### 1. Incision and Flap Preparation

- Make your superficial incision large, i.e., 5x5 mm for a good exposure until you gain familiarity with surgical landmarks associated with Schlemm’s canal exposure. You may wish to scale down later on.

- Flap preparation aids end-of-procedure water tight closure. Make vertical cuts for both superficial and deep flaps with the deep flap at least 0.5 mm inside the superficial flap margin. The combination of straight edges and a nice shelf for the superficial flap to lie upon helps with water tight closure.

- Use high magnification on your microscope during the cut down of the deep flap in order to recognize scleral fiber orientation, and aid identification of the scleral spur. Fibers are organized in a parallel manner at the scleral spur. Expose the full length of the spur and SC will reveal itself.

### 2. Exposing the SC Ostia

- With deep vertical cuts for the outline of the deep flap, as you plane forward to Schlemm’s canal, make sure you continue to advance your margins with a 90 degree cut angle to ensure clean ostia of Schlemm’s canal.

- Once you have identified Schlemm’s canal, use a paracenthesis to lower the intraocular pressure (IOP) to 5mmHg or less to take “air out of the balloon” while working around the thin tissue layers of the trabecular meshwork and Descemet’s membrane.

- Once Schlemm’s canal is exposed, do not use the blade to detach Schwalbe’s line; use a blunt instrument (spatula) or Weck-cell sponge. Sudden egress of aqueous humor may be observed.

### 3. Creation of Descemet’s Window

- After lowering IOP via paracenthesis, dissect the sides with gentle upwards strokes while holding the bottom of the deep flap with your forceps on the same side where you are applying upward strokes. Gently pull the flap away from the incisional area which provides some tension allowing the gentle strokes to easily cut the tensioned tissue. Do not hold the flap in the middle or center of the flap. This may result in perforation. Carry on with the creation of Descemet’s Window far enough (double the width of TM), so there is enough exposure of DW after cutting the deep flap off.

- Check the flow through the Trabeculo-Descemetic Window using the three second rule by adding a balanced salt solution (BSS) to the anterior chamber to bring IOP to the high teens. Dry the scleral bed. Within three seconds, the whole bed should be filled with aqueous humor. If there is insufficient flow, use a wet Weck sponge to gently scrape across the TM or peel some JCT. Repeat the three second test.

- Perforations of DW may occur, but can be addressed while continuing with Canaloplasty. If you suspect a micro-perforation, apply miotics and continue with procedure. If there is a macro-perforation, apply miotics, fill the anterior chamber with viscoelastic, and continue with procedure. Prophylactic small iridectomy needs to be done to prevent iris prolapse at the end of the procedure. If there is macro-perforation with iris prolapse, apply miotics, perform an iridectomy, reposition the iris, fill the anterior chamber with viscoelastic and continue with canaloplasty. In case of macro-perforation with or without iris prolapse, fill the anterior chamber with viscoelastic at the end of the procedure to prevent hypotony the next day. Watertight closure is strongly recommended. There is no need to convert to trabeculectomy.
4. Opening of SC Ostia

- Use a Grieshaber or a 30 gauge introducer cannula. Place the cannula on top of TM, parallel with the scleral spur and coaxial to the Schlemm’s canal ostium, and inject Healon a couple of times to identify and expose the opening. Do not enter the Schlemm’s canal. The iTrack microcatheter is designed for safe viscodilation.

5. Catheterization

- Prime the catheter with Healon. Activate lubricious coating by dipping the working length of microcatheter into BSS (the last 4 cm) and insert into ostia while Healon is still oozing from the tip of catheter. This will be enough for gentle atraumatic catheterization. Actual viscodilation will be done during catheter withdrawal. Constant steady withdrawal of the micro-catheter is necessary in order to avoid DM detachment.

- Catheterization and obstructions: Typically the iTrack microcatheter passes through 360 degree very readily. However, the microcatheter may become stuck at times, most commonly in the ostium of a super collector channel. The easiest way to address an obstruction is to remove the microcatheter and enter counterclockwise. If the microcatheter encounters another obstruction, remove the microcatheter and with your forceps at the distal end (beyond the wire and fiber optic, just on the plastic), bend the tip approximately 30-45 degrees. Place the bent tip pointing anteriorly while being mindful that the bent tip has to enter Schlemm’s canal (therefore place the bent tip coaxial to the ostium). Once inside Schlemm’s canal way, the bent tip of the catheter will run anteriorly against the TM wall. If the bent tip is not placed to enter Schlemm’s canal properly, it may enter the anterior chamber. If this occurs, withdraw the micro-catheter and reinsert properly.

6. Obtaining a Watertight Closure

- The aim of Canaloplasty is to restore natural physiological outflow without filtering blebs. To achieve this, place the first two sutures on each site of the limbus area. Refill the anterior chamber and place the third suture at the apex. An additional 2-4 sutures are placed alternately (right and left) on each side of the superficial flap.

- Use a slipknot to control and adjust the tension. Tighten until you see dimpling or folds in the TM. Use the “slack- pull” technique to ensure correct tension. Finally, use two forceps to pull both remaining arms of the suture to see if the knot pulls beyond the scleral spur.

7. End of Procedure and Postoperative Regimen

- Refill the anterior chamber with BSS and bring IOP to at least 20mmHg. By doing so, there will be less hyphema on Day 1 as the flow of aqueous will be forced out of the newly opened collector channels. In case of macro-perforation refill with viscoelastic.

- Take the patient off his or her anti-glaucoma medication. Use the standard postoperative regimen (for example, as per cataract surgery). Antibiotics and anti-inflammatory therapy are recommended.

8. Patient Selection Criteria

- Canaloplasty is indicated for OAG, pigmentary glaucoma, pseudoexfoliation glaucoma, OHT, NTG, steroid-induced glaucoma, and following SLT.

- Canaloplasty should not be used in patients with neovascular glaucoma, angle recession glaucoma, chronic uveitis, peripheral anterior synechias, a history of angle closure or those with a narrow inlet with plateau iris.

- Canaloplasty is unsuitable for OAG with narrow but not occludable angles after laser iridectomy (although Canaloplasty without suturing may be considered), and OAG with narrow angle, unless Canaloplasty and phacoemulsification is scheduled at the same time.