

## INTRA-CORNEAL RING PROCEDURE

### BACKGROUND

1. The ICR procedure involves the insertion of 1 or 2 PMMA ring segments into the midperipheral cornea at a depth of 400  $\mu\text{m}$ .
2. The ring segment flattens the cornea and can reduce irregular astigmatism.
3. The Bochner Eye Institute was one of the first centres in Canada to perform the ICR procedure over 10 years ago.
4. The initial indication was the correction of low myopia, less than 4 diopters. Although the procedure was effective it did not have the refractive accuracy as PRK or LASIK.
5. Today the main indication is the treatment of keratoconus to reduce irregular astigmatism and flatten the cornea.
6. Other clinical indications include corneal ectasia after LASIK, and myopic correction with thin corneas.
7. A minimum corneal thickness of 500  $\mu\text{m}$  is required at the 6 mm optical zone. This is confirmed with Pentacam or Obscan maps.
8. The procedure usually results in an improvement in UCVA and best-corrected spectacle acuity.
9. Postoperatively patients with keratoconus often have enhanced contact lens wear.

### PROCEDURE

1. Corneal collagen crosslinking may be performed prior to ICR to enhance corneal rigidity and prevent progressive ectasia. This is especially true in patients under 50 years of age.
2. The Intralase is used to create narrow channels in the midperipheral corneal. The laser duration is approximately 20 seconds per eye.
2. In a sterile operating room one or two rings are inserted into the corneal channels.
3. One temporary nylon suture is inserted.

### POSTOPERATIVE

1. Patients are typically seen postoperatively at 1 day, 1 week, 1 month, 2 months, 6 months, and then annually.
2. Medication used consists of an antibiotic drop for 1 week and a steroid drop for 3 weeks.
3. Patients may return to contact lens wear at 2 week postoperatively.
4. The suture is usually removed at 2 months. If the suture loosens it will produce a foreign body sensation and should be removed.
5. If patients wear glasses it is usually best to wait until the suture is removed before prescribing new lenses. Glasses may be given earlier but the patient should know that the prescription will not be stable until after the suture is removed.
6. The rings should be positioned so the ends are not directly under the corneal wound.
7. Complications are uncommon but could include extrusion of the ring, infection, or inflammation.
8. The surgeons at the Bochner Eye Institute are available to answer any questions or to see postoperative patients.

