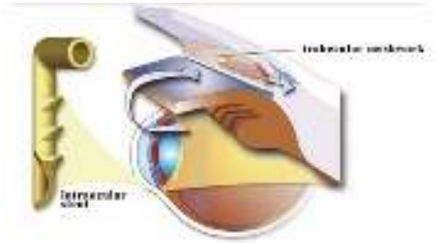
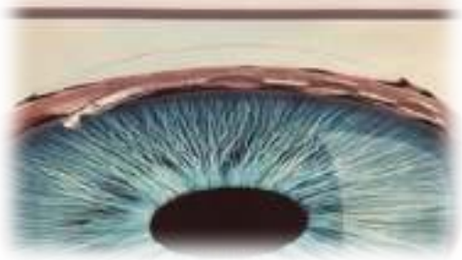
L V Prasad Eye Institute

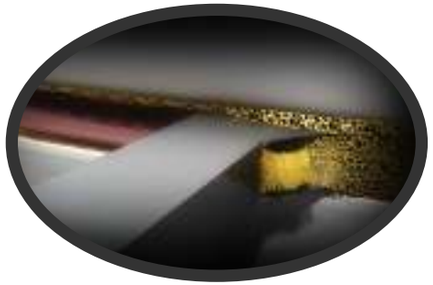
MIGS in Developing world! Do they have a Role??

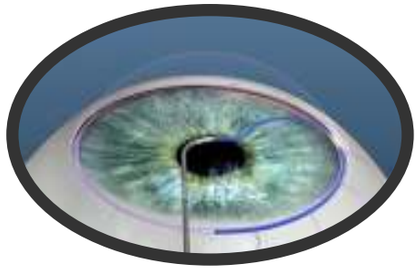
Sirisha Senthil, MS, FRCS (Edin)
Consultant and Head
VST Center for Glaucoma Care
L V Prasad Eye Institute
Hyderabad

Minimally Invasive Glaucoma Surgeries (MIGS): Bypass the TM resistance

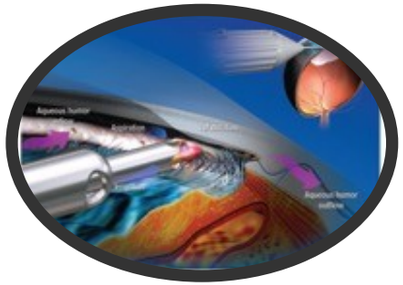




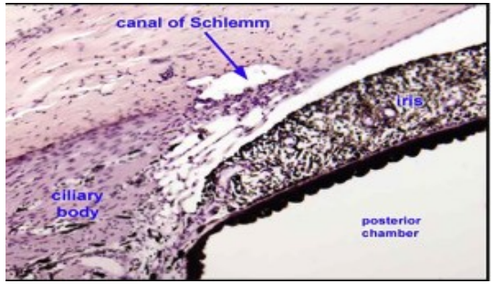


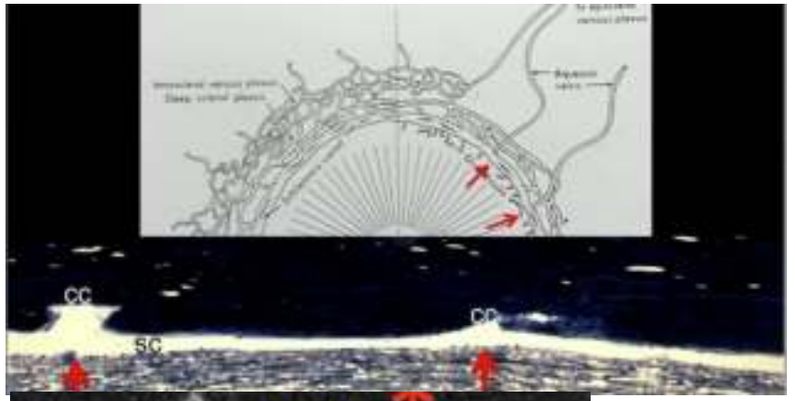


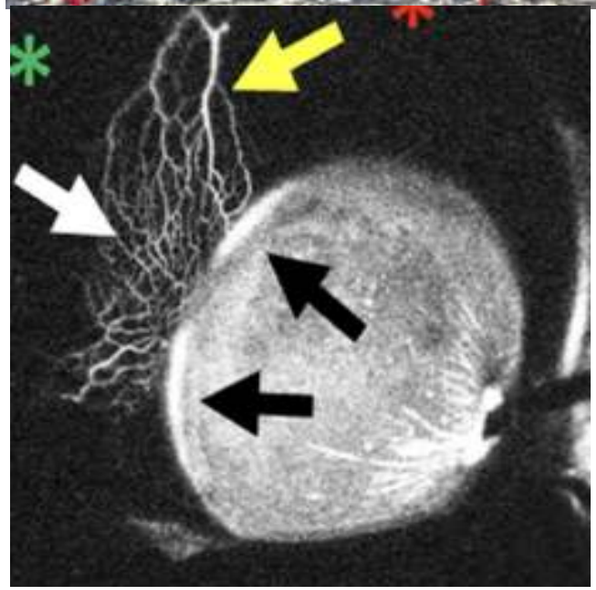
- Early to moderate OAG
- Moderate IOP control



- Can be performed when the angle is open
- The TM and SC bypass procedures have a floor effect in IOP reduction and dependent on distal outflow capacity and EVP
  - Average canal diameter - 121 +/-45 um
  - Hyperopes - 180 +/-69 um
  - Myopes - 122 +/-45 um
  - Previous glaucoma surgery - 98 +/-20 um
  - Without glaucoma surgery - 125 +/-4 um







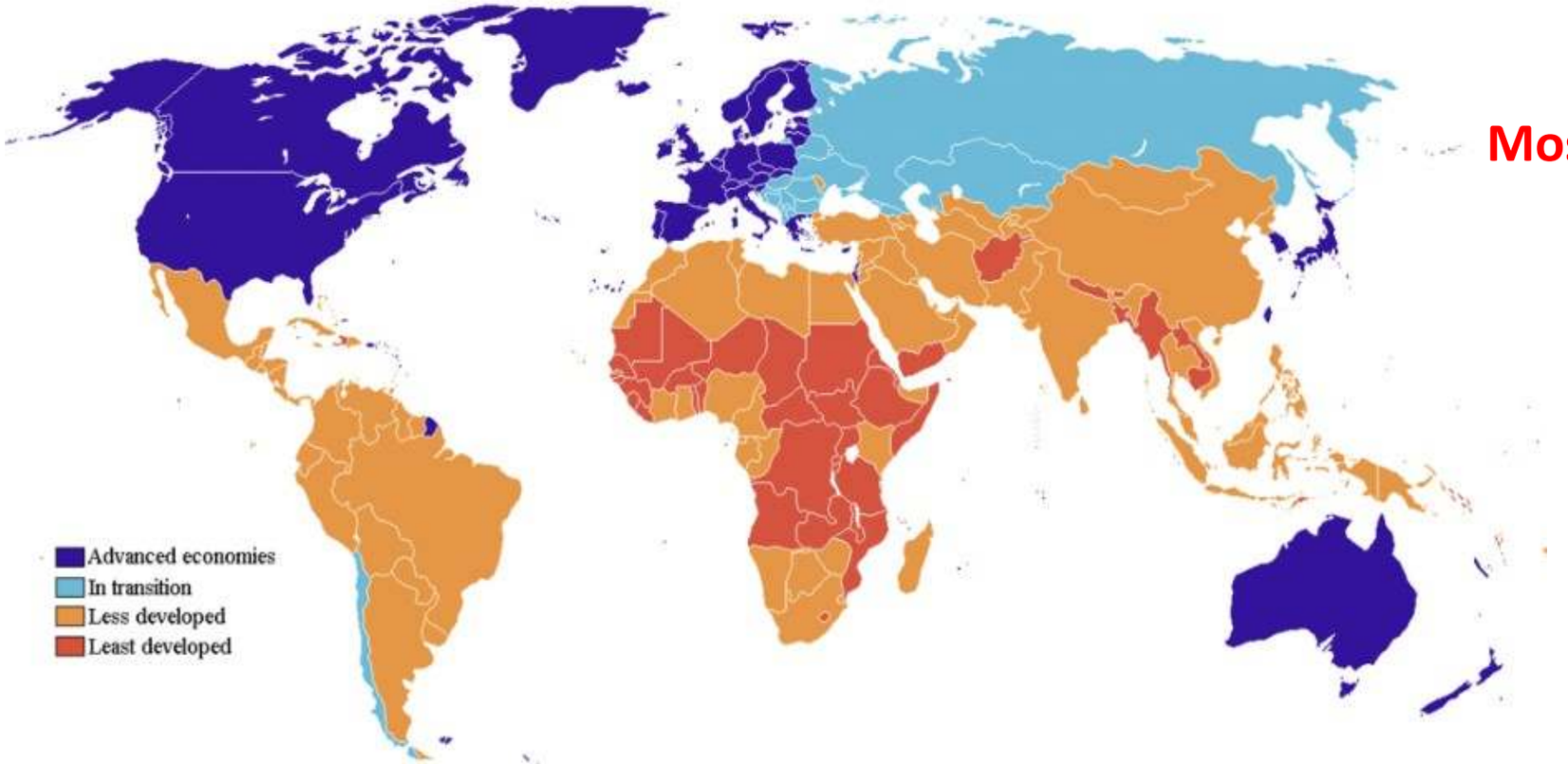
Xiaobin Xie et al, APJO, 2019

Glaucoma Surgery

Uncontrolled IOP	**Non-compliant**	**Affordability**	**Progression**

Developing countries

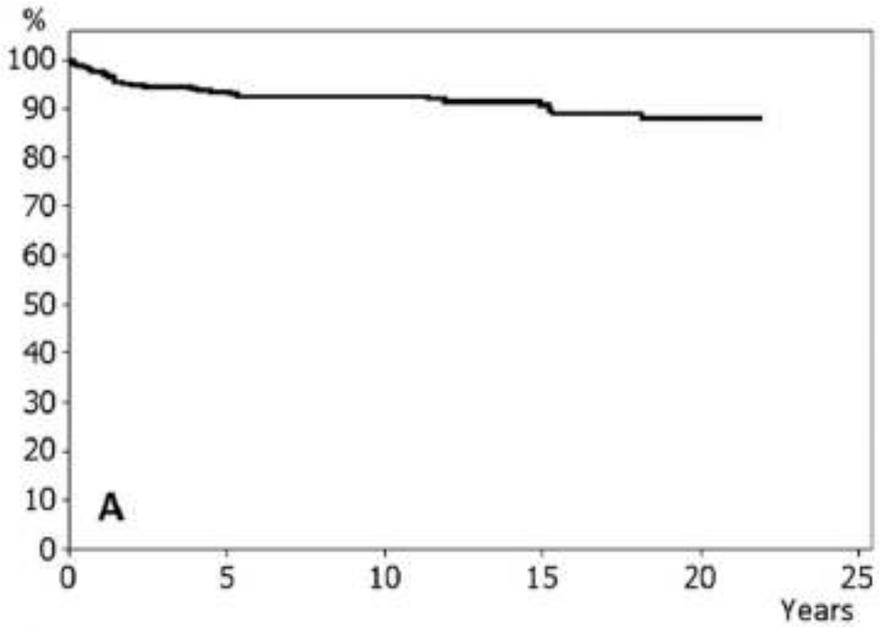
>90% undetected



Most Glaucomas present late

>50% present with advanced glaucoma

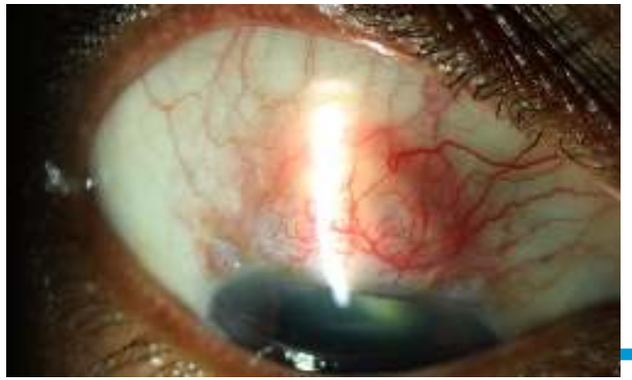
Trabeculectomy is still the choice



Complete success: 57%
Qualified success: 88%

A Twenty-Year Follow-up Study of Trabeculectomy: Risk Factors and Outcomes

John Landers, PhD, FRANZCO,[1,2] Keith Martin, MRCP, FRCOphth,[1] Nicholas Sarkies, FRCS, FRCOphth,[1] Rupert Bourne, MD, FRCOphth,[1,3] Peter Watson, FRCS, FRCOphth[1]



Risk of failure: Younger, uveitic glaucoma

Risk of blindness: Pseudoexfoliation, aphakia

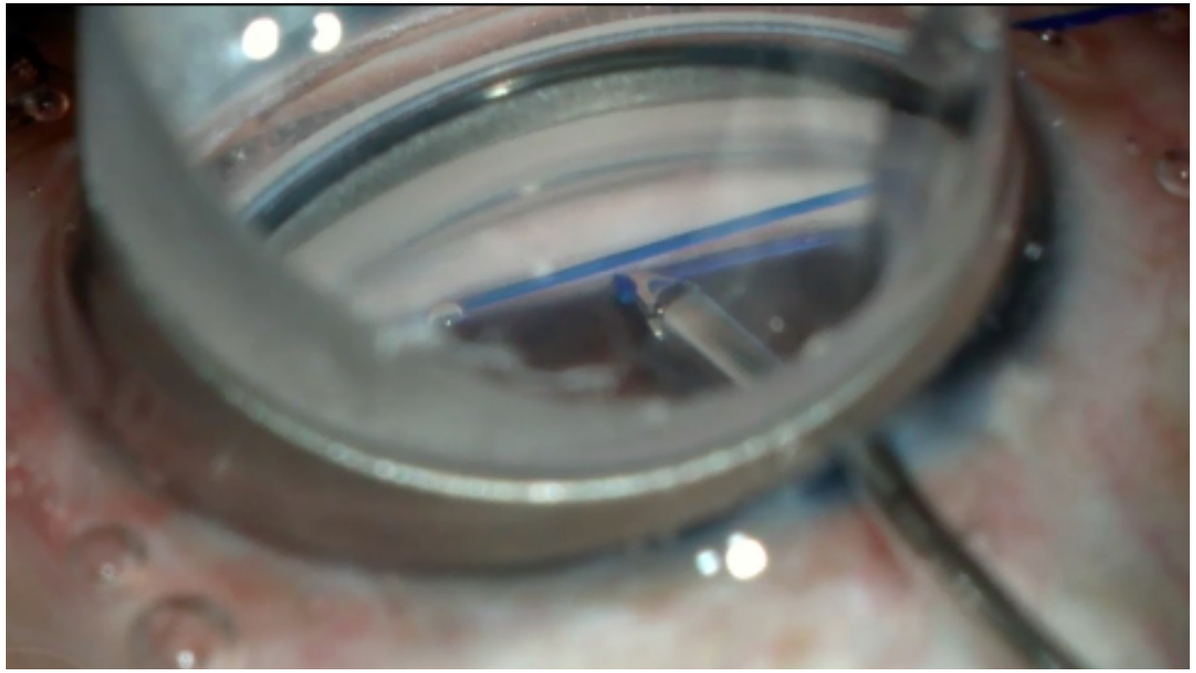
Alternatives……

GDD

TSCPC

MIGS

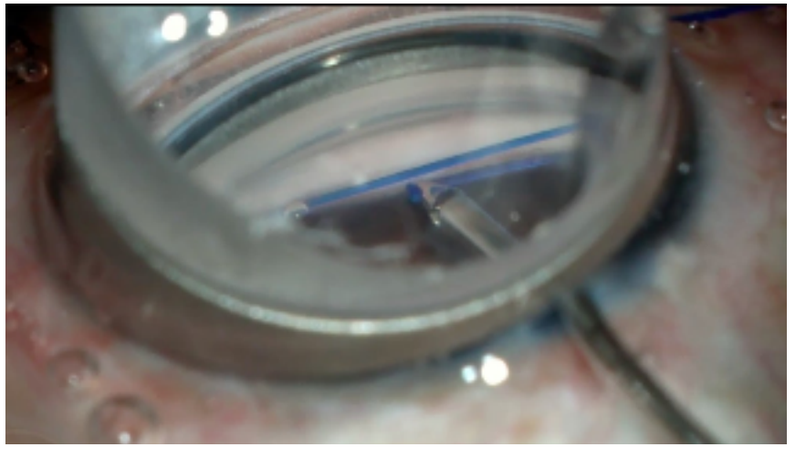
Gonioscopy assisted transluminal trabeculotomy (GATT)



Introduced by Grover et al in 2014

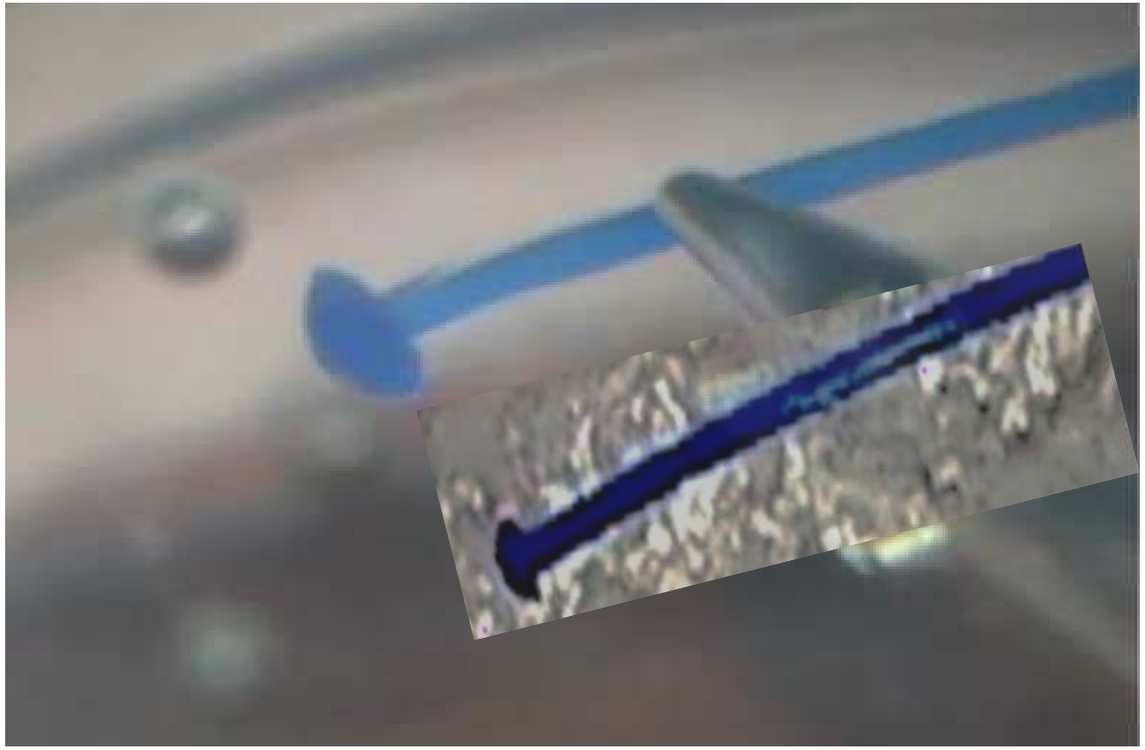
5-0 Prolene suture ab-interno trabeculotomy, shows great promise

How to get started?




Sodium hyaluronate Ophthalmic Solution 1.4% w/v
AUROGel
1ml Sterile Solution
Packed in a Pre-Filled Syringe
Single use only

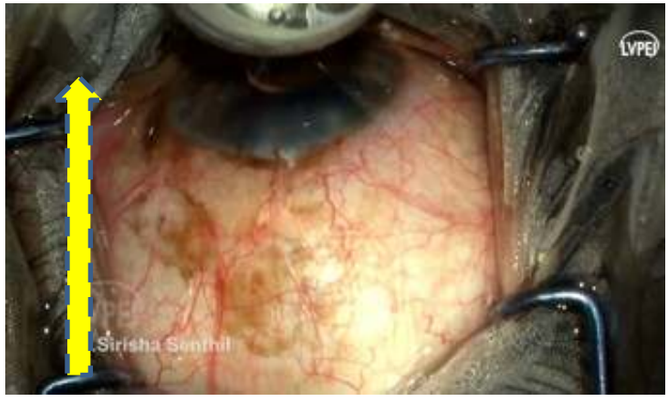
Suture GATT---5/6-0 Prolene

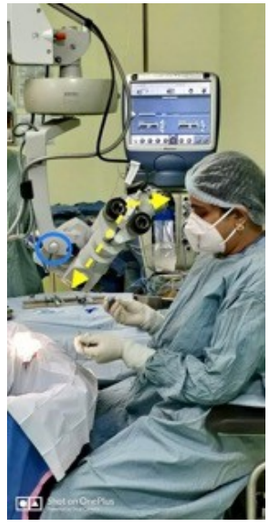


SC - 40 mm

Patient positioning

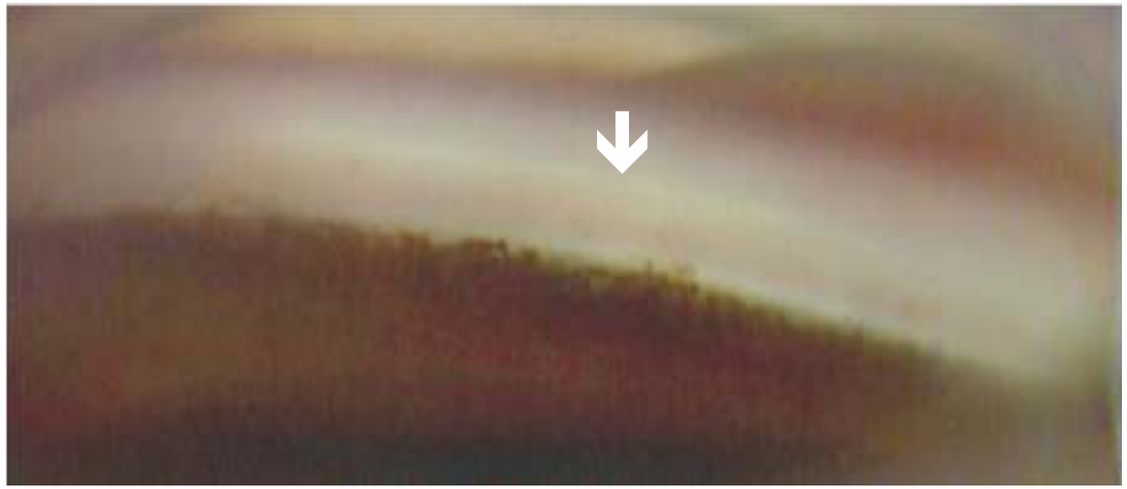
- Tilt of the patient head and eye away from the surgeon/ eye in opposite side gaze

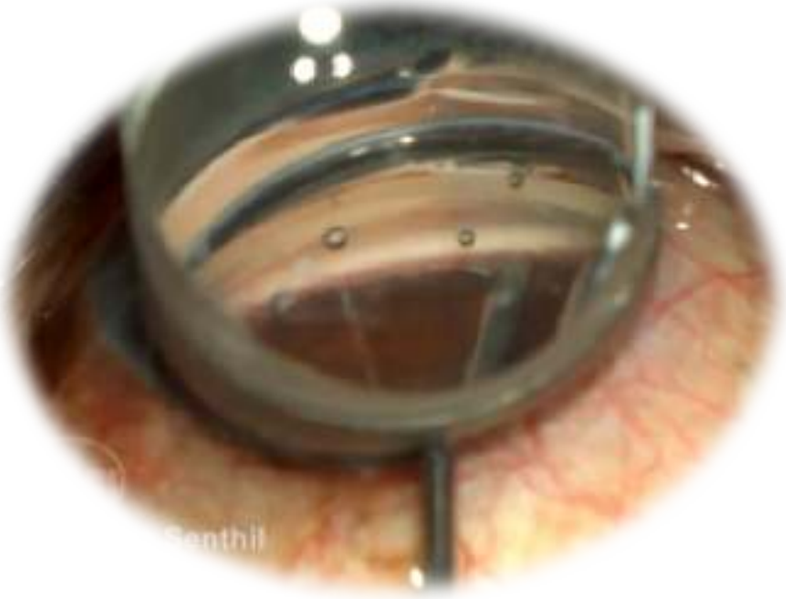




Tilted 35 degree towards the surgeon

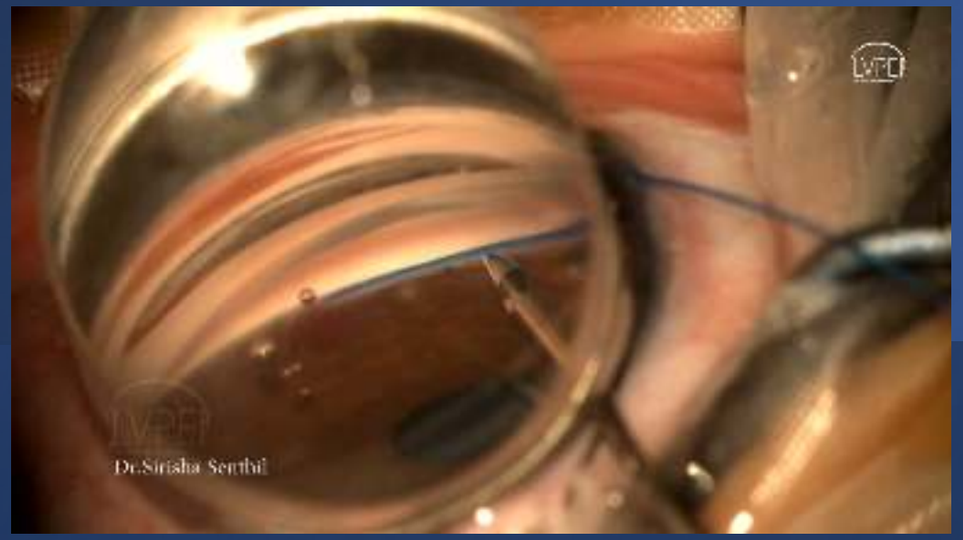
Identify the anatomical landmarks

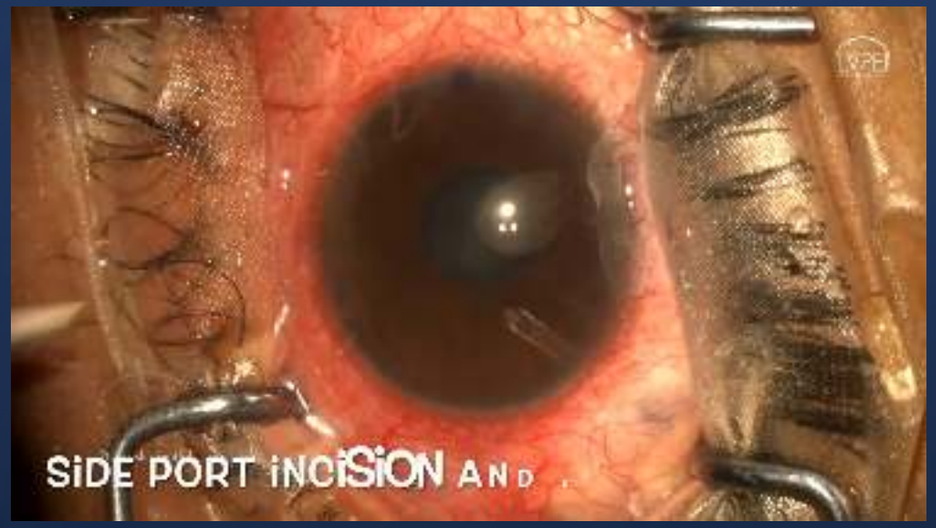


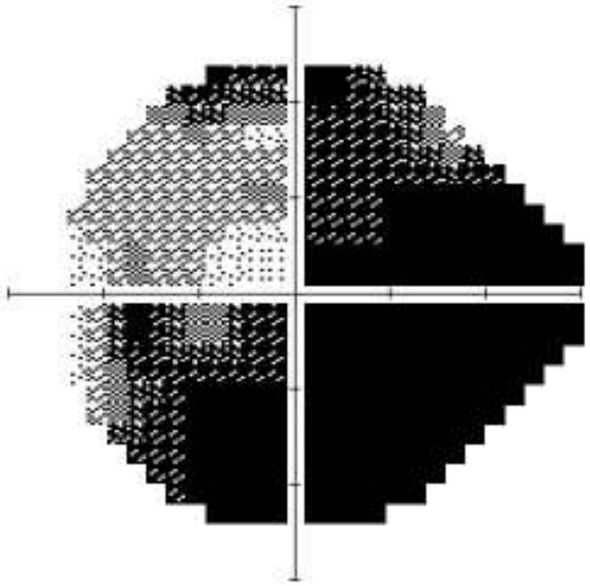


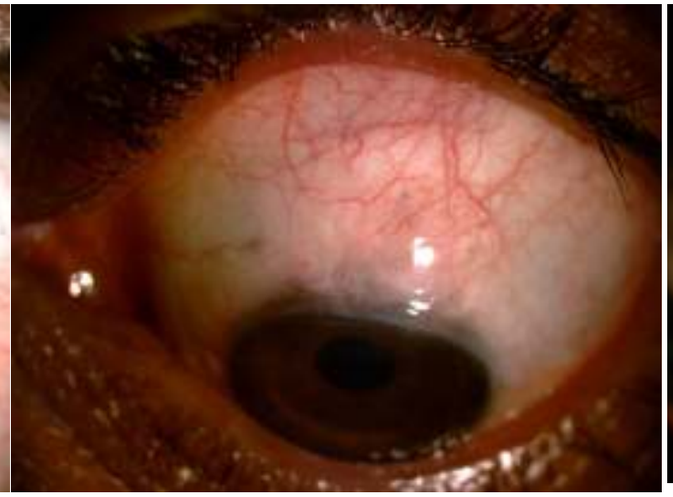
Blood in SC

GATT

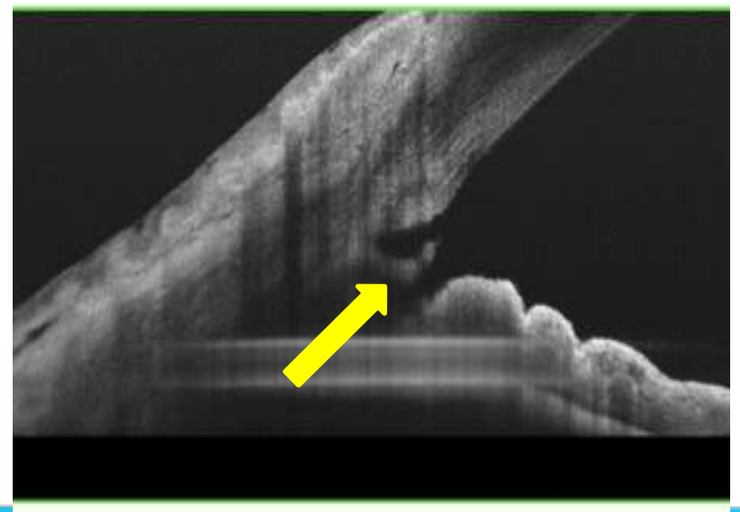








42-year-old, JOAG
One eyed
Advanced damage
2 Trab MMC– failed—IOP
>25 on max meds
What next??



GATT, 360
2 years post GATT
Vision 20/25
2 AGM (combination)
IOP 14 mm Hg

Outcomes of Gonioscopy-Assisted Transluminal Trabeculotomy in Eyes With Prior Failed Glaucoma Surgery

Srihari Siddhartha, MS, Rashmi Krishnamurthy, MS,**
Siddharth Dikshit, DNB, FLVPEI, Chandrasekar Garudadri, MD,**
*Md Hasnat Ali, PhD,† and Sirisha Senthil, MS**

Précis: This study concludes that GATT can be an effective and safe surgical alternative for managing IOP in eyes with prior failed glaucoma surgeries, associated with minimal complications.

Purpose: To report outcomes of gonioscopy-assisted transluminal trabeculotomy (GATT) in eyes with prior failed glaucoma surgery.

Patients and Methods: A retrospective study involving 30 eyes of 30 patients, all of whom had open angles on gonioscopy, experienced prior glaucoma surgery failures, and subsequently underwent GATT. The primary outcome measure was success defined as complete when the intraocular pressure (IOP) was >5 and ≤ 21/16 mm Hg without glaucoma medications and qualified with medications.

Results: The mean age was 51.8 ± 16.1 years. Twenty-one eyes underwent GATT and 9 eyes underwent phaco-GATT. Twenty-seven eyes had failed trabeculectomy and 3 eyes had failed glaucoma drainage device. Post-GATT, the IOP decreased from 27.1 ± 7 to 16.9 ± 6 mm Hg ($P < 0.001$) at the end of 15 months, with a mean drop in AGM from 4.9 ± 1.0 to 2 ± 1.6. At postoperative 1 year, the probability of complete success was 20% (95% CI: 9–43) for an IOP criterion of both 21 and 16 mm Hg. The qualified success probability at 1 year was 82% (67–100) for an IOP criterion of 21 mm Hg and 57% (38–84) for an IOP criterion of 16 mm Hg. Risk factor for failure was older age [hazard ratio (HR): 1.03, 95% CI: 1.01–1.06]. The complications noted were hyphema in 14 eyes (46%), majority resolved within 1 week and all by 2 weeks. None needed any intervention.

Conclusions: This study concludes that GATT can be an effective and safe surgical alternative for managing IOP in eyes with prior failed glaucoma surgeries, associated with minimal complications.

Key Words: GATT, ab interno trabeculotomy, failed filtering surgery, suture GATT

(*J Glaucoma* 2024;33:612–617)

invasive options like trabeculectomy or glaucoma drainage implants become necessary to control the IOP effectively.

While trabeculectomy and glaucoma drainage implants are vital in the surgical management of glaucoma, they come with their own set of complications, particularly failure of surgery due to long-term fibrosis and scarring.[2]

When the primary trabeculectomy fails the range of treatment options include bleb needling,[3] canaloplasty,[4] revision of the previous trabeculectomy site,[5] repeat trabeculectomy,[6] glaucoma drainage implant,[6] or laser cyclophotocoagulation. Over time, there has been an evolution in surgical approaches with an emphasis on angle-based procedures. Notable advancements include techniques such as the Kahook Dual Blade (KDB),[7] Omni and iScience catheter trabeculotomy,[8] iStent Inject,[9] Xen Gel Stent,[10] Trabectome,[11] and PreserFlo Microshunt.[12] Nevertheless, the availability and affordability of some of these devices remain a challenge.

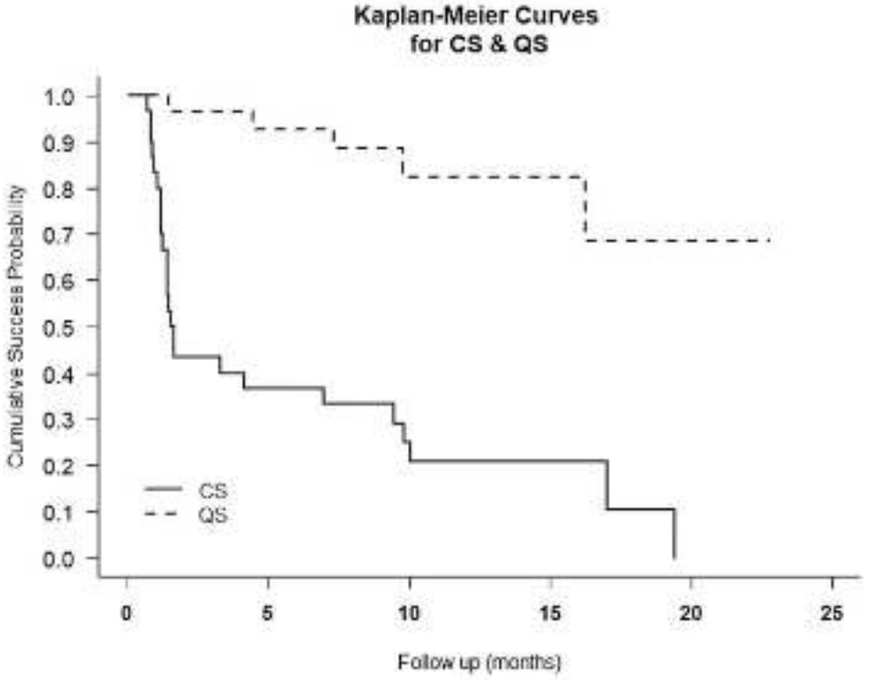
For patients with open angle glaucoma seeking less expensive angle-based surgical options, two noteworthy procedures, namely bent angle needle goniotomy (BANG)[13] and gonioscopy-assisted transluminal trabeculotomy (GATT)[14] have garnered attention. The GATT procedure, popularized by Grover and colleagues in 2014, is an ab interno approach performed under direct gonioscopic guidance. It involves using a 5-0 prolene suture to cannulate Schlemm's canal and create a 360-degree ab interno trabeculotomy.

Grover et al[15] reported promising results with GATT in eyes that had experienced previous failures of various glaucoma incisional surgeries, including trabeculectomy, glaucoma drainage devices, trabectome, and endocyclophotocoagulation. Their study demonstrated a 40% reduction in preoperative IOP and a 25.6% reduction in the use of antiglaucoma medications over a 24-month period.

30 eyes with failed GFS/ GDD underwent GATT

At 15 months, 82% had qualified success

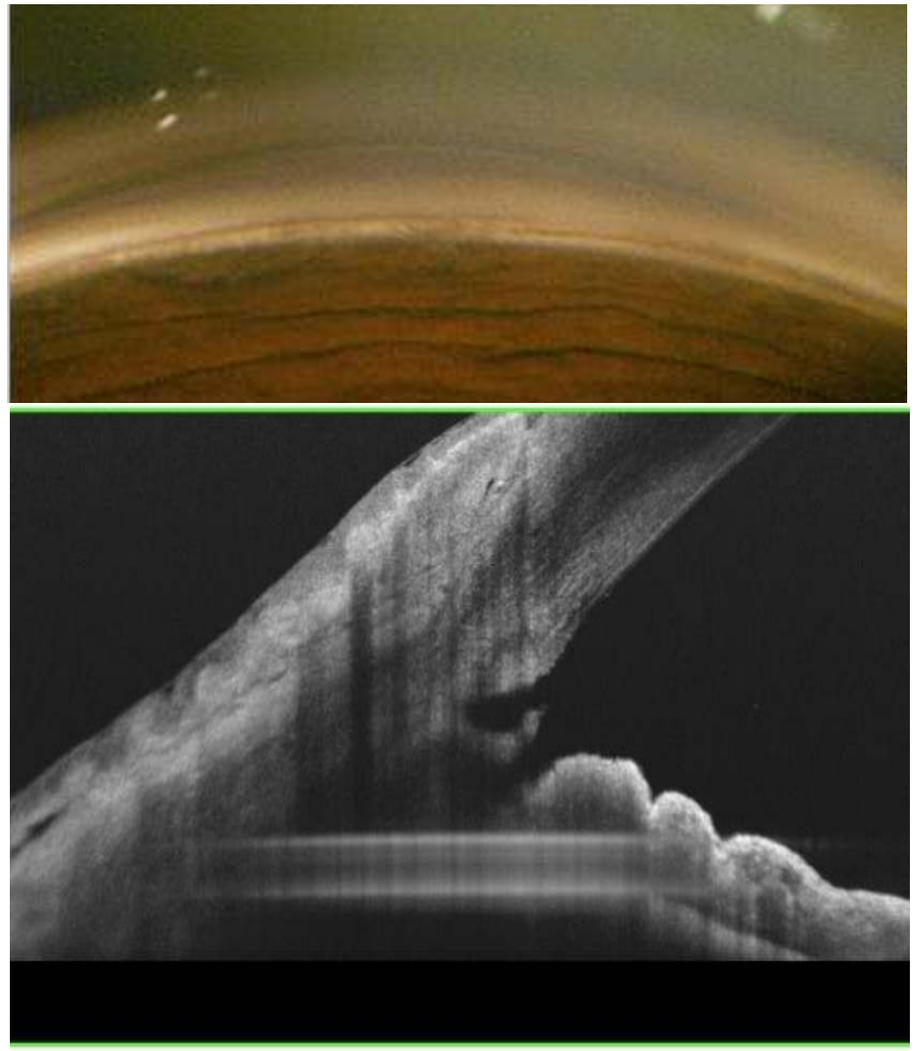
Complete success was 20%



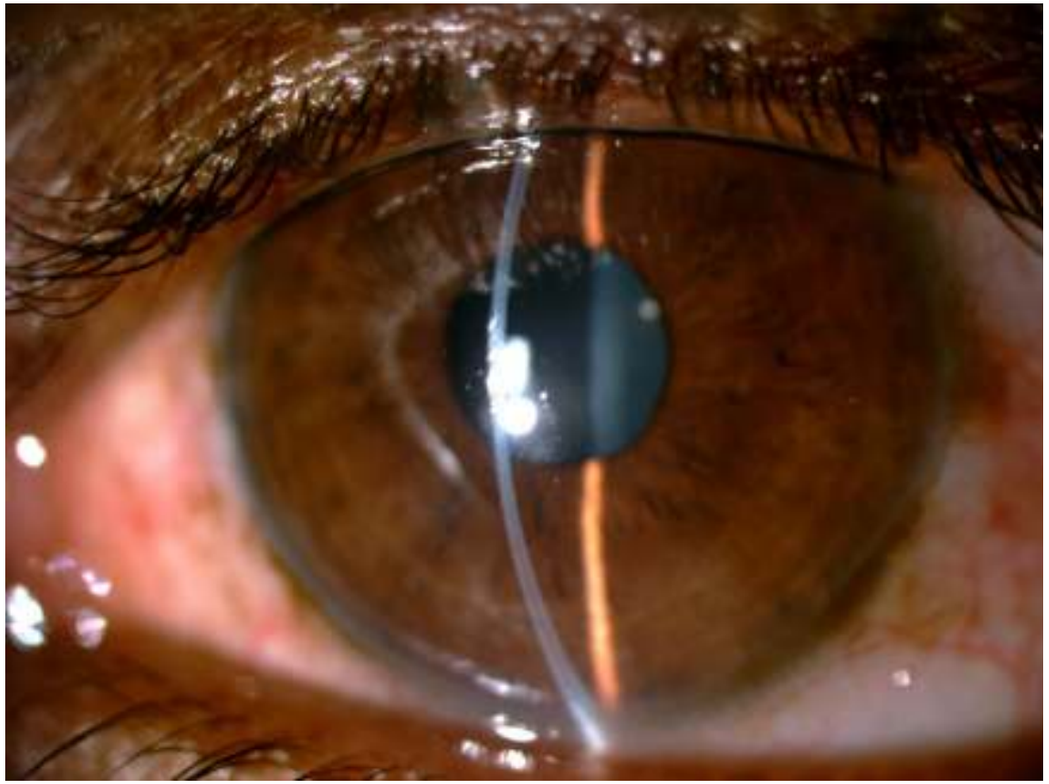
JOG, 2024, August

Postoperative care

- High steroid response, short course
- IOP spikes
- Topical NSAIDS for 5-6 weeks
- Periodic gonio to look for cleft, PAS
- ASOCT for trabecular shelf
- Topical Pilocarpine in case of PAS formation or PACG eyes, or high iris insertion up to 2 months post op
- Topical AGMs when needed, Alpha agonist may help with hyphema



Complications



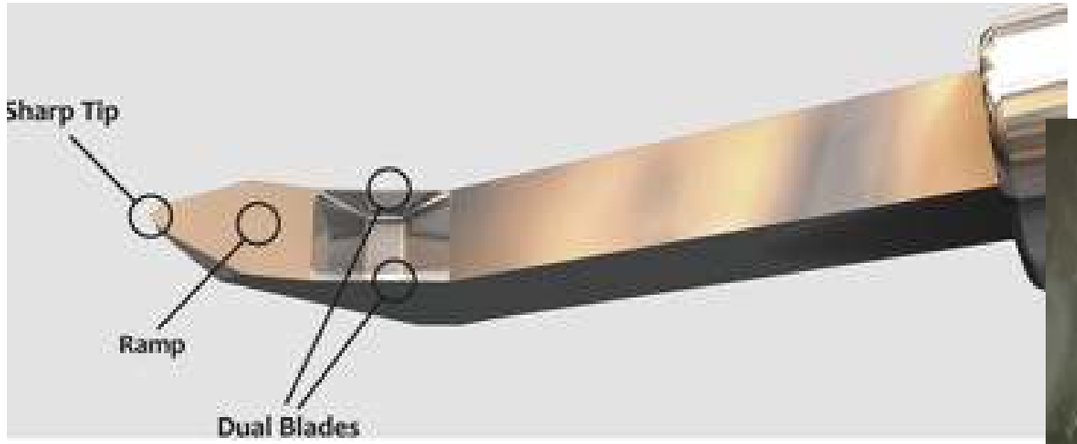
Micro hyphema

< 0.5 mm hyphema

Macro hyphema

> 1mm hyphema

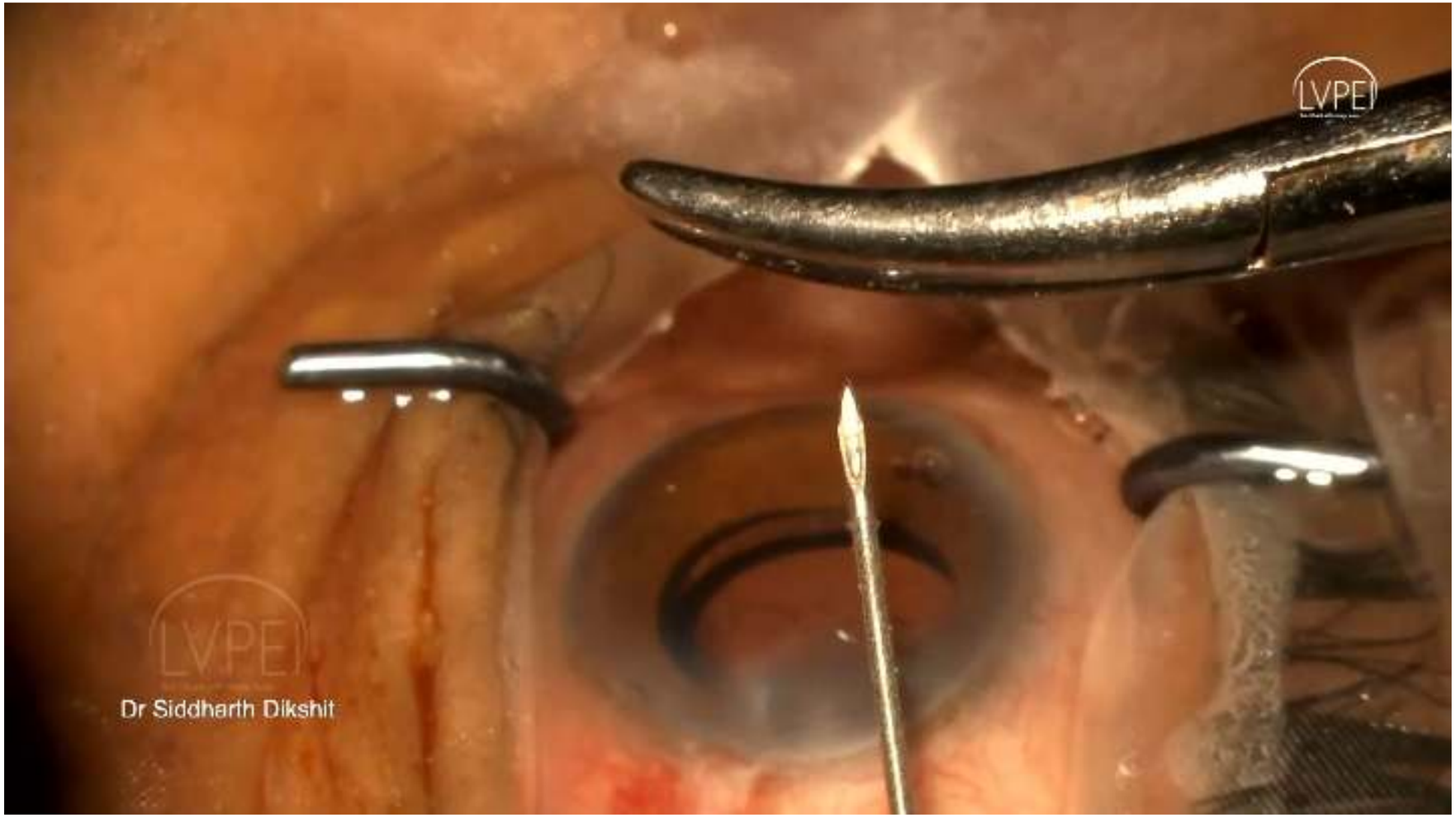
Kahook Dual Blade Goniotomy



BANG Cost effective alternative

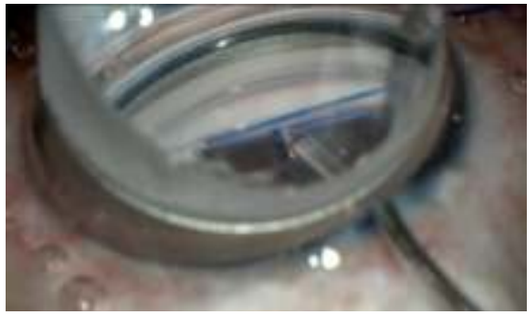
- Bent angle needle goniectomy
- 26/24G needle with tip bent

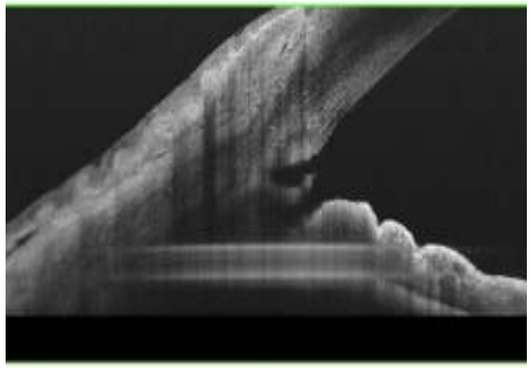
BANG



Summary

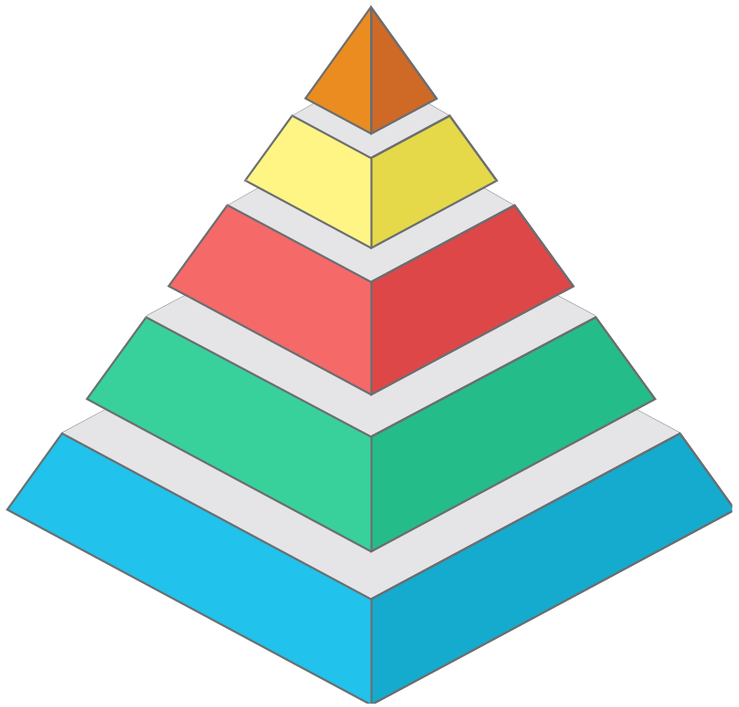
- MIGS have a role in OAG—Primary and Secondary
- Low-cost options
- Choice of case and type of MIGS
- Preoperative Gonioscopy very important
- GATT seems promising in 1^0 and 2^0 OAG
- Even in failed prior GFS, GDD with OAG
- Post op IOP spikes, steroid response, hyphema





LVPEI
So that all may see

L V Prasad Eye Institute



Thank You