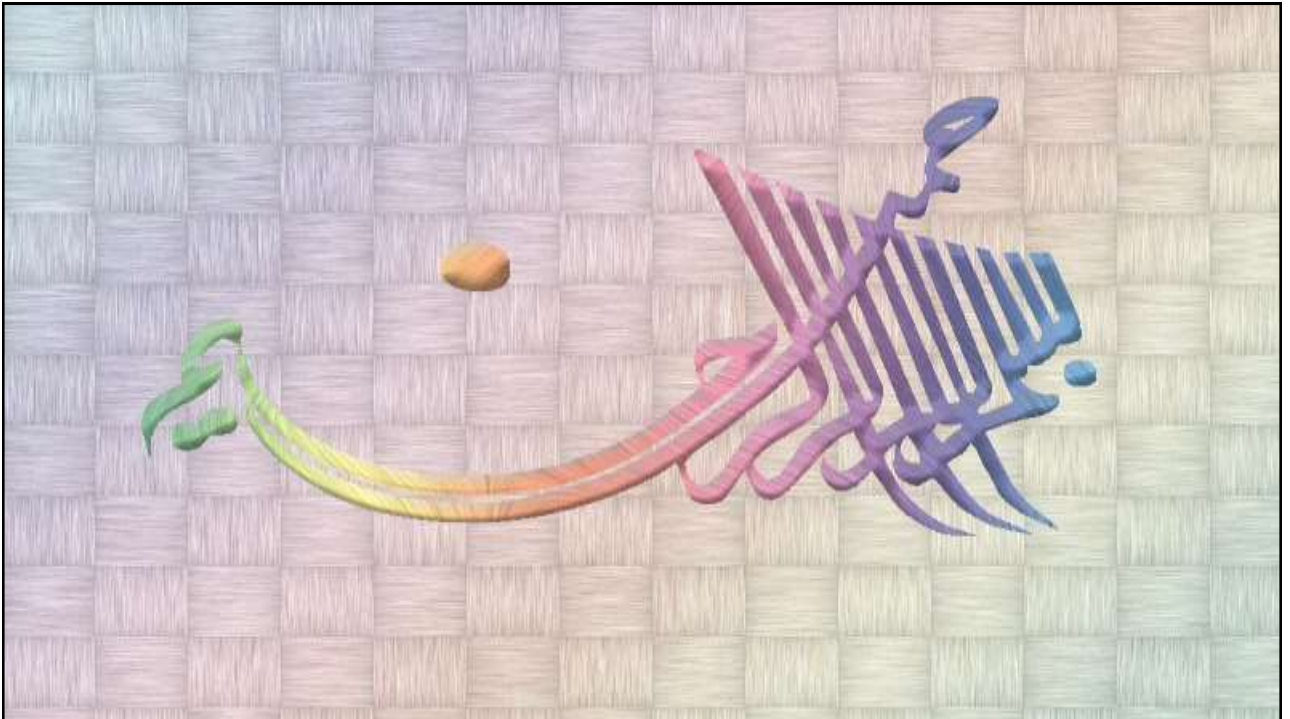




1



2

المؤتمر السنوي الدولي للجمعية الرمدية المصرية
INTERNATIONAL CONGRESS OF THE
EGYPTIAN OPHTHALMOLOGICAL SOCIETY

EOS 2023

SC surgery course

Ab externo Angle/SC Surgery

A holistic less invasive approach
in treatment of glaucoma

Ahmed Samy Elwehidy, MD, PhD
Professor of Ophthalmology- MOC-
Mansoura University- Egypt - 2023




3





EOS 2023



4

Disclosure

I have NO financial disclosure or conflicts of interest with the presented material in this presentation.



5

Angle/SC surgeries

1)-Ab interno surgeries :

- (1)-Ab interno trabeculectomy: TM & inner wall SC removal (Trabectome & KDB)
- (2)-Ab interno trabeculotomy: TM & inner wall SC disruption (GATT & TRAB-360 ST)
- (3)-Implantation of a microstent: to bypass the TM (iStent ,Hydrus implant)
- (4)-Ab interno canaloplasty: dilation of Schlemm's canal via an internal approach (ab interno canaloplasty or Visco360 .



6

Angle/SC surgeries

II)-Ab externo surgeries :

Ab externo trabeculotomy: by disruption of the TM & inner wall SC via an external approach , includes :

- 1)-Rigid probe Trabeculotomy
- 2)-RP Viscotrabeculotomy
- 3)-RP Double-entry T or VT
- 4)-Microcatheter 360° circumferential trabeculotomy
- 5)-Prolene suture 360° circumferential VT (VCST)



7

Concept of angle surgery

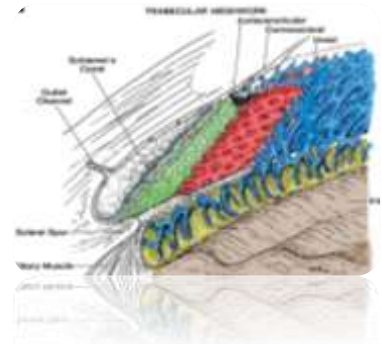
The site of greatest resistance in glaucoma (T.M & juxta-canalicular tissue) is removed allowing normal flow to the collector system

Advantages of ab externo approach

- Can be done with a cloudy cornea
- Less invasiveness to the ocular tissues
- No requirement for expensive devices or instruments.
- 360-degrees suture trabeculotomy can treat the whole angle by one incision

Disadvantages of ab externo approach

- Little longer operating time
- Conjunctival scarring.
- Good understanding of SC & angle anatomy is needed



8

Anatomical

Surgical

Tips

In ab externo approach

9

Surgical anatomy of the limbus

- Scleral spur identification is the main landmark for external angle surgery
- SS is the site where the C.B attaches to the sclera under limbal zone.
- SS appears as a circumferential ring of white scleral fibers against the longitudinal fibers of the scleral bed



- 1-Corneal band (transparent)
- 2-Trabecular blue-greyish band
- 3- Sclera (white)

- The junction of gryish trabecular band & sclera is the landmark of SS



10

Exposing Schlemm's Canal

A)- Radial cut-down in the scleral bed

1 mm anterior to the proposed site of SS & 1/2 mm posteriorly → deepened carefully until reaching the roof of the CS.



EOS2023



11

B)- 2 flaps : as that used with non-penetrating op.



EOS2023



12

Applications

Of ab externo angle surgery

in different types of glaucomas

13

1)-Rigid probe ab externo Trabeculotomy in IO-PCG

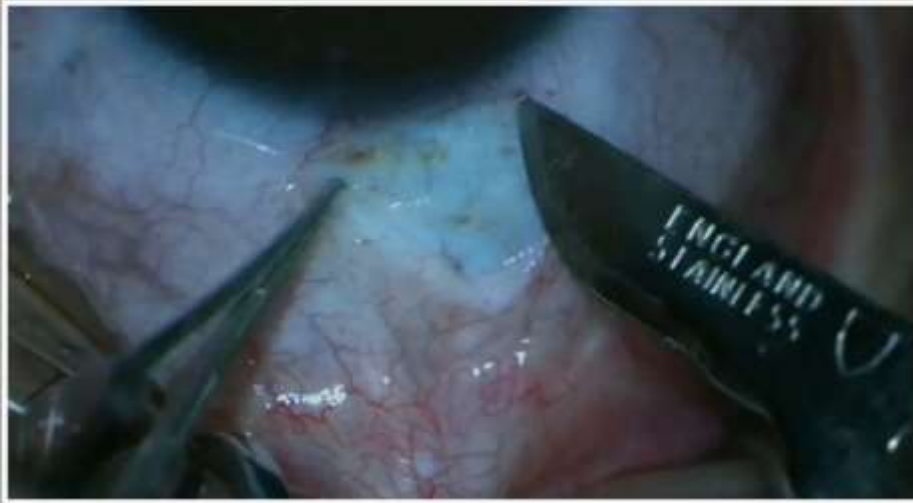


EOS 2023



14

2)-Rigid probe ab externo ViscoTrabeculotomy in DO-PCG



The use of viscoelastics during trabeculotomy proved to enhance the success rate by:

- Dilatation of the narrow SC
- Facilitate trabeculotomy advancement into SC
- Tamponade potential hyphema
- Prevention of the postop. fibroblastic proliferation & haze



15

Surgical Technique

Five-year results of viscotrabeculotomy versus conventional trabeculotomy in primary congenital glaucoma: A randomized controlled study

Ahmed S Elwehidy¹, Sherein M Hagra¹ , Nader Bayoumi², Ayman E AbdelGhaffar¹ and Amani E Badawi¹

Abstract

Purpose: To assess the long-term results of viscotrabeculotomy in infants with primary congenital glaucoma and to compare its outcome with conventional trabeculotomy.

East origin. VT was more effective than CT for reduction of IOP in PCG with more stability, higher success rates, and lower complications.

EJO | European Journal of Ophthalmology

European Journal of Ophthalmology
0(0) 1-10
© The Author(s) 2020
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/110671120922453
journals.sagepub.com/home/ejo




16

3)-Prolene suture 360° circumferential VT (VCST)in IO-PCG



17

Surgical Outcomes of Visco-Circumferential-Suture-Trabeculotomy Versus Rigid Probe Trabeculotomy in Primary Congenital Glaucoma: A 3-Year Randomized Controlled Study

Ahmed S. Elwehidy, MD, PhD,*
Nader H.L. Bayoumi, MD, FRCS(Glasgow),† Dina Abd Elfattah, MD,*
and Sherein M. Hagra, MD*

Purpose: The aim was to compare the long-term surgical outcomes of visco-circumferential-suture-trabeculotomy (VCST) and rigid probe trabeculotomy (RPT) in patients with primary congenital glaucoma (PCG).

Primarily congenital glaucoma (PCG) is an uncommon anterior chamber (AC) angle dysgenesis, accounting for 18% of childhood blindness.¹ It reveals itself within the first years of life

JoG Paper of the Month

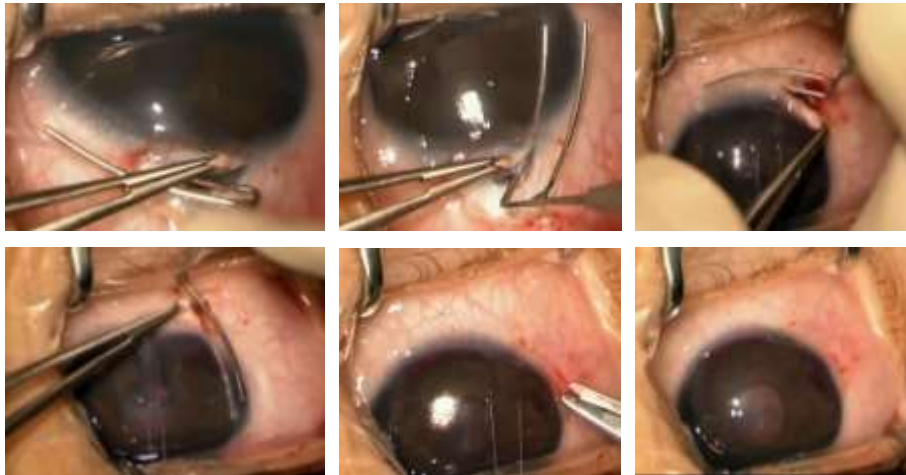
The Journal of Glaucoma (JOG) is the official publication of the World Glaucoma Association (WGA). Every month the WGA Associate Advisory Board selects the Paper of the Month. Watch all the Paper of the Month videos here! Get FREE JOG access via your WGA#One account.

VCST offers 2 advantages a low cost circumferential suture trabeculotomy + facility of SC cannulation & dilatation by the use of a viscoelastic.



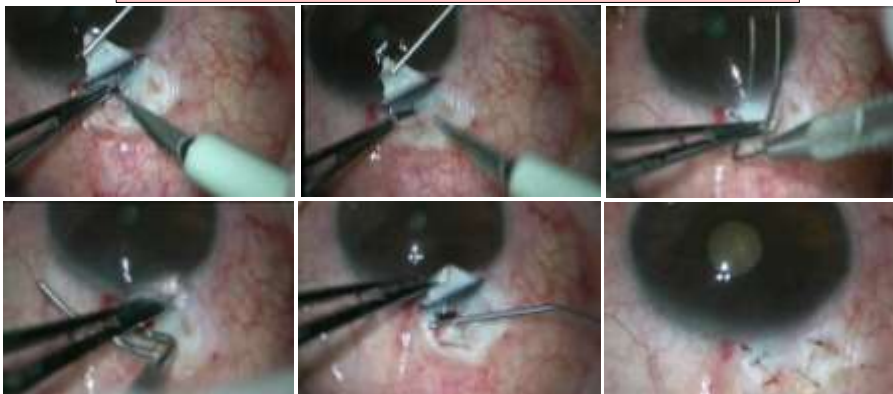
18

4)-RP Double-entry VT in PCG



19

5)-RP VT in POAG



Japanese Journal of Ophthalmology (2021) 65:295–301
<http://dx.doi.org/10.1007/s10384-020-00801-9>

THE OFFICIAL INTERNATIONAL
 JOURNAL OF THE JAPANESE
 OPHTHALMOLOGICAL SOCIETY



CLINICAL INVESTIGATION

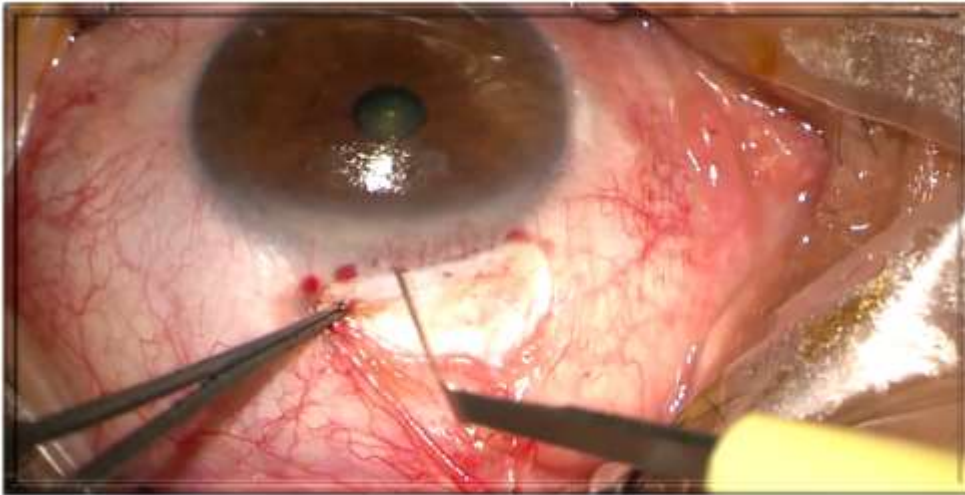
Viscotrabeculotomy versus trabeculectomy in the surgical treatment of open angle glaucoma: a single center, randomised controlled trial

Ahmed S. Elwehidy¹ · Tharwat H. Mokbel¹ · Nader H. L. Bayoumi² · Amani E. Badawi¹ · Sherein M. Hagrass¹

Received: 5 June 2020 / Accepted: 10 November 2020 / Published online: 7 January 2021
 © Japanese Ophthalmological Society 2021

20

6)-Prolene suture circumferential Trabeculotomy (VCST) in POAG



21

7)-Prolene suture circumferential Trabeculotomy (VCST) in JOAG



22


8)-RP VT(+phaco)in PACG

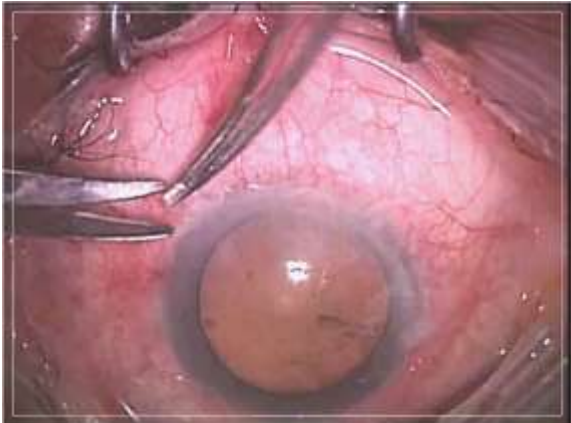
**Combined
phacoemulsification–viscosynechialysis–
trabeculotomy vs phacotrabeculectomy
in uncontrolled primary angle-closure
glaucoma with cataract**


*Ahmed S. Elwehedy, MD, PhD, Nader J.L. Beyoum, MD, PhD, FRCR(G), Amam E. Badawi, MD, PhD,
Sherin M. Hagnas, MD, PhD, Ramia Kamel, MD, PhD*

Purpose: To compare the effect on intraocular pressure (IOP) of phacoemulsification combined with viscosynechialysis and trabeculotomy vs phacotrabeculectomy in uncontrolled primary angle-closure glaucoma with cataract. Intraoperative complications were noted. The primary outcome measure was the IOP before and after surgery.

JCRS







23

CSVT + phaco in ACG+ Cataract




24

Ab externo Angle - SC Surgery in 2ry glaucomas



25

OPEN

Intravitreal Ranibizumab With Panretinal Photocoagulation Followed by Trabeculectomy Versus Visco-Trabeculotomy in Management of Neovascular Glaucoma

Ahmed S. Elwehidy, MD, PhD*, Nader Hussein Lotfy Bayoumi, MD, FRCS (Glasgow)†
Amani E. Badawi, MD, PhD*, Sherein M. Hagrass, MD*, and Amr Abdelkader, MD*

Purpose: The aim of the current study was to compare visco-trabeculotomy (VT) with standard trabeculectomy with mitomycin C (Trab-MMC) in the treatment of aqueous neovascular glaucoma (NVG).

Methods: The study was conducted on 51 eyes of 51 patients presenting with NVG and treated at an Ophthalmic Center in Egypt between March 2014 and April 2017. All study eyes were subjected to a standard protocol of intravitreal injection of ranibizumab followed by panretinal photocoagulation. Eyes were then randomized to either VT or Trab-MMC. Study eyes were followed up for at least 18 months. Success was defined as an intraocular pressure of ≤ 21 mm Hg and without vision-threatening complications. Complications were noted.

Key Words: mitomycin C, neovascular glaucoma, panretinal photocoagulation, ranibizumab, visco-trabeculotomy, trabeculectomy

(*Acta Paediatr Scand* 2019;98:308–313)

Neovascular glaucoma (NVG) is the term reserved for the subset of glaucomas in which proliferation of a fibrovascular tissue is the culprit behind intraocular pressure (IOP) elevation.¹ The most common inciting factor for the neovascular proliferation is retinal ischemia,² which results in the production of vasoproliferative factors, most notably vascular endothelial growth factor (VEGF).³ Obstruction of aqueous



26



ORIGINAL PAPER

Long-term outcomes of trabeculectomy with ologen implant versus combined viscotrabeculectomy-synechiolysis in uncontrolled uveitic glaucoma

Ahmed S. Elwehdy · Nader H. L. Bayoumi · Amgad El Nokrasly · Sherouk M. Hagar

Received: 16 April 2021 / Accepted: 23 September 2021
© The Author(s), under exclusive licence to Springer Nature B.V. 2021

Abstract

Purpose: To compare trabeculectomy with Ologen implant (Trab-Ologen) to combined viscotrabeculectomy-synechiolysis (VTS) in uncontrolled uveitic glaucoma (UG).

Patients and methods: A retrospective chart review of 47 patients subjected to VTS (24 eyes) or Trab-Ologen (23 eyes) at Mansoura Ophthalmic Centre between 2010 and 2016. The patients were evaluated on day 1, week 1, months 1, 3, 6, 12, 18, 24, 30, 36, 42, and 48.

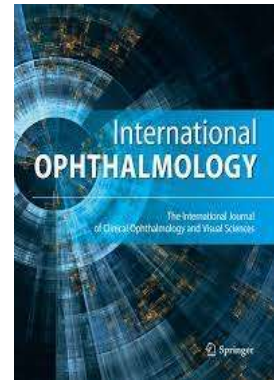
Results: The mean ± standard deviation age of patients in the Trab-Ologen and VST groups were 38.29 ± 12.5 and 38.91 ± 11.6 years ($p = 0.86$), respectively. Juvenile idiopathic arthritis (committed on methotrexate) was the most common associated systemic disease (3 patients in each group). The mean ± standard deviations of the intraocular pressure (IOP) and IOP-lowering medications preoperatively

and at the end of follow up in the Trab-Ologen and VST groups were 33.1 ± 2.6 mmHg, 33.2 ± 2.6 mmHg ($p = 0.91$), 3.4 ± 0.5, 3.4 ± 0.5 (0.90) and 15.4 ± 1.2 mmHg, 15.0 ± 0.9 mmHg ($p < 0.001$), 0.6 ± 1.1, 0.7 ± 1.2 ($p = 0.72$), respectively. IOP control was better in the Trab-Ologen group till the 30th month when it becomes better in the VST group till the end of follow-up. The most notable complication was a minimal self-limiting hyphema in the VST group. Success rates at the end of follow-up in the Trab-Ologen and VST groups were 63% and 78%, respectively.

Conclusions: Trabeculectomy with ologen implant and visco-trabeculectomy-synechiolysis were equally effective in lowering IOP in uncontrolled UG. There was no statistically significant difference in the success rates between the 2 procedures.

Keywords: Anterior uveitis · Glaucoma · Trabeculectomy with ologen · Viscotrabeculectomy · Synechiolysis

A. S. Elwehdy · S. M. Hagar
Faculty of Medicine, Mansoura University, Mansoura,
Egypt



ORIGINAL ARTICLE

Viscotrabeculectomy with anterior chamber irrigation versus Ahmed glaucoma valve implantation for silicone oil glaucoma in the pseudophakic eye

Viscotrabeculectomia com irrigação da câmara anterior versus implante de válvula de Ahmed para glaucoma por óleo de silicone em olho pseudofálico

Ahmed Barry Dawehly¹, Nader Hussain Lutfy Bayoumi², Amr Abdelkader³, Amgad El Badawy³

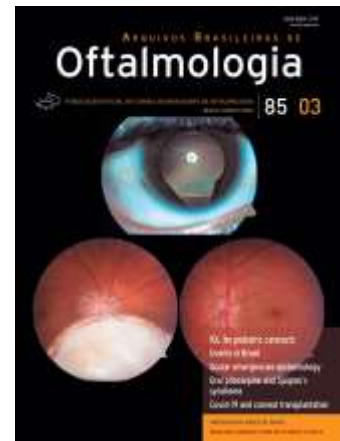
¹ Faculty of Medicine, Mansoura University, Mansoura, Egypt
² Faculty of Medicine, Assiut University, Assiut, Egypt

ABSTRACT | Purpose: To compare viscotrabeculectomy with anterior chamber irrigation to Ahmed glaucoma valve implantation for secondary glaucoma following silicone oil removal. **Methods:** A prospective study was conducted on 43 uncontrolled pseudophakic eyes with persistent glaucoma after silicone oil removal. Patients were randomized to either viscotrabeculectomy with anterior chamber irrigation or Ahmed glaucoma valve implantation. All patients were examined on day 1, week 1, and months 1, 3, 6, 12, 18, and 24 postoperatively. Postoperative complications were noted. Success was defined as an intraocular pressure between 8 and 20 mmHg and with an intraocular pressure reduction of > 30% compared with the preoperative intraocular pressure. **Results:** There were 22 eyes in the viscotrabeculectomy with anterior chamber irrigation and 21 eyes in the Ahmed glaucoma valve implantation group. The mean preoperative and postoperative intraocular pressure in the viscotrabeculectomy with anterior chamber irrigation and Ahmed glaucoma valve implantation groups were 35.3 ± 2.6 mmHg and 35.5 ± 2.4 mmHg and 16.9 ± 0.7 mmHg and 17.2 ± 0.5 mmHg, respectively ($p < 0.0001$). There was a statistically significant intraocular pressure reduction at all follow-up time points compared to preoperative values ($p < 0.0001$) in both groups. The unpaired success rate in the viscotrabeculectomy with anterior chamber irrigation and Ahmed glaucoma valve

implantation groups were 72.73% and 61.9%, respectively. A minimal self-limited hyphema was the most common complication. **Conclusions:** Both viscotrabeculectomy with anterior chamber irrigation and Ahmed glaucoma valve implantation are effective in lowering the intraocular pressure in glaucoma after silicone oil removal with viscotrabeculectomy with anterior chamber irrigation providing greater reduction, higher success rates, and minimal complications.

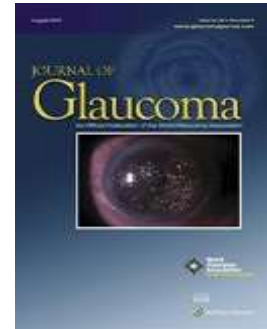
Keywords: Glaucoma drainage, implant; Glaucoma; Retinal detachment; Silicone oil; Trabeculectomy; Intraocular injection; Intraocular pressure; Postoperative complications; Ophthalmic solution; Desamethasone; Olanopate

RESUMO | Objetivo: Comparar a viscotrabeculectomia com irrigação da câmara anterior com o implante de válvula de glaucoma de Ahmed para glaucoma secundária após remoção de óleo de silicone. **Métodos:** Foi realizado um estudo prospectivo de 43 olhos pseudofálicos viscotrabeculectomia com glaucoma persistente após a remoção de óleo de silicone. Os pacientes foram randomizados para viscotrabeculectomia com irrigação da câmara anterior ou implante de válvula de Ahmed. Todos os pacientes foram examinados no primeiro dia, no primeiro semana e 1, 3, 6, 12, 18 e 24 meses após a cirurgia. Observaram-se complicações pós-operatórias. O sucesso foi definido como



Ahmed Glaucoma Valve Revision Versus Visco-Trabeculotomy After Failed Ahmed Glaucoma Valve in Refractory Pediatric Glaucoma

Ahmed S. Elwehidy, MD, PhD,* Amani E. Badawi, MD, PhD,*
Sherein M. Hagra, MD,* and Nader H.L. Bayouni, MD, FRCS (Glasgow)†



Purpose: To compare the outcome of the intraocular pressure (IOP) of Ahmed glaucoma valve (AGV) revision to visco-trabeculotomy (VT) in children's eyes with failed AGV.

Patients and Methods: A prospective randomized study conducted on 41 children (41 eyes) with uncontrolled glaucoma with an AGV

glaucoma is primary, surgical options include a number of procedures, including angle surgery, ab interno² or ab externo,³ filtering surgery,⁴ combined procedures,⁵ and—although reported less frequently—glaucoma drainage device (GDD) implantation.⁶

Secondary glaucoma enjoys a far less success rate with



29

Take Home Messages

- External angle surgery is well formed surgical methods helping effectively in treatment of different types of glaucoma in both children and adults with great efficiency & safety.
- The use of a viscoelastic with trabeculotomy was proved to enhance the success rate by preventing postop. hyphema, hypotony & fibroblastic proliferation at the site of opening.
- VCST offers the potential advantages of both 360 circumferential trabeculotomy using a low cost prolene suture & the facilitation of the SC cannulation & dilatation by the use of a viscoelastic.

30



31