all or part of the cost of the procedure?

The Clear-K® CPV procedure is considered a refractive procedure that alters the cornea to redistribute light to the retina. OHIP does not cover refractive procedures. Other refractive procedures not covered by OHIP include laser vision correction procedures such as LASIK or PRK, topography-guided lasers to improve irregular corneas, a refractive lens exchange, and correction of astigmatism at the time of cataract surgery.

CONTACT US.

To arrange a consultation, and possible surgery, just get in touch with the Bochner Eye Institute.

1. Doctors can either send a referral note by fax to 416-966-8917, via mail, or email us at AMD@bochner.com.
2. Patients or family members can call directly for a consultation at 416-AMD-1000 or email us at AMD@bochner.com.
3. Patients will be contacted to arrange comprehensive consultation and testing at one of our locations: Central (Toronto), East End (Scarborough), West End (Oakville), North End (Unionville).
4. Clear-K® CPV laser procedure to be scheduled.
5. One-month, three-month, six-month and twelve-month post-op visits, seen at the Bochner Eye Institute or referring doctor's office.

OUR FACILITIES

We are located in the heart of Yorkville, and easily accessible by TTC, at 40 Prince Arthur Avenue. We also have three satellite offices across the GTA.

40 Prince Arthur is our flagship office, and the main centre for all surgical and refractive procedures. Our Scarborough office serves our east end patients while the Unionville and Oakville facilities support patients living north and west of the city, respectively. Pre-surgical consultations are performed at all four offices.

THE BOCHNER EYE INSTITUTE

TRADITION AND INNOVATION IN EYE CARE

SINCE 1929

CANADA'S MOST ESTABLISHED EYE CARE FACILITY.

EXPERIENCED SURGEONS. ADVANCED TECHNOLOGY.

In 1929, Dr. Maxwell K. Bochner opened his practice specializing in cataracts and diseases of the eye. As one of the first eye surgeons in Canada, he became well known for his thorough diagnosis and compassionate bedside manner.

Today, the Bochner Eye Institute, located in Toronto's Yorkville area, stands as a symbol of the care and innovation for which Dr. Bochner became famous. The mission of the Bochner Eye Institute is to use the most advanced, effective technology and proven techniques to help people see clearly, and naturally. We conduct our own research and develop our own techniques. We are pioneers in refractive surgery procedures for restoring clear vision to people with nearsightedness, farsightedness and astigmatism.

Over twenty-five years ago, we were one of the first practices in North America to invest in revolutionary Excimer laser technology, with devices that have turned out to be the future in vision correction. In 2012, the Bochner Eye Institute was the first centre in Canada to offer Laser Cataract Surgery with the Catalys™ Precision Laser System. This is considered one of the most significant advances in cataract surgery and lens replacement surgery in over 50 years.

Today, we are the first approved eye care facility in North America to perform Corneal Laser Surgery, a revolutionary procedure that treats various forms of macular degeneration.

BochnerVIsion™ is our promise to use the most advanced technology and techniques to allow unsurpassed precision and safety. Today, our patients can undergo advanced procedures to enhance their vision and enjoyment of life.

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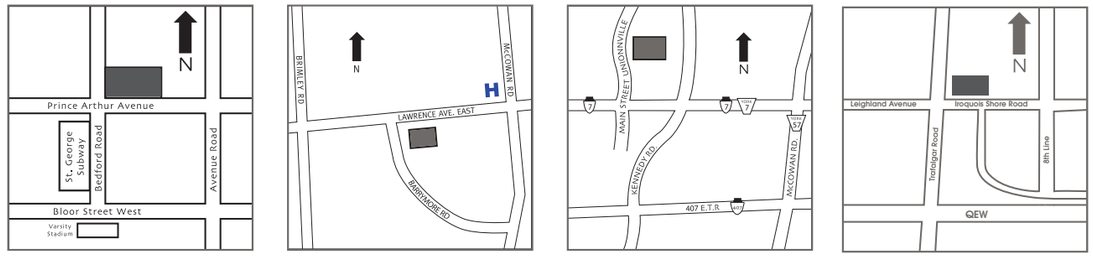
ESTABLISHED 1929

The Bochner Eye Institute appreciates the research support of the Foundation Fighting Blindness to advance this corneal laser technology for AMD and other conditions.

The FOUNDATION FIGHTING BLINDNESS



TORONTO
40 Prince Arthur Avenue
Toronto, Ontario M5R 1A9
(416) 960-2020

SCARBOROUGH
2941 Lawrence Avenue East
Scarborough, Ontario M1P 2V6
(416) 431-7449

UNIONVILLE
147 Main Street
Unionville, Ontario L3R 2G8
(905) 470-2020

OAKVILLE
353 Iroquois Shore Rd, Suite 200
Oakville, Ontario L6H 1M3
(905) 815-1112

(416) AMD-1000 1 800-665-1987 bochner.com

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