

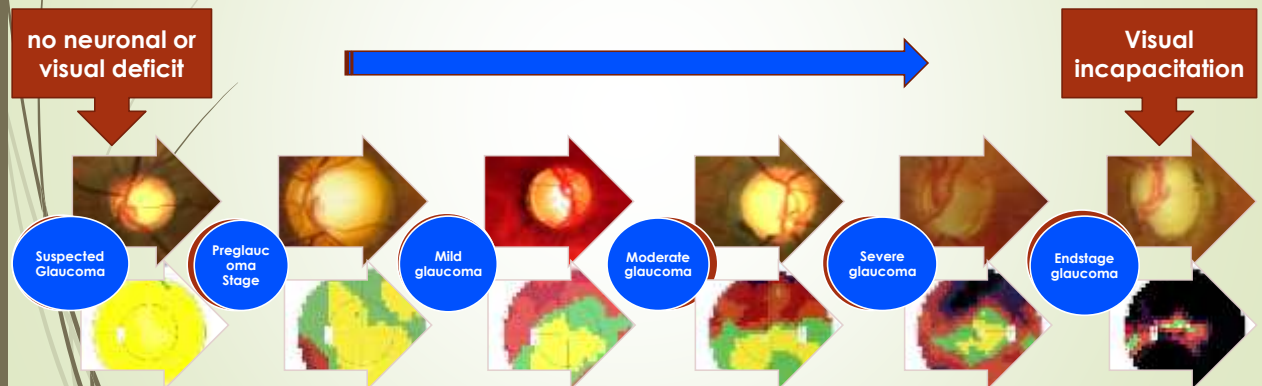
# PATIENTS WITH ADVANCED GLAUCOMA: WHY SHOULD WE INTERVENE?

Dr. TAREK EID

*Tarek Eid, MD*

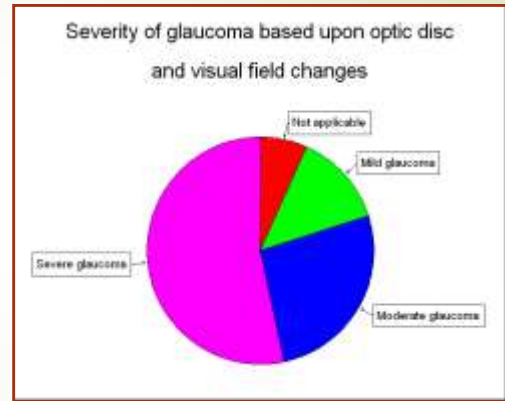
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Advanced to endstage glaucoma rests at the end of the spectrum of glaucoma staging which extends from:



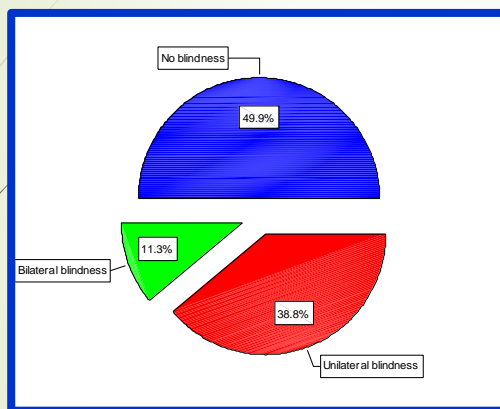
## MAGNITUDE OF THE PROBLEM PREVALENCE OF ADVANCED GLAUCOMA

- In a clinic-based study in **United Kingdom**, **38%** of newly diagnosed glaucoma patients were in the advanced stage
- In a clinic based-study in **Saudi Arabia**, **> 50%** of newly diagnosed glaucoma patients have **ADVANCED to END STAGE** glaucoma in one or both eyes



- Ng WS, Agarwal PK, Sidiki S, McKay L, Townend J, Azuara-Blanco A. The effect of socio-economic deprivation on severity of glaucoma at presentation. *Br Ophthalmol.* 2010;94:85-7
- Tarek Eid, Elhawary I, Elmenawy W. Prevalence of glaucoma types and legal blindness from glaucoma in the western region of Saudi Arabia: a hospital-based study. *Int Ophthalmol* 2009;6:477-483

## GLAUCOMA BLINDNESS RATE



- **Bilateral legal Blindness = 47 pt of 417 new gl pts (11.3%)**
- **Unilateral legal blindness = 162 pts of 417 new gl pts (38.8%)**
- In a glaucoma prevalence survey in **rural South Africa**, **45%** of those with glaucoma were blind in at least one eye

- Tarek Eid, Elhawary I, Elmenawy W. Prevalence of glaucoma types and legal blindness from glaucoma in the western region of Saudi Arabia: a hospital-based study. *Int Ophthalmol* 2009;6:477-483
- Rotchford AP, Johnson GJ. Glaucoma in Zululand: A population-based cross-sectional survey in a rural district in South Africa. *Arch Ophthalmol.* 2002;120:471-8



## RATE OF PROGRESSION TO ADVANCED STAGE

- ▶ **TIME TO PROGRESSION of glaucoma from undetectable field loss to advanced stage with field loss in central 5 degrees in untreated patients:**
  - ▶ 14.4 yrs for IOP 21-25 mmHg
  - ▶ 6.5 yrs for IOP 25-30 mmHg
  - ▶ 2.9 yrs for IOP > 30 mmHg
- ▶ **TIME TO PROGRESSION of glaucoma from stage one to stage five in patients under treatment in a tertiary facility**
- ▶ The median time to worsening by:
  - ▶ One stage was 7.5 years,
  - ▶ Two stages was 18.5 years,
  - ▶ Three stages was 24.5 years

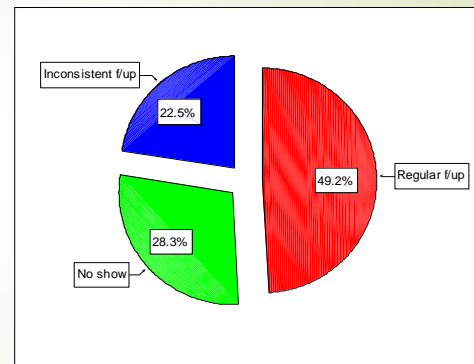
□ Jay JL, Murdoch JR. The rate of visual field loss in untreated primary open angle glaucoma. Br J Ophthalmol. 1993;77:176-8

□ Eid TM, Spaeth GL, Bitterman A, Steinman WC. Rate and amount of visual loss in 102 patients with open-angle glaucoma followed up for at least 15 years. Ophthalmology 2003;110:900-907



## RISK FACTORS FOR PROGRESSION TO ADVANCED STAGE

- ▶ RAPIDLY PROGRESSIVE GLAUCOMA
- ▶ LATE DIAGNOSIS (ADVANCED DISEASE AT INITIAL PRESENTATION)
- ▶ OLD AGE, BLACK RACE
- ▶ NONCOMPLIANCE WITH TREATMENT OR FOLLOW-UP
- ▶ SOCIOECONOMIC FACTORS
- ▶ ASSOCIATED OCULAR & SYSTEMIC ILLNESSES

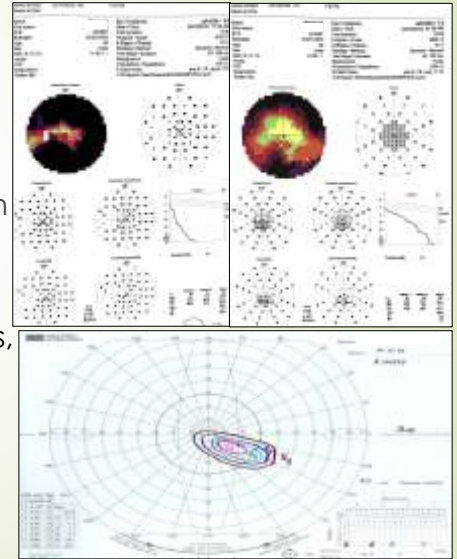


- ▶ Almost 50 % of glaucoma patients are poorly compliant to follow-up schedules after their first visit examination
- ▶ Eid T et al. Int Ophthalmol 2009;6:477-483

## CLINICAL WORKUP OF PATIENT WITH ADVANCED GLAUCOMA



- Comprehensive history taking
- **SUBJECTIVE ASSESSMENT OF VISUAL FUNCTION**
  - Corrected VA for distance and near
  - The ability to perform his daily activities
  - VF monitoring: central 10-2, size V Goldmann perimeter, or confrontation
- **THOROUGH ATTENTION TO IOP FLUCTUATION**
- PROPER CONTROL of BP, vascular abnormalities, blood sugar, blood viscosity, ...etc
- Care about
  - **psychological and mental status of the patient**
  - **the socioeconomic condition of the patient**



## PATIENTS WITH ADVANCED GLAUCOMA



### WHY SHOULD WE INTERVENE?

- TO REDUCE IOP & CONTROL GLAUCOMA
- TO SAVE EYE SIGHT
- TO IMPROVE PATIENT'S QUALITY OF LIFE

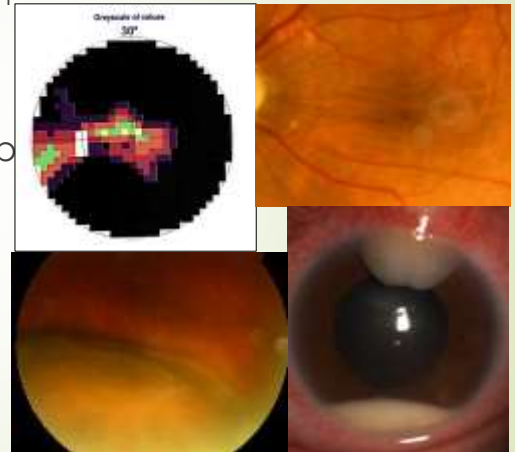
### WHY SHOULD WE NOT INTERVENE?

- NOT TO THREATEN EYE SIGHT
- NOT GOING TO HELP MUCH
- NOT OF VALUE ANYMORE AT THIS STAGE (let the eye die in peace)



## What threatens EYE SIGHT in eyes with advanced glaucoma?

- Wipe-out phenomenon (with split of fixation or loss within central 5 degrees)
- Hypotony maculopathy
- Refractive changes (postop astigmatism, induced myopia)
- Cataract progression
- Disastrous complications:
  - Suprachoroidal hemorrhage
  - Endophthalmitis



## The risks and benefits of glaucoma surgery



Immediate risks		Late risks	
Sudden loss of central vision	2-5%	Progression of glaucoma	15%
Infection	<0.1%	Progression of pre-existing cataract	usual
Malignant glaucoma	2%	Droopy upper lid	rare
Serious bleeding inside the eye	2%	Late-onset infection with antimetabolites on full-thickness surgery	3-9%
Excessive filtration with flat AC	10%		
Need for second related surgery	10%		
Temporary blurring of vision	usual		

Spaeth GL. Indications for glaucoma surgery, In Ophthalmic Surgery, Principles and Practice. Saunders, Philadelphia, 2003:223

## The risks and benefits of glaucoma surgery

### Benefits of glaucoma surgery:

1. Increased likelihood of maintaining vision 90%
2. No further progression of glaucoma 80%
3. Less need for glaucoma medications 80%
4. No need for glaucoma medications 40%
5. Improved vision 30%

□ Spaeth GL. Indications for glaucoma surgery. In *Ophthalmic Surgery, Principles and Practice*. Saunders, Philadelphia, 2003:223

## Rate and Amount of Visual Loss in 102 Patients with Open-Angle Glaucoma Followed Up for at Least 15 Years

Tarek M. Eid, MD,<sup>1</sup> George L. Spaeth, MD,<sup>2</sup> Anya Bitterman, MD,<sup>3</sup> William C. Steinmann, MD, MSc<sup>2</sup>

**Purpose:** To determine the probability of worsening of glaucoma and the rate of change in patients having open-angle glaucoma for approximately 20 years.

**Design:** Retrospective, noncomparative case series.

**Participants:** One hundred and two patients diagnosed and treated for open-angle glaucoma before 1982.

**Testing/Intervention:** The optic disc and visual field of one eye of each patient were graded independently at diagnosis and periodically throughout the follow-up period for a minimum of 15 years (mean, 19 ± 3 years), using a scale ranging from 0 = no damage to 5 = far-advanced damage. Therapy was contemporaneous and stepped through medical laser, and surgery.

**Main Outcome Measures:** The probability of worsening by one or more stages was plotted against the length of follow-up (Kaplan-Meier survival curves).

**Results:** Seventeen eyes did not worsen, 43 deteriorated one stage, 31 two stages, and 9 three or more stages. The median time to first worsening was 7.5 years, to second worsening 18.5 years, and to third worsening 24.5 years. Patients with more advanced stages of damage were not more likely to deteriorate than those with less-marked damage. The intraocular pressure was not significantly lower in the patients who remained stable. Seventeen eyes deteriorated to a visual acuity of 20/200 or worse. Of these, causes other than glaucoma were responsible in at least 80% of the cases.

**Conclusions:** Approximately 80% of eyes with open-angle glaucoma remained stable for about 20 years, 43% deteriorated one or five stages, and 9% three or five stages. Seventeen of the eyes lost acuity to a level of 20/200, usually from causes other than glaucoma. Deterioration of field was, on average, first noted at 7.5 years, after which the rate of deterioration slowed. *Ophthalmology* 2003;110:900-907 © 2003 by the American Academy of Ophthalmology.



The management plan of Advanced glaucoma should **IMPROVE QUALITY OF LIFE** of the patient

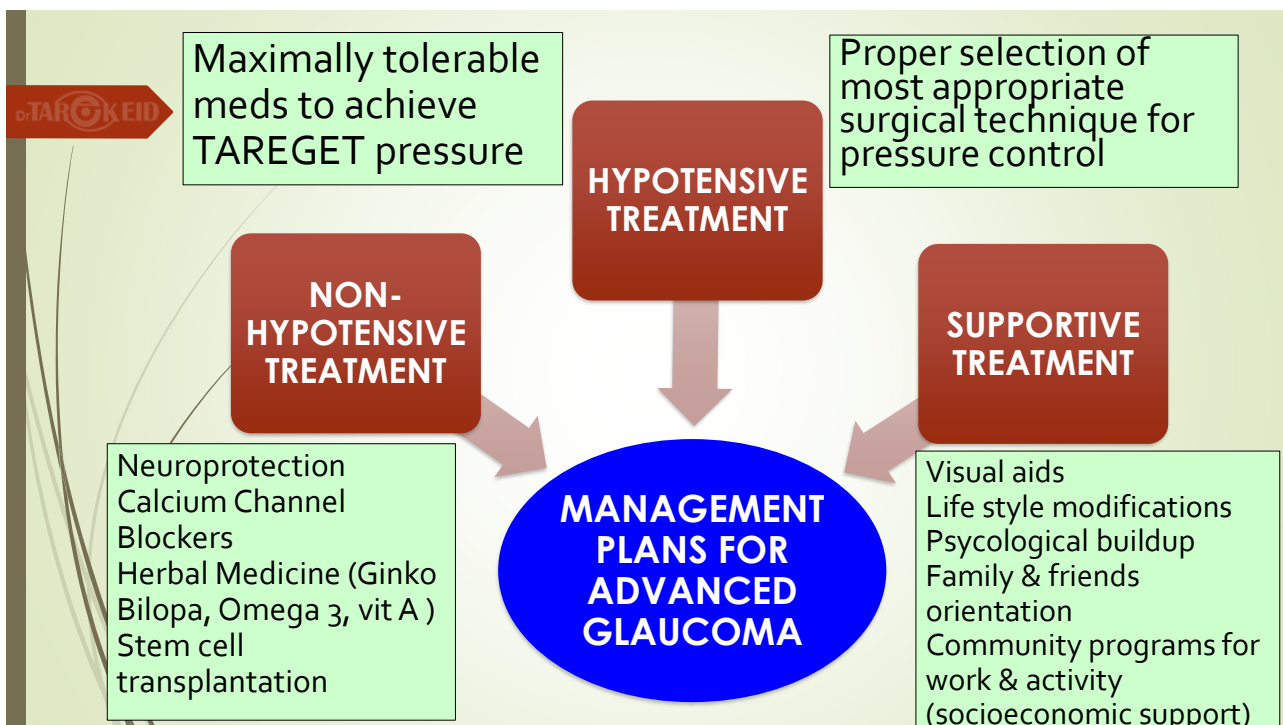
Patients always hope for further visual improvement

Doctors always hope to do no further harm to patients

■ Tarek Eid

## Intervention for pressure control requires individualization & customization of treatment plan

- **Proper Consultation** for the benefits vs risks of treatment
- Remember **Unrealistic Expectations** of patients maximize the surgeon's fear to intervene
- Remind patient that Treatment success means **pressure reduction & glaucoma control, not visual improvement**
- Due to the need for **a low target pressure**: Discuss risk of hypotony-related complications and wipe out especially if center of fixation is involved
- **The main Factors controlling treatment plan:**
  - Patient's compliance
  - rate of progression
  - eye comorbidity
  - life expectancy





## Problems during management of Advanced glaucoma

### ► The HOPE:

- A safer surgery without inducing ocular hyper- or hypotension during early postoperative period
- Controlled and persistent IOP reduction to the target level to control glaucoma and preserve eye sight



## Treatment alternatives for patients with advanced glaucoma

- **Medications:** maximum therapy, high adverse effects, high cost, compliance issue, medications for other illnesses
- **SLT, MIGS & NPDS, Visco canalostomy, canaloplasty:** safer, target pressure not reached
- **Mitomycin-trabeculectomy & Express Glaucoma shunt:** augment external filtration, can achieve target pressure but with high risk of complications
- **Aqueous shunting Sx:**
  - Nonvalved implants: high complication rate
  - Valved implants: hypertensive phase, target IOP not reached
- **Cyclodestructive Sx:** unpredictable, risk of hypotony & phthisis
- **Modified trabeculectomy techniques:**
  - **Combined visco-trab:** target IOP in the low teens



# Combined VISCO-TRAB operation for advanced glaucoma

## Combined Visco canalostomy–Trabeculectomy for Management of Far-Advanced Glaucoma: Evaluation of the Early Postoperative Course

Tarek M. Eid, MD

- BACKGROUND AND OBJECTIVE:** To study the early postoperative efficacy and safety of combined visco canalostomy with trabeculectomy (VISCO-TRAB) for treating far-advanced glaucoma.
- PATIENTS AND METHODS:** Patients with far-advanced glaucoma scheduled for glaucoma surgery were enrolled in the study. Surgery included visco canalostomy until Schlemm's canal was debrided and dilated with viscotecan, followed by penetrating corneotomies, peripheral iridectomy, and tight closure of lamellar flap. Patients with severe glaucoma who were treated with trabeculectomy only (TRAB) in the preceding year were used for comparison.
- RESULTS:** The study included 39 eyes in the VISCO-TRAB group and 40 eyes in the TRAB group. Mean intraocular pressure was significantly lower in the VISCO-TRAB group during the early postoperative period ( $P < .05$ ). The postoperative course was less successful in the VISCO-TRAB group with minimal hypotony or suture lysis-related complications.
- CONCLUSION:** During the early postoperative period, VISCO-TRAB proved efficacious and safe in reducing intraocular pressure to target levels in patients with far-advanced glaucoma.

[Ophthalmic Surg Lasers Imaging 2008;39:358-366.]

Original Article

### Combined Visco canalostomy-Trabeculectomy for Management of Advanced Glaucoma – A Comparative Study of the Contralateral Eye: A Pilot Study

Tarek M. Eid\*, Waleed A. Tantawy

**ABSTRACT**

**Purpose:** To compare combined visco canalostomy-trabeculectomy (VISCO-TRAB) to trabeculectomy (TRAB) for the management of advanced glaucoma.

**Materials and Methods:** The study cohort comprised of 18 patients with bilateral advanced glaucoma who underwent VISCO-TRAB surgery (VISCO-TRAB group) in the right eye and TRAB (TRAB group) in the left eye. VISCO-TRAB consisted lamellar scleral flap, deep scleral flap, ablation with diode laser of Schlemm's canal (SC), visualization of EC, penetrating iridectomy, peripheral iridectomy, and tight flap closure. All eyes received visco canalostomy. Primary criteria included intraocular pressure (IOP) = 14 mmHg or > 30% lowering of IOP with no increasing medications. A P value less than 0.05 was considered statistically significant.

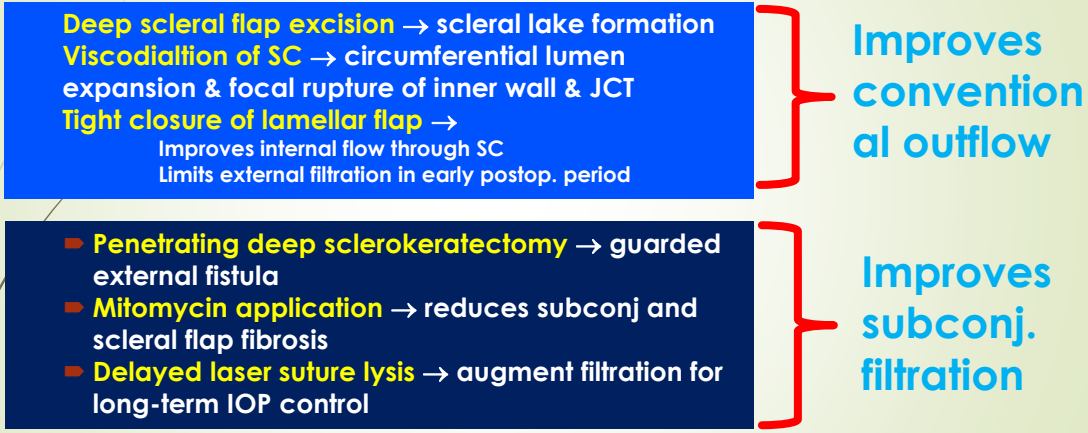
**Results:** Mean IOP was significantly lower after VISCO-TRAB compared to TRAB at 1 week and 3 months postoperatively (P<0.05). No eye lost more than two lines of best-corrected vision. There were more hypotony-related complications after TRAB than VISCO-TRAB surgery. Target IOP was achieved in 83.3% in the VISCO-TRAB group compared to 66.6% in the TRAB group.

**Conclusion:** Combined VISCO-TRAB is effective in reducing IOP to the target level for advanced glaucoma with fewer postoperative complications.

**Key words:** Advanced Glaucoma, Trabeculectomy, Visco canalostomy, Visco canalostomy-Trabeculectomy



# Dual Mechanism of Action of Combined VISCO-TRAB operation

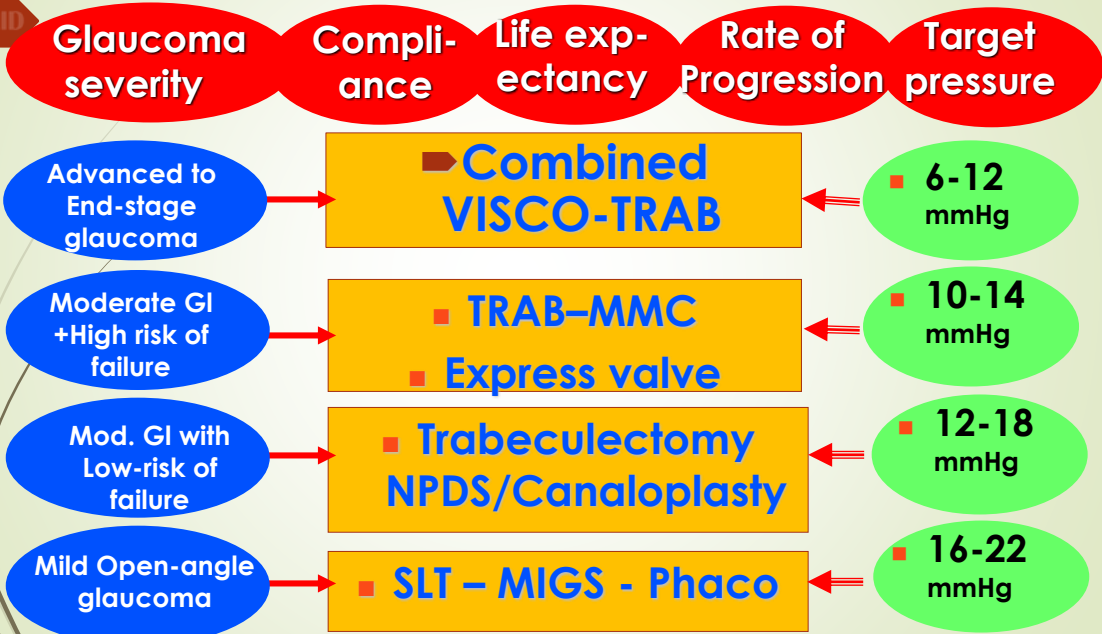


- ❑ Tarek Eid, MD. *Ophthalmic Surg, Lasers, & Imaging*. 2008;39:358-366
- ❑ Tarek Eid, Waleed Tantawy. *Middle East African J Ophthalmology (MEAJO)* 2011; 18(4):292-7

## Combined VISCO-TRAB op for advanced glaucoma



## Factors affecting choice of Glaucoma Filtering Surgery



**DONATE A MINUTE OF YOUR TIME  
TO GIVE YOUR PATIENT WITH  
ADVANCED GLAUCOMA  
SUPPORT , EMPATHY & HOPE  
THAT TREATMENT CAN IMPROVE  
QUALITY OF THEIR LIFE**

**THANK YOU  
TAREK EID**

Dr. TAREK EID