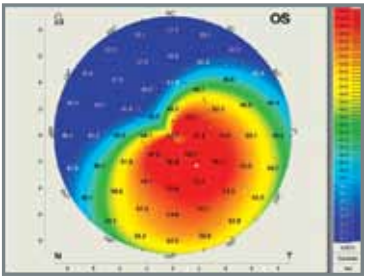
KERATOCONUS CLINIC©

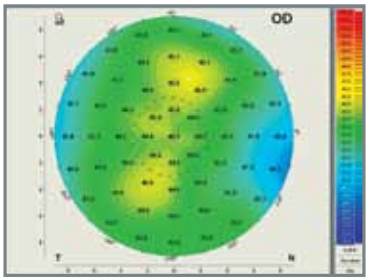
Optometric Co-management Opportunities

BOCHNER EYE • INSTITUTE

The Bochner Eye Institute established the first Keratoconus Clinic in Canada in 2008. The consultation and advanced imaging are OHIP covered. All patients are referred back to their optometrist for continued co-management care.

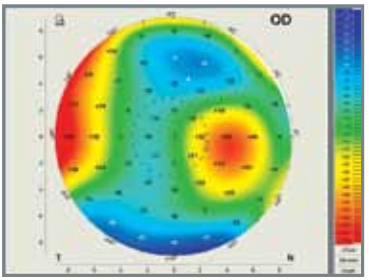


Sophisticated imaging at the Institute includes a Pentacam diagnostic test that measures over 20,000 data points of the cornea. This test determines curvature of the anterior surface, elevation of both the anterior and posterior surface, and generalized pachymetry readings. This imaging is the most sensitive indicator of early keratoconus, which frequently shows bulging on the posterior surface before changes occur to the anterior surface. The Ocular Response Analyzer (ORA) is a device that measures the biomechanical properties of the cornea and is helpful in confirming the diagnosis of keratoconus.



Relatively normal anterior topography

=



Same eye but evaluation of posterior surface which shows bulging indicative of keratoconus

Main goals of Keratoconus Clinic

1. Detection of keratoconus using Pentacam and ORA imaging.
2. Determination of progressive disease or stability with repeat imaging.
3. Counselling patients on therapeutic or refractive options, which include contact lenses, corneal crosslinking, topographically-guided PRK, intrastromal corneal rings, and phakic implants.

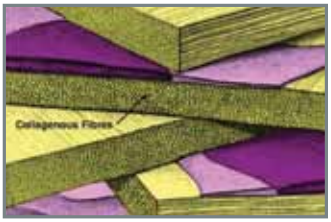
Services provided

1. Tertiary Contact Lens Department

To provide feedback on contact lens options and fitting parameters to help eye-care professionals manage and take care of their own patients.

2. Corneal Crosslinking with Riboflavin and UV-A light

The Bochner Eye Institute was the first centre in Canada to introduce corneal crosslinking in 2008. The procedure is used to stiffen corneas and prevent progressive ectatic disease. Crosslinking is widely considered to be the standard of care to stabilize corneas and prevent the risk of a corneal transplant. The success rate at stabilizing corneas is 98%, and in addition 60% of eyes achieve an improvement of one or more lines in best-corrected spectacle acuity. Clinicians have an obligation to inform keratoconus patients about this breakthrough technology.



Indications

A. Keratoconus patients between 10 and 35 years of age with or without evidence of progressive disease. Earlier treatment of the disease results in best-uncorrected and best-corrected visual acuity.

B. Keratoconus patients over 35 years of age with a history of progression. This may be determined by progressive steepening on topography, an increase in myopia and or astigmatism, or a decrease in best-corrected spectacle acuity.

Contraindications

A. Corneas less than 320 microns;
B. Significant corneal scarring that interferes with best-corrected visual acuity.

Postoperative Medications

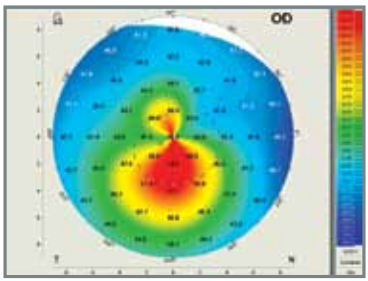
1. Flarex QID for 1 week, BID for 1 week
2. Vigamox QID for 1 week
3. Acular or Voltaren BID for 2 days

Postoperative Management/Expectations

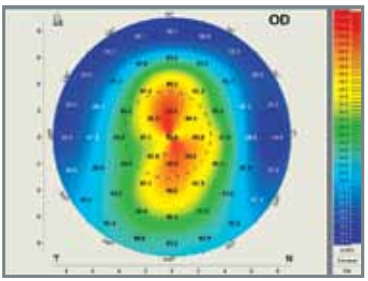
A. Bandage soft contact lens is worn until the epithelium becomes intact which is usually 5 days. Rarely there is a delay in epithelial healing.
B. Vision is typically worse than preop during the first month. The epithelium gradually undergoes hyperplasia and hypoplasia to smooth the corneal surface and restore vision.
C. Patient 's can return to contact lens wear by 2 weeks postop.
D. Usually best to wait 2 months before changing a glass or contact lens prescription.
E. Rare cases of corneal infiltrates or ulcers. Crosslinking can be used to kill bacteria, acanthamoeba, and viruses. This accounts for the low incidence of infection with crosslinking.

3. Topographically-Guided PRK

Data from the Allegretto Oculyzer (computerized topography) is digitally inputted into the Allegretto 400 KHz excimer laser to reduce irregular astigmatism by smoothing the corneal contour. Corneal crosslinking is then performed to strengthen and stabilize the cornea.



Preop shows irregular astigmatism with inferior steepening.



Postop maps shows reduction of irregular astigmatism by steepening superior cornea.

Indications

A. Patients desire an improvement in best-corrected visual acuity with glasses or soft contact lenses.

B. Patients desire improved uncorrected visual acuity.

Contraindications

A. Significant corneal scarring that interferes with best-corrected visual acuity.

Postoperative Medications

1. Flarex QID for 1 week, TID for 1 week, BID for 1 week, and once a day for 1 week.
2. Vigamox QID for 5 days.
3. Acular or Voltaren BID for 2 days.

Postoperative Management/Expectations

A. Bandage soft contact lens is typically removed by 5 days.
B. May take 2 to 4 months for best-uncorrected and best-corrected acuity to be achieved.
C. Complications are uncommon and are similar to PRK.

4. Intrastromal Corneal Rings

Intrastromal corneal rings are used to flatten corneas in advanced keratoconus. Under topical anesthesia a corneal-stromal channel is created 450 microns below the surface with a femtosecond laser. Based on topography either one or two rings are inserted in the midperipheral cornea. The thickness of the rings can vary from 200 microns to 450 microns. More flattening is achieved with thicker rings. A single corneal suture is inserted which is typically removed in 6 to 8 weeks.

Indications:

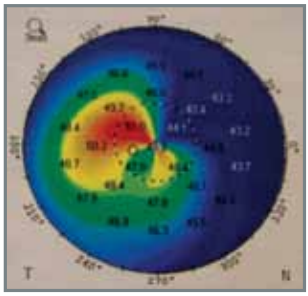
A. Contact lens intolerance or difficulty with lens wear.
B. Patients desire an improvement in best-corrected visual acuity with glasses or soft contact lenses.
C. Refractive stability. Younger patients (< 35 years of age) should undergo crosslinking to stabilize the cornea and hence the refractive error.

Contraindications:

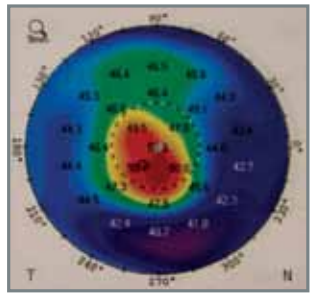
A. Thin corneas in which the midperipheral thickness is less than 450 microns.
B. Significant central corneal scarring that interferes with best-corrected visual acuity.

Postoperative Medication

1. Maxidex or Pred Forte QID for 3 weeks.
2. Vigamox QID for 1 week.



Preop map shows irregular astigmatism with a BCSVA of 20/80.



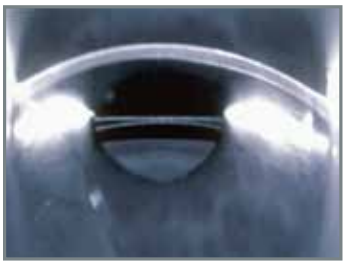
1 year postop map after insertion of a single ring shows reduction of irregular astigmatism. BCSVA improved to 20/25

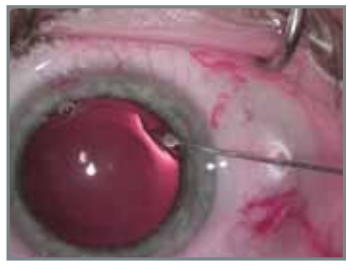
Postoperative Management/Expectations

A. Patients may return to contact lens 2 weeks postoperatively.
B. There is typically an improvement in best-corrected spectacle acuity in the first month.
C. The single suture is removed at 6 to 8 weeks postoperatively.

5. Phakic Intraocular Implants

A phakic implant such as a Toric Implantable Contact Lens can be inserted behind the iris and in front of the crystalline lens to correct a high degree of myopia and astigmatism. The implant is custom ordered with a specific spherical power, cylinder and axis, and length. Preoperatively two iridotomies are performed to prevent pupillary block glaucoma.





Indications:

A. Patients desire an improvement in uncorrected visual acuity.
B. Refractive stability. Younger patients (< 35 years of age) should undergo crosslinking to stabilize the cornea and hence the refractive error.
C. Usually high myopic and astigmatic corrections that are not suitable for PRK

Contraindications:

A. Large pupils greater than 7 mm in dim light.
B. Central anterior chamber depth less than 3 .0 mm.
C. Best-corrected visual acuity with glasses less than 20/40.

Postoperative Medication

1. Tobradex 5 times a day for 3 weeks.

Postoperative Management/Expectations

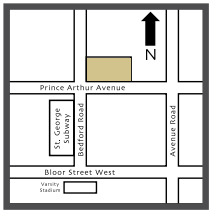
A. Usually a rapid improvement in uncorrected acuity.

B. Typically best-corrected spectacle acuity is improved, by one or more lines. This occurs by optically correcting vision close to the nodal point of the eye.

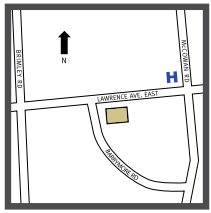
C. Extremely rare cases of pupillary block with elevation of intraocular pressure that require an urgent enlargement of the iridotomy. This typically would occur in the first 24 hours.

D. Less than 1% incidence of anterior subcapsular cataract. If visually significant this can be managed by phakic lens removal, cataract extraction, and posterior chamber implant.

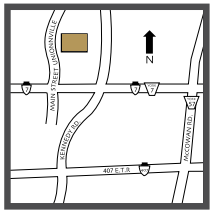
OUR LOCATIONS



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

We're proud to be an Official sponsor of the Toronto Maple Leafs and Toronto Raptors.

We're proud to be "The Official Laser Eye Centre" for the Toronto Blue Jays.

Fax (416) 966-8917 bochner.com

BOCHNER EYE INSTITUTE

ESTABLISHED 1929