



Factors Influencing the Outcome of Goniotomy and Trabeculotomy in Primary Congenital Glaucoma

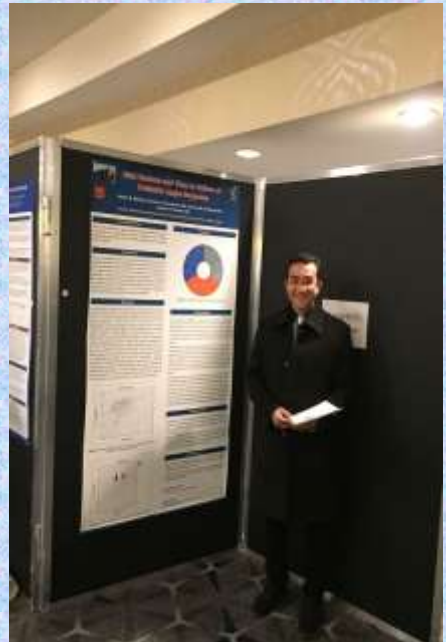
(Nader Momtaz, MSc, Yasmine El Sayed, MD, Amanne Esmael, MD, Ghada Gawdat, MD, Zeinab El Sanabary, MD)

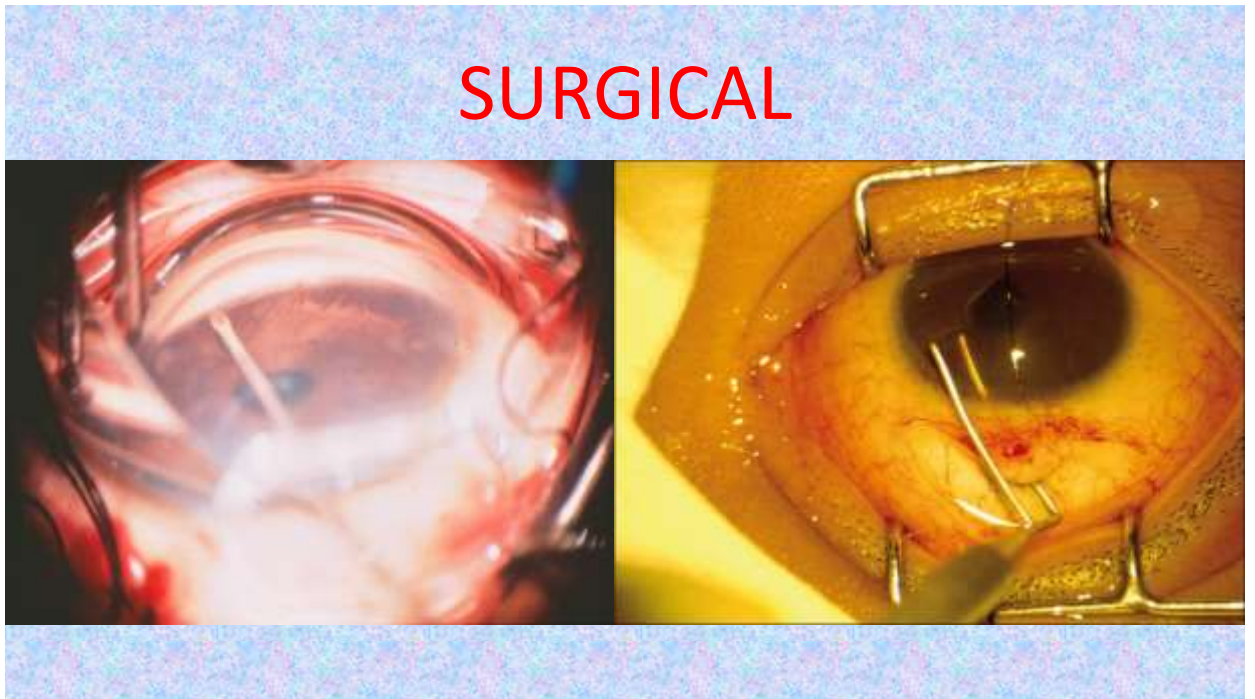
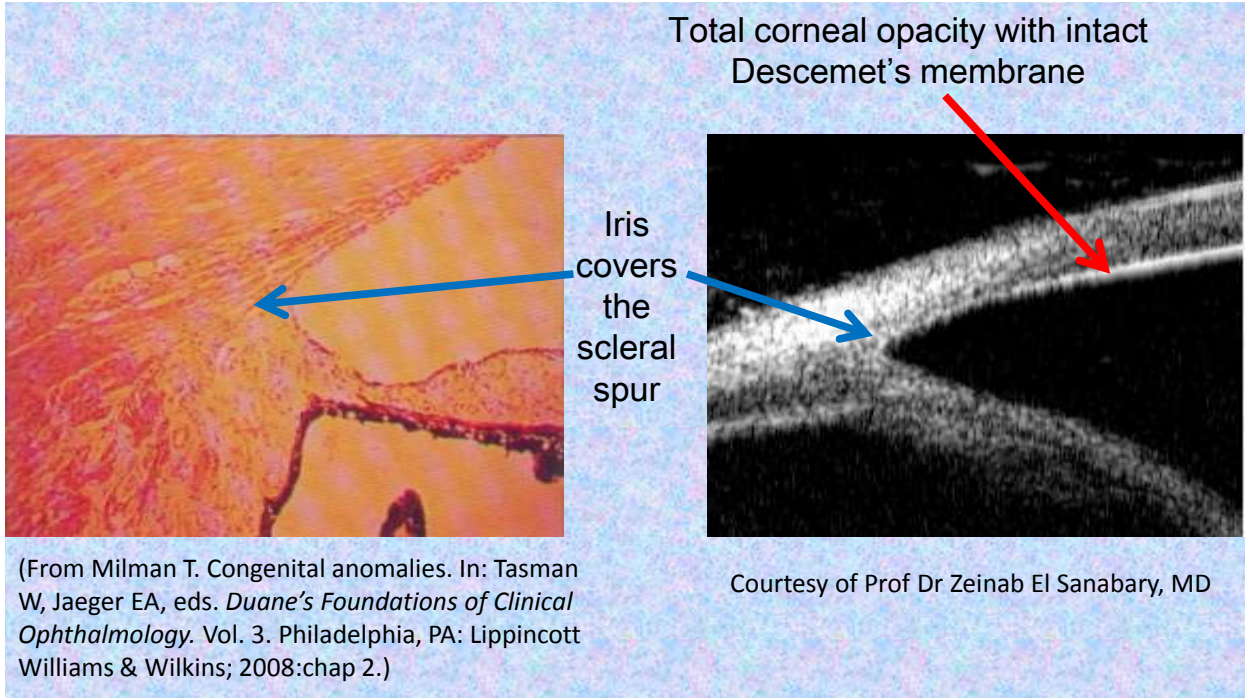
by

Nader Momtaz, MSc.

(Air Defense House- Nozha, Nasr City, 17-19/10/2018)

The study was presented as a poster at the **AAPOS meeting, Washington DC, March 2018.**





Risk factors

- Corneal diameter Barkan (1953)
- Higher IOP
- Family history Lister (1966)
- Females
- Early age at presentation Shaffer (1982)
- Middle Eastern race Elder (1993)

Correlations

- | | | |
|------------|----------------------|----------------------------------|
| • Shaffer | <u>Goniotomy</u> | Age: <1 month and >2 years |
| • Quigley | <u>Trabeculotomy</u> | HCD: >14 mm |
| • Dietlein | <u>3 surgeries</u> | Age: <3 months and AXL >24 mm |
| • Levy | <u>4 surgeries</u> | Initial IOP and CD ratio |
| • Yalvac | <u>Trabeculotomy</u> | AXL: >22 mm |
| • Bowman | <u>Goniotomy</u> | Female gender |
| • Fieß | <u>Goniotomy</u> | Preop IOP, CD ratio and >2 years |

Classification used for PCG by Al-Hazmi, et al (2005)

Severity	IOP (mmHg)	Corneal diameter (mm)	Corneal clarity
Mild	<25	<13	Good
Moderate	25-35	13-14.5	Fair
Severe	>35	>14.5	Poor

Classification used for PCG by Al-Hazmi, et al (2005)

Severity	Goniotomy	Trabeculotomy
Mild	81 %	90 %
Moderate	13 %	40 %
Severe	—	10 %

Aim of work

- To study prognostic factors influencing intraocular pressure (IOP) reduction and success rates of pediatric goniotomy and trabeculotomy.

(help in the proper selection of the type of intervention)

Methods

- Retrospective review
- Patients aged ≤ 12 years
- January 2013-January 2016
- Minimum of 6 months follow-up
- Pediatric ophthalmology department of Cairo University Hospital (Abureish Hospital)

Methods

- Multivariate linear regression analysis was used to predict the correlation of preoperative and operative risk factors to the percent IOP reduction
- Multivariate logistic regression was done to detect independent predictors of failure.
- Failure was defined as a final IOP > 18 mmHg on medications or the need for another glaucoma procedure.

Results

452 eyes (303 patients) met the inclusion criteria and were distributed as follows:

120 eyes (88 patients) underwent goniotomies (9.4 ± 11.4 months)

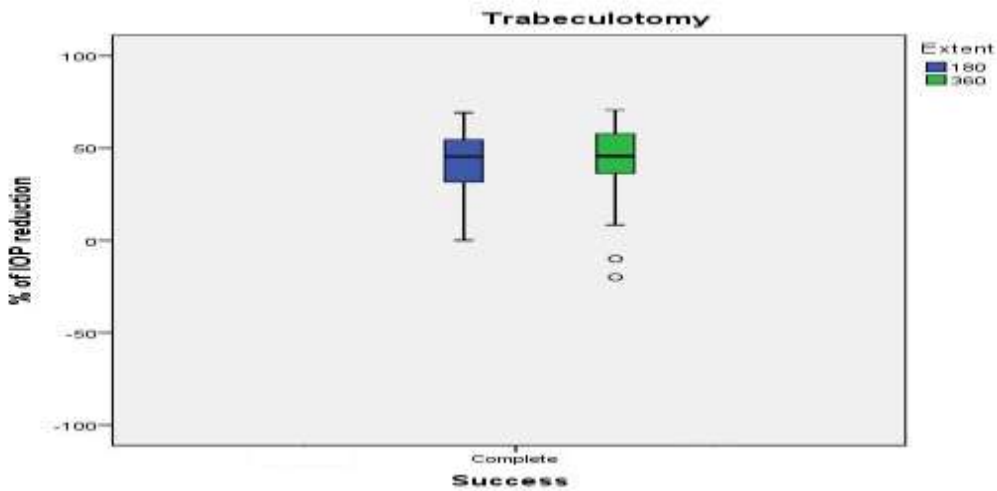
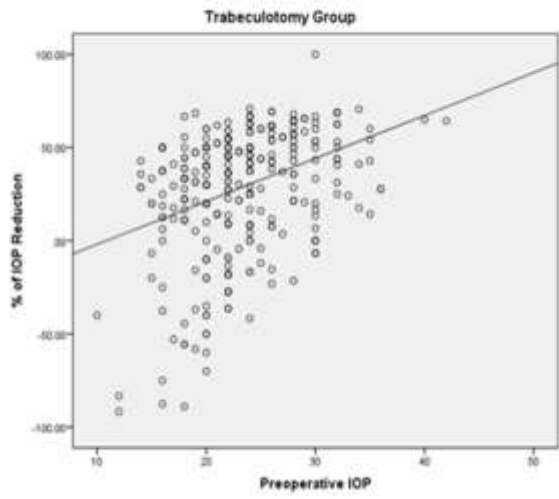
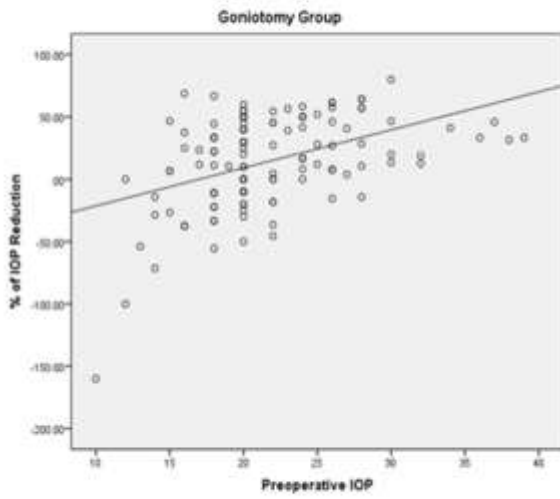
332 eyes (215 patients) underwent trabeculotomies (9.1 ± 13.1 months)

Goniotomy (120 eyes)

- Mean percentage of IOP reduction was 14.7 ± 37.5 % and was significantly correlated with high initial IOP ($p = <0.001$)

Trabeculotomy (332 eyes)

- Mean percentage of IOP reduction was 28 ± 33 % and was mostly influenced by
preoperative IOP ($p = <0.001$)
extent of trabeculotomy ($p = 0.003$)
corneal clarity ($p = 0.04$)
gender ($p = 0.04$)
consanguinity ($p = 0.03$)



Highly significant IOP reduction in 360° vs 180° ($p = 0.003$)
 (Sarkisian, 2010)

	Goniotomy		Trabeculotomy	
	Correlation with % IOP reduction	Correlation with failure rate	Correlation with % IOP reduction	Correlation with failure rate
Parameter	P-value	P-value	P-value	P-value
Gender	0.64	0.44	0.01	0.002
Consanguinity	0.29	0.42	0.001	<0.001
Family history	0.82	0.46	0.02	0.12
Previous surgery	0.96	0.5	0.06	0.36
Laterality	0.21	0.72	0.03	0.003
Age at presentation	0.32	0.56	<0.001	<0.001
Age at surgery	0.1	0.26	<0.001	<0.001

	Goniotomy		Trabeculotomy	
	Correlation with % IOP reduction	Correlation with failure rate	Correlation with % IOP reduction	Correlation with failure rate
Parameter	P-value	P-value	P-value	P-value
Time from presentation to surgery	0.68	0.97	0.3	0.21
Preoperative IOP	<0.001	0.08	<0.001	0.003
Preoperative C/D ratio	0.14	0.03	0.49	0.75
Preoperative corneal diameter	0.64	0.16	0.63	0.64
Extent	--	--	0.004	0.001
Corneal clarity	--	--	0.001	0.02

Cup-to-disc ratio:

In the *goniotomy group*, 20 eyes (16.7 %) showed reduction in cupping by at least 0.2

In the *trabeculotomy group*, reduction of the cup-to-disc ratio by at least 0.2 was seen in 62 eyes (32% of eyes in eyes in which the disc was seen both pre- and postoperatively) ($p = 0.0007$)

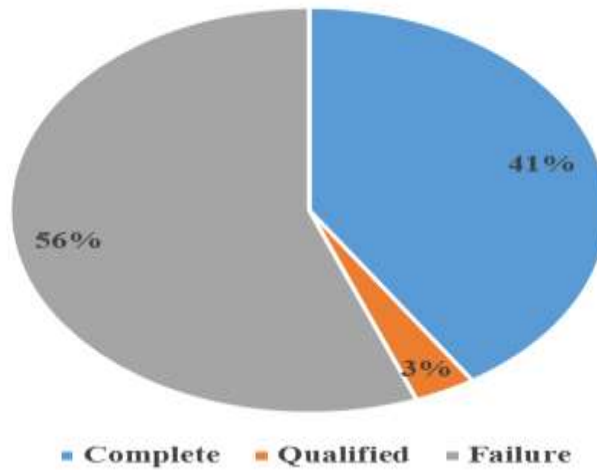
Cornea Clarity:

In the *trabeculotomy group*

Preop 199 eyes Vs Postop 281 eyes

Goniotomy (120 eyes)

Success



Goniotomy (120 eyes)

Follow-up duration:

- Mean = 9.36 ± 9.05 m (range= 0.33 - 40.57 m)

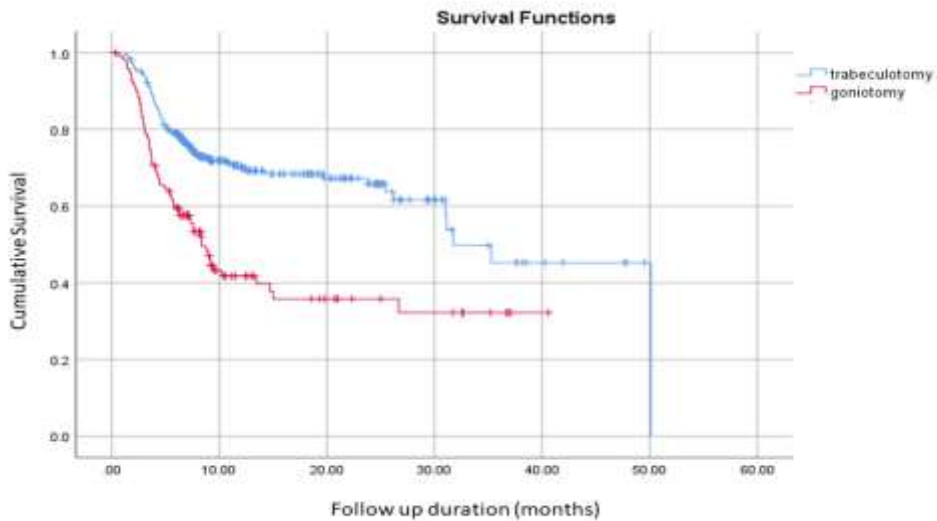
Trabeculotomy (332 eyes)



Trabeculotomy (332 eyes)

Follow-up duration:

- Mean = 11.61 ± 9.39 m (range= 1.17-50.13 m)



The survival time for *trabeculotomy* was significantly longer than *goniotomy* ($p < 0.001$)

Conclusion and recommendations

- Identification of risk factors associated with poorer outcome in pediatric angle surgery can help in guiding the choice of surgery.
- Initial IOP and cup-to-disc ratio influenced the outcome in goniotomy.

- Earlier manifestation, initial IOP, positive consanguinity and female gender were the most important predictors of final outcome in trabeculotomy.
- Both procedures achieve a success rate similar to that previously reported in other patient populations, with trabeculotomy having a higher success rate and longer survival than goniotomy.
- Success in trabeculotomy is higher when the extent of the incision is bigger.

Thank
you