

# Circumferential Schlemm's Canal Surgery

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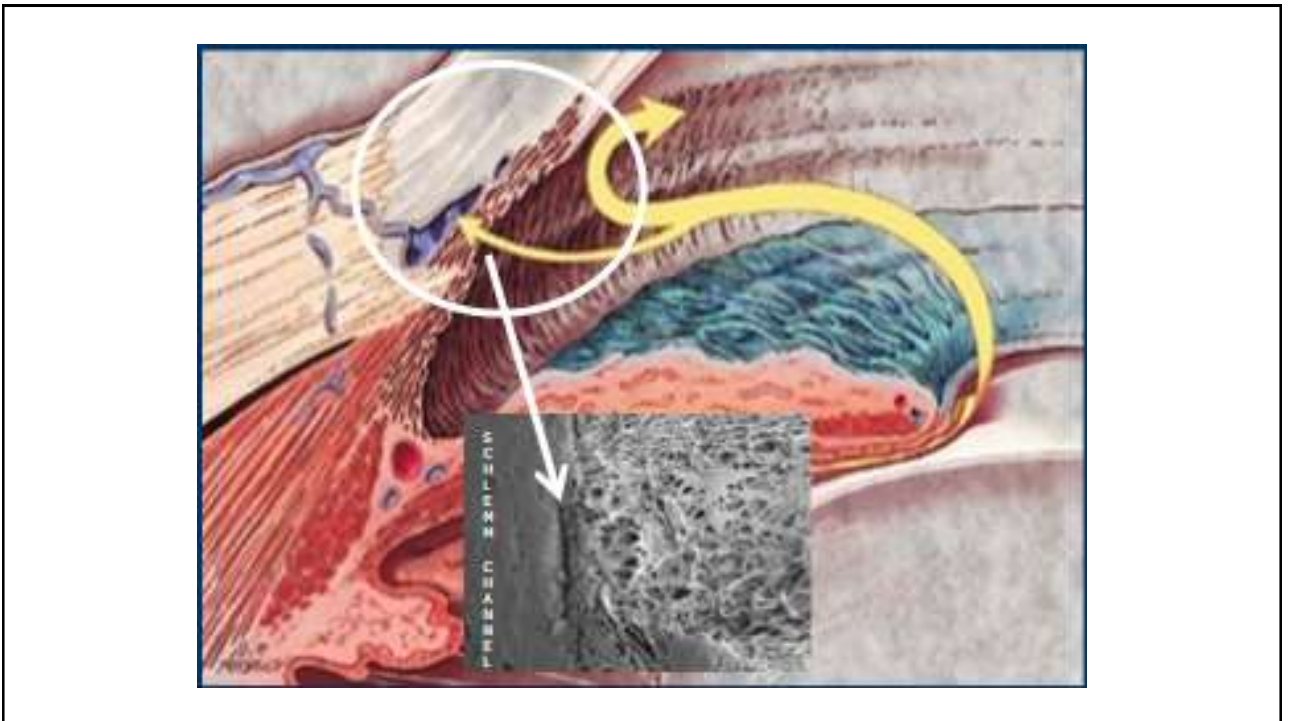


Abureesh Children's  
Hospital



Cairo University

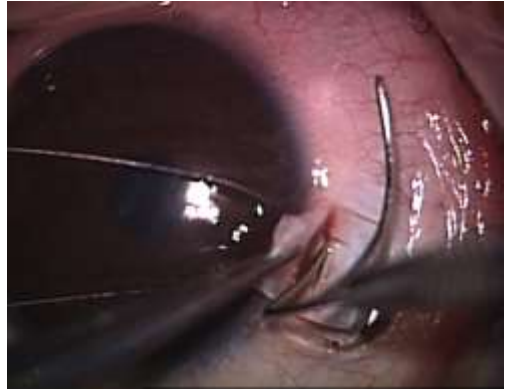




**Ab-interno**



**Ab-externo**



**Trabectome**



**Kahook Dual Blade**



## Circumferential vs 180-degree Angle Surgery

Author	Design	Micro-Catheter type	Minimum follow up	Includes	Number of eyes	Age at surgery	Preoperative IOP (mmHg)		Success criteria	Postoperative IOP at final follow-up (mmHg)		Success rates		
							MT	CT		MT	CT	MT	CT	
							MT	CT		MT	CT	MT	CT	
Lim et al.	Retrospective	Not specified	4 months	Ury and Dry childhood glaucoma <18 years	14	77	9.61 ± 25.42	30.35 ± 28.04	28.75 ± 25.30	Need for additional glaucoma surgery is considered failure	11 ± 31	17.08 ± 25.32	88.71%	88.44%
				1.52 ± 23.68 years in CT group										
De et al.	Retrospective	Track	4 months	Ury and Dry childhood glaucoma	22	21	33.26 ± 33.22	33.26 ± 33.22	11	IOP <21 mmHg and 25% IOP reduction	14.8 ± 8.5	19.0 ± 7.1	Complete 81% Qualified 88.4%	Complete 51.8% Qualified 61.9%
Colla C. et al.	Retrospective	NA	24 months	PCG	41	38	5.37 ± 8.82 months	17.29 ± 8.88	25.1 ± 2.58	NA	13.8 ± 2.03	15.73 ± 1.88	NA	NA
El Sayed et al.	Prospective randomized controlled	Glaucolight	24 months	Ury and Dry childhood glaucoma	10	18	3.6 ± 8.7 months in MT group	25.1 ± 29.4	22.3 ± 25.2	-Complete: IOP <21 mmHg on no medications	11.4 ± 2.3	12.6 ± 14.4	Complete 67%	Complete 47%
Shahraee et al.	Prospective randomized controlled	Staarlight	11 months	PCG	10	18	8.39 ± 1.2 months	24.70 ± 2.50	24.60 ± 2.31	Complete IOP <11 mmHg on no medications	9.5 ± 2.4	11.7 ± 2.1	Complete 80% Qualified 90%	Complete 68% Qualified 70%
Neethan et al.	Retrospective (compared to standard trabeculectomy/goniotomy)	NA	7.1 to 4.0 years in MT 8.2 to 4.3 years in CT/goniotomy	PCG	38	42	NA	NA	NA	Success: IOP <21 mmHg with or without medications	15.2 ± 2.8	18.2 ± 7.0	Overall success 81%	Overall success 51%

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## ORIGINAL STUDY

## Reduction of Intraocular Pressure Using a Modified 360-degree Suture Trabeculotomy Technique in Primary and Secondary Open-Angle Glaucoma: A Pilot Study

*Shinki Chin, PhD, MD, Takuya Nitta, PhD, MD, Yasuhiro Shinmei, PhD, MD,  
Maiko Aoyagi, MD, Akari Nitta, MD, Shigeaki Ohno, PhD, MD,  
Susumu Ishida, PhD, MD, and Kazuhiko Yoshida, PhD, MD*

- POAG

Circumferential : 84%

Conventional: 31%

- SOAG

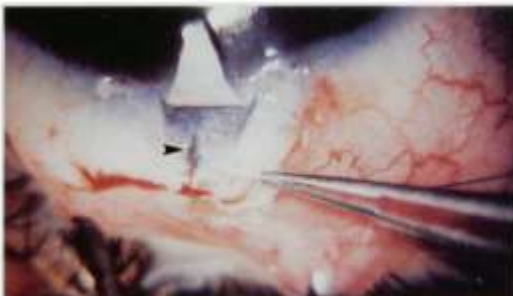
Circumferential : 89%

Conventional: 50%

## SURGICAL TECHNIQUE

### 360° Trabeculotomy for Primary Congenital Glaucoma

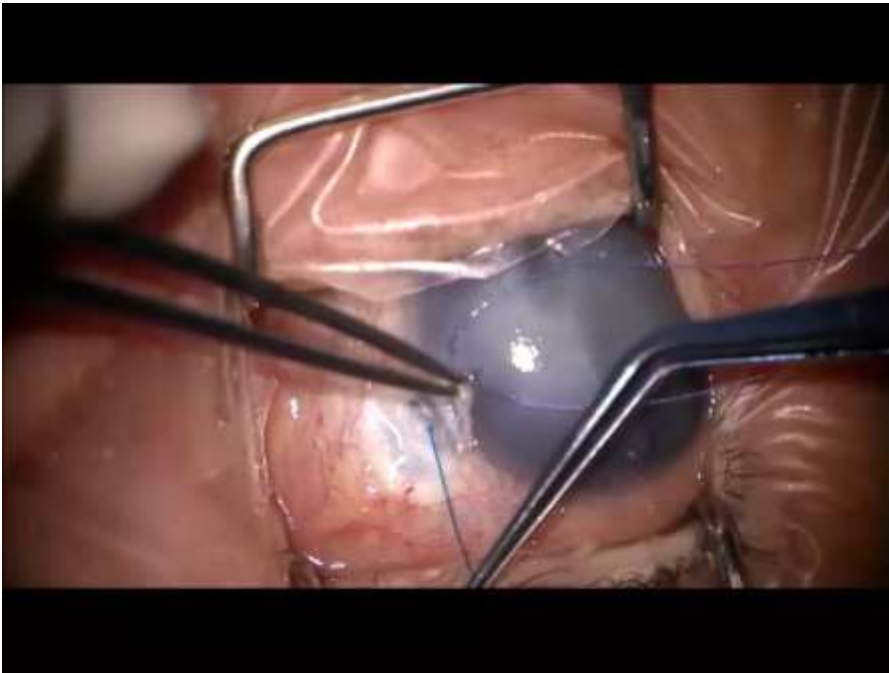
Allen D. Beck, MD, Mary G. Lynch, MD



**Figure 1.** The end of a 6-0 blue polypropylene (Prolene) suture fragment is inserted with a disposable cautery unit. The rounded end is threaded into Schlemm's canal via a radial incision (arrowhead) beneath a partial-thickness scleral flap.



**Figure 2.** Correct placement of the polypropylene (Prolene) suture is verified by gonioscopic visualization of the blue material in Schlemm's canal (black arrowhead). The white arrow demonstrates the anterior insertion characteristic of primary congenital glaucoma.

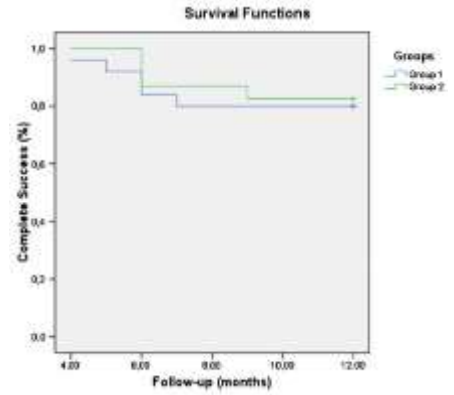
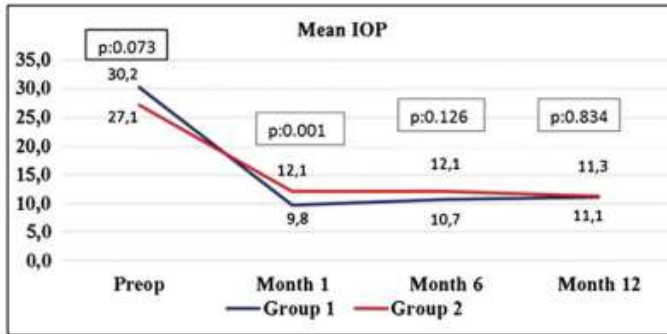


## Letter to the Editor

**Are the outcomes of circumferential trabeculotomy for adult open angle glaucoma comparable to those of trabeculectomy?**

piece of sponge soaked with MMC (0.2 mg/mL, 2 min) had been placed under the Tenon's capsule both temporally and nasally, in addition to scleral flap area. In Group 2, standard nonpenetrating incision technique described for viscocanalostomy and canaloplasty was performed. Schlemm canal was cannulated circumferentially using a 6-0 polypropylene suture with a blunted tip as defined by Hepsen *et al.*<sup>7</sup> The 360° trabeculotomy was modified as de-

*Aktas et al., 2016*



## False passages:

- Suprachoroidal
- Subretinal

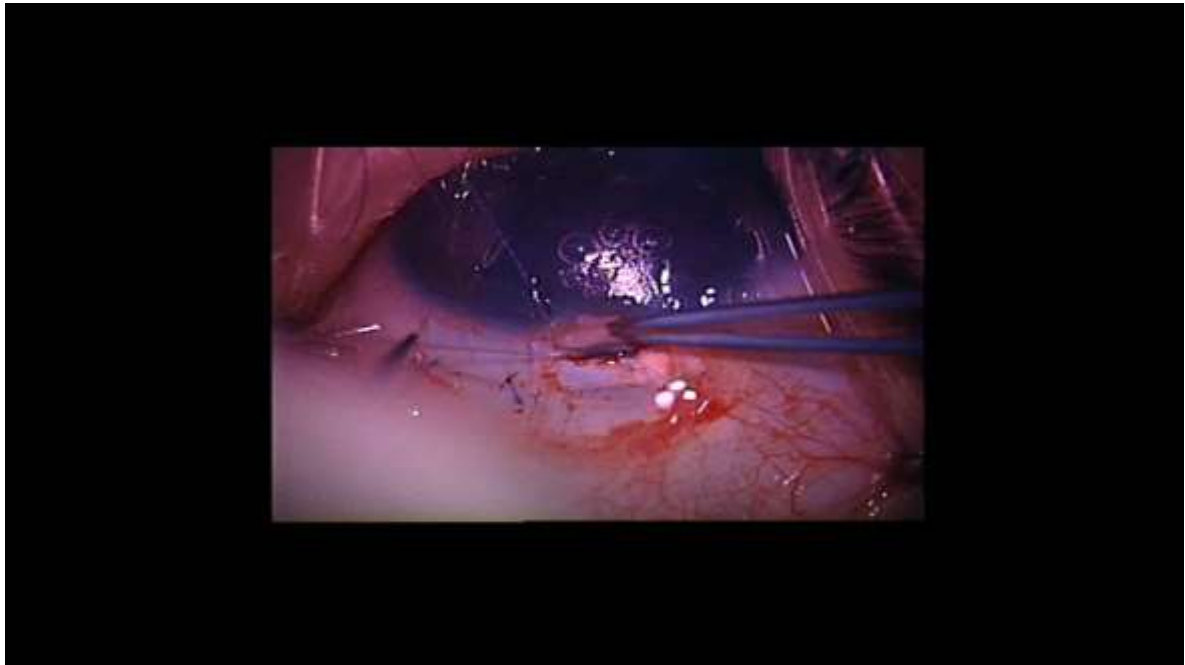




iTrack (Ellex, Adelaide, SA)



Glaucolight (DORC International, Zuidland, The Netherlands)





**Acta Ophthalmologica**

ACTA OPHTHALMOLOGICA 2017

**Two-year results of microcatheter-assisted trabeculotomy in paediatric glaucoma: a randomized controlled study**

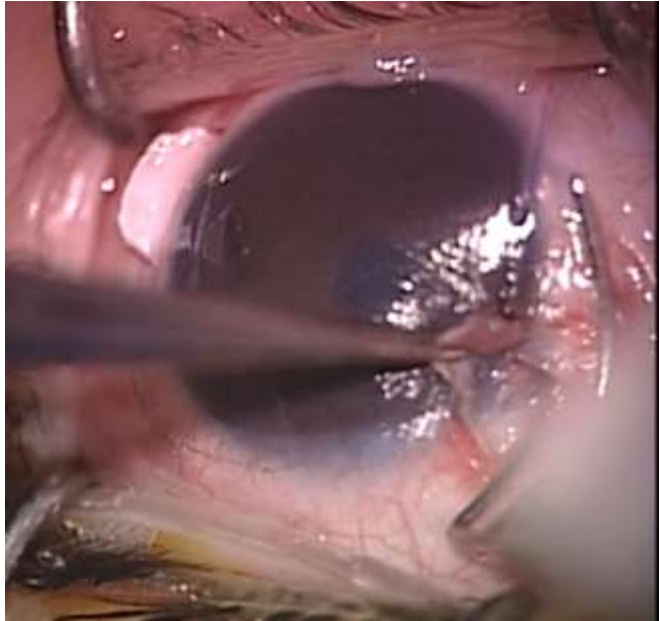
Yasmine El Sayed and Ghada Gawdat

Cairo University Faculty of Medicine, Cairo, Egypt

- **85%** success rate with *microcatheter-assisted trabeculotomy*
- **50%** success rate with *conventional 180° trabeculotomy*



## Two-site trabeculotomy



### ORIGINAL STUDY

#### Microcatheter-assisted Trabeculotomy Versus 2-site Trabeculotomy With the Rigid Probe Trabeculotome in Primary Congenital Glaucoma

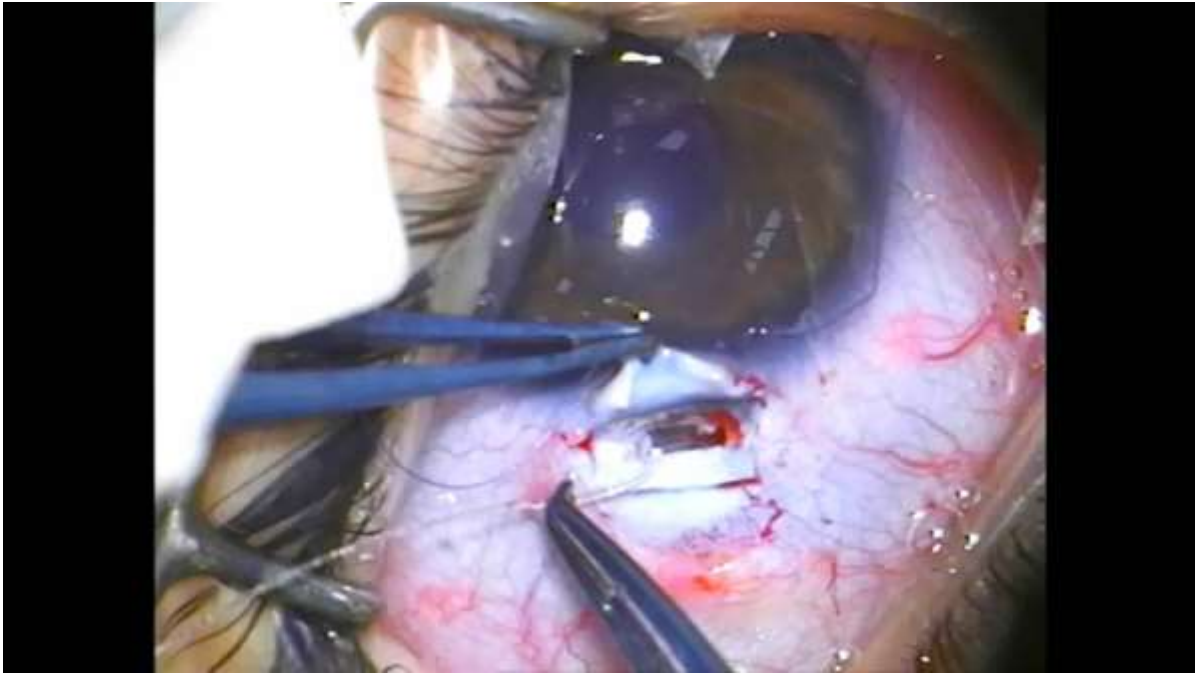
*Yasmine M. El Sayed, MD, MRCSEd and Ghada I. Gamilat, MD*

*Glaucoma J, 2018*

• **MAT (33 eyes):**  
73% complete success

• **2-site trabeculotomy (59 eyes):**  
80% complete success

(*P*=0.2)



## Ab-interno Circumferential SC Surgery

# GATT

Gonioscopy-assisted transluminal trabeculotomy



## Gonioscopy assisted transluminal trabeculotomy: an ab interno circumferential trabeculotomy for the treatment of primary congenital glaucoma and juvenile open angle glaucoma

Davinder S Grover,<sup>1</sup> Oluwatosin Smith,<sup>1</sup> Ronald L Fellman,<sup>1</sup> David G Godfrey,<sup>1</sup>  
Michelle R Butler,<sup>1</sup> Ildamaris Montes de Oca,<sup>2</sup> William J Feuer<sup>3</sup>

*BJO, 2015*

- Retrospective
- 14 eyes of 10 patients
- Mean FU of 20 months
- Mean IOP decreased from 27.3 to 14.8 mm Hg
- Medications decreased from a mean of 2.6 to 0.86

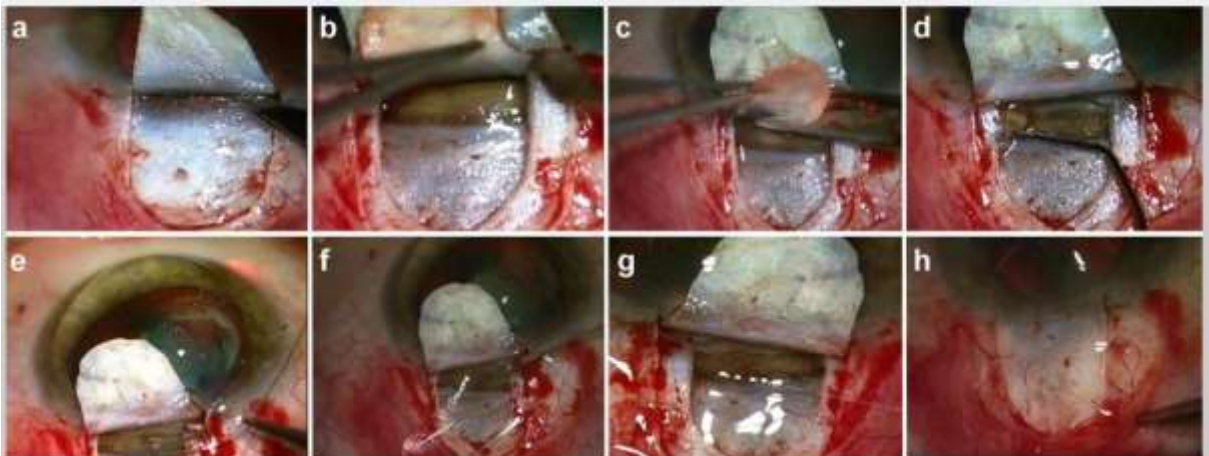
## TRAB360

(Sight Sciences)



# Non-incisional Schlemm's Canal Surgery

## Canaloplasty

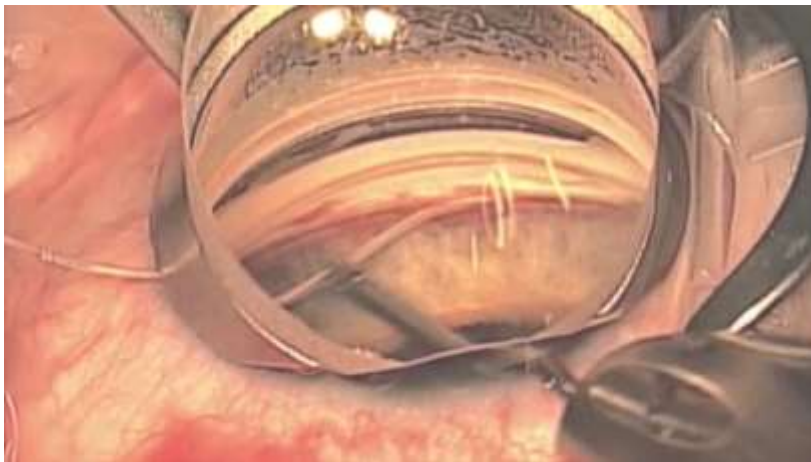


Riva I et al., Adv Ther, 2019

## Canaloplasty

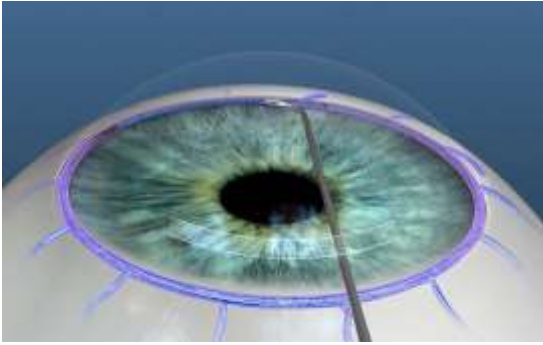


## Ab-interno Canaloplasty ABiC



Courtesy of Grover et al.

## Visco360 (Sight Sciences)



Courtesy of Sight Sciences

# BARRIERS TO SUCCESS



1. Scarring

2. Collector channels

## Collector Channels

- Around **one third** of the resistance to outflow lies distal to the inner wall of Schlemm's canal.
- Evaluation:
  - Fluorescein and ICG angiography
  - Trypan blue dyes
  - Episcleral Venous Flow Wave (EVFW)
  - OCT

**Thank you for your attention**