COMINED TRABECULECTOMY & TRABECULOTOMY VS DEEP SCLERECTOMY IN CONGENITAL GLAUCOMA

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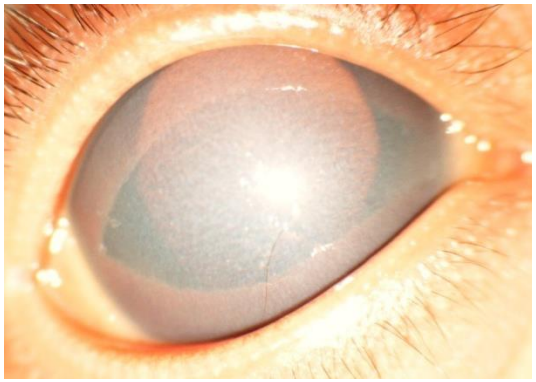
SAUDI ARABIA

INTRODUCTION



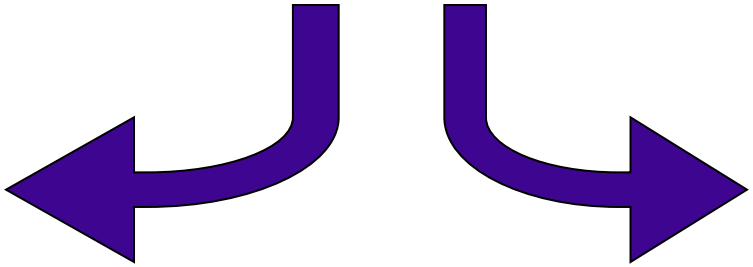
- Congenital glaucoma is a challenging , potentially blinding disease ,which is often refractory to medical treatment

  Morad et al. Ophthalmol 2003

- Treatment is typically surgical ,unlike adult glaucoma management where medications are usually initiated before moving on to surgical treatment

  Englert et al. BJO 1999

CONGENITAL GLAUCOMA



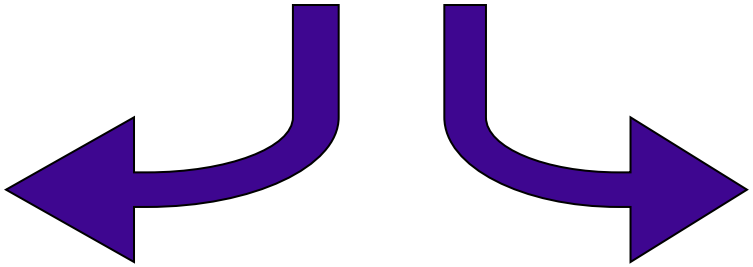
PRIMARY

Maldevelopment of the aqueous outflow system without associated systemic &/or predisposing factors

SECONDARY

Damage to the aqueous drainage system due to maldevelopment of other portions of the eye or the body

PATHOGENESIS



PRIMARY

- Isolated trabeculodysgenesis
- No other ocular anomalies
- No systemic association
- No associated syndromes

SECONDARY

- Iridotrabeculodysgenesis
- Corneotrabeculodysgenesis
- Systemic
- Syndromes

GONIOTOMY:

- Described by Barkan in 1936
- Incise through the trabeculum to remove obstructing tissue
- Need a clear view to the angle. So, it is not indicated in corneal haze & almost 50% will be excluded

Barkan et al. Am J Ophthalmol 1936

TRABECULOTOMY:

- Described by Burian & Smith in 1960
- The Schlemm's canal is cannulated externally & a tear is made through the TM to the anterior chamber. But the canal is not found in 11-15% of procedures

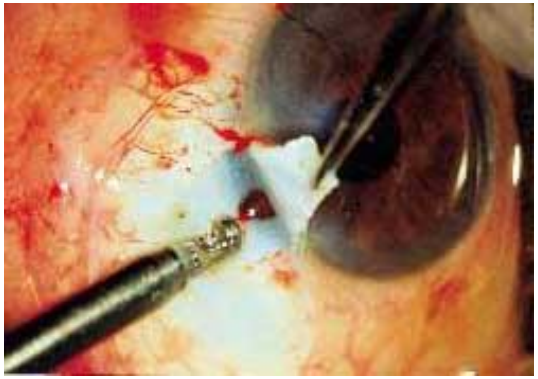
Harms et al. Trans Ophthalm Soc 1970

- Corneal clarity is not much needed as in goniotomy

Burian et al. Am J Ophthalmol 1960

Smith et al. BJO 1960

TRABECULECTOMY:



- Described in 1967
- Had a limited success in pediatric glaucoma patients of 37% to 85% depending on patients population & series

  Englart et al. JAAPOS 1999

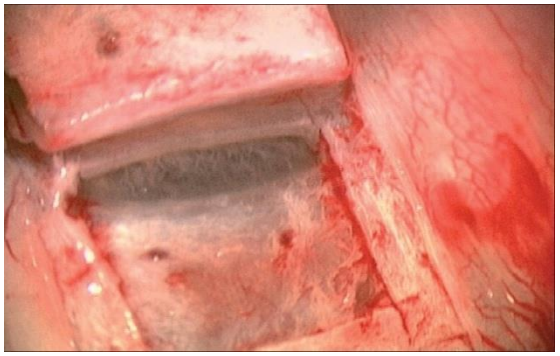
- MMC was introduced in 1983, but it's application was not popular until 1991. Since that time, it increased the success rate of trabeculectomy of 67% - 100%

  Beck et al. JAAPOS 2003

COMBINED TRABECULECTOMY & TRABECULOTOMY:

- Add the advantage of direct inflow of aqueous to the Sclemm's canal by trabeculotomy + the subconjunctival outflow by trabeculectomy

DEEP SCLERECTOMY:

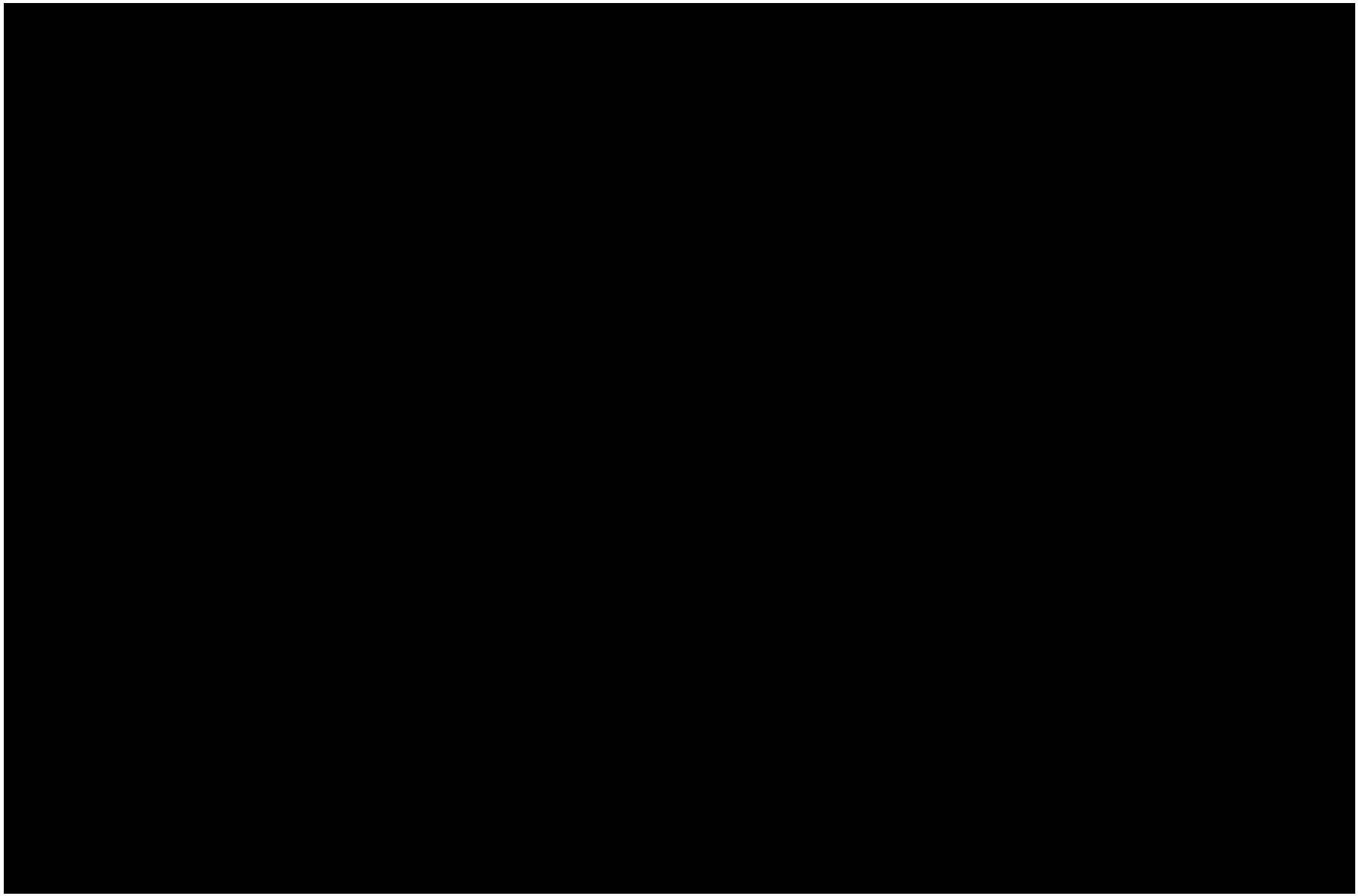


- In the 1980s, Fyodorov, Kozlov & Zimmerman modified the NPGS to have a scleral flap with the excision of portion of the Schlemm's canal

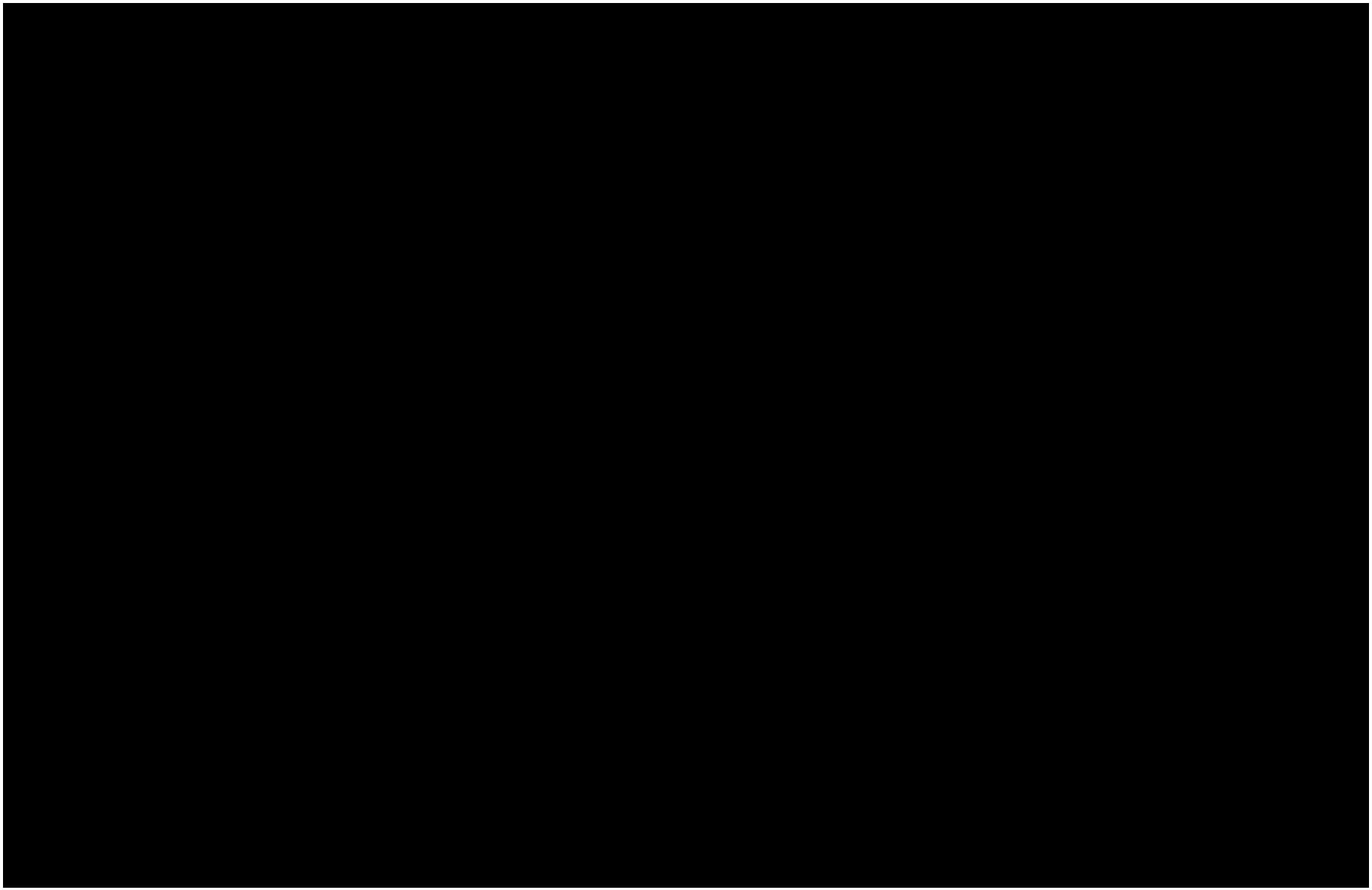
  Zimmerman et al. Ophthalm. Surg 1984

- Had a similar success rate to conventional surgeries with lower rates of intraoperative & postoperative complications

CTT

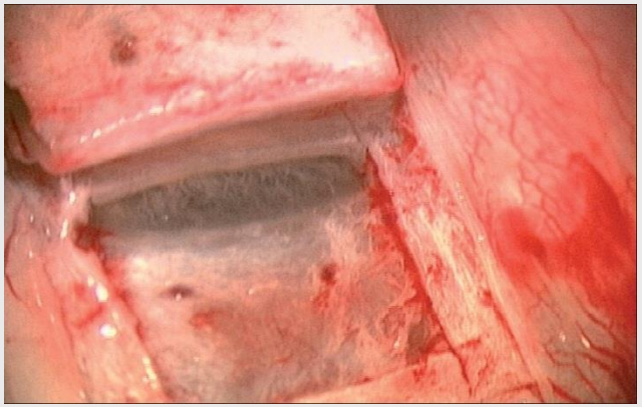


DEEP SCLERECTOMY



SURGICAL MANAGEMENT FOR CONGENITAL GLAUCOMA IN KAUH

DEEP SCLERECTOMY



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ALTHOUGH DEEP SCLERECTOMY HAS SHOWN CONSIDERABLE SUCCESS RATES IN CONGENITAL GLAUCOMA, THERE IS STILL A DEBATE ABOUT IT'S COMPARABILITY TO TRADITIONAL COMBINED PROCEDURE. WE STILL NEED A CONCRETE EVIDENCE ABOUT SUCH UNCERTAINTY AS LITTLE IS KNOWN ABOUT COMPARING BOTH PROCEDURES IN A CLINICAL TRIAL DESIGN

COMINED TRABECULECTOMY & TRABECULOTOMY VS DEEP SCLERECTOMY IN CONGENITAL GLAUCOMA

CTT VERSUS DEEP SCLERECTOMY IN CONGENITAL GLAUCOMA

Purpose:

- To compare the efficacy & safety of combined trabeculectomy + trabeculotomy & deep sclerectomy as a first procedure in congenital glaucoma
- To detect different types of complications in both groups
- To improve the guidelines for management of congenital glaucoma

Design: Ongoing prospective comparative study.

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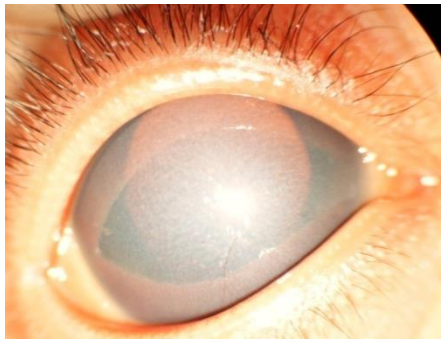
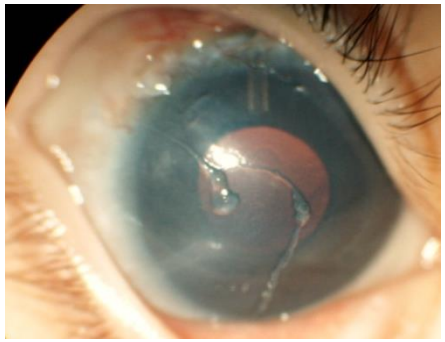
Inclusion criteria were:

- Congenital glaucoma
- Vergin eyes
- Complete 6 months of regular follow-up



Exclusion criteria were:

- Previously operated eyes
- incompliance with follow-up



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CRITERIA FOR SUCCESS:

Complete success:

- IOP ≤ 21mmHg without antiglaucoma medications.
- No additional glaucoma surgeries.
- No visually devastating complications.

Qualified success:

- IOP ≤ 21mmHg with antiglaucoma medications.

Failure:

- IOP > 21mmHg for 2 follow-ups despite antiglaucoma medications.
- Needed further glaucoma surgery.
- Developed visually devastating complications.

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METHODS :

- The majority of congenital glaucoma cases presented with a bilateral disease
- One of the two procedures : deep sclerectomy or Combined trabeculectomy & trabeculotomy was randomly assigned to the first operated eye
- Pre & postoperative demographic & clinical data was collected after filling a formal consent by the patient parents/guardian

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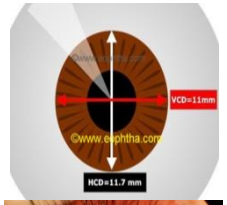
MAJOR OUTCOME MEASUREMENTS:

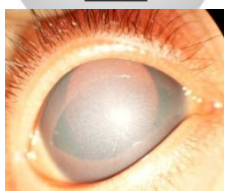
- Reduction in IOP
- Reduction in the Haze scale
- Reduction in the number of antiglaucoma medications
- Improvement (if any) in the cup/disc ratio
- Improvement (if any) in the corneal diameter
- Difference in the success rates & complications

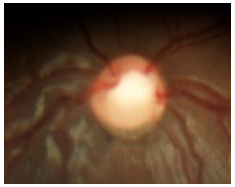
CTT VERSUS DEEP SCLERECTOMY IN CONGENITAL GLAUCOMA

SAMPLE DESCRIPTION:

- 28 eyes of 14 patients
- 8 (57.1%) males & 6 (42.9%) females
- Mean age at surgery 45.4 days (±54), range (3days – 5months)
- Mean follow-up was 8.4 months (±4.3), range (3 -14.4)
- 5 (35.7%) had family history of glaucoma
- 1 (7.1%) had Haab's striae

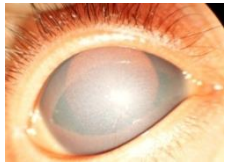
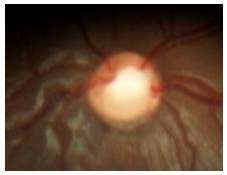




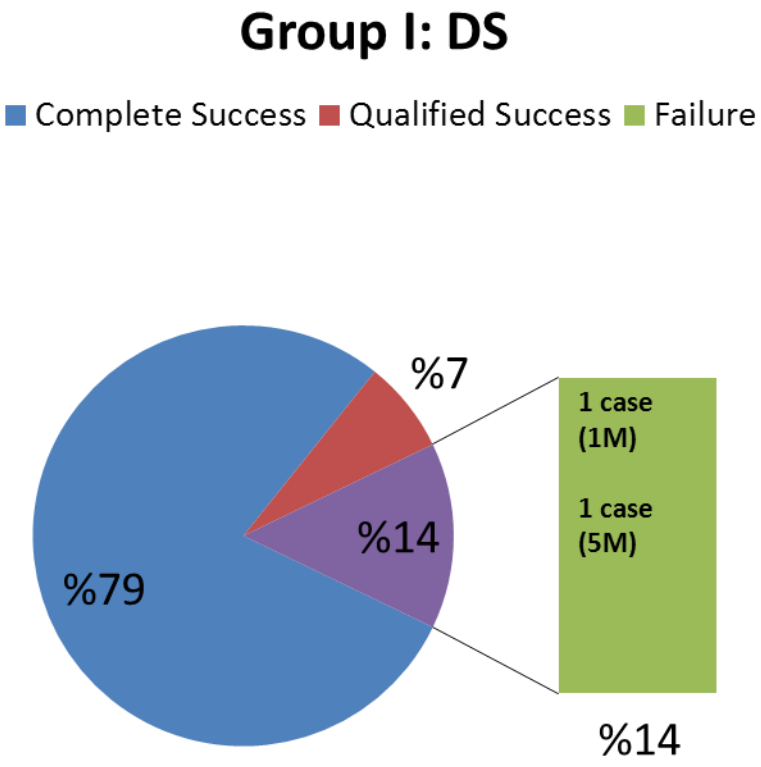


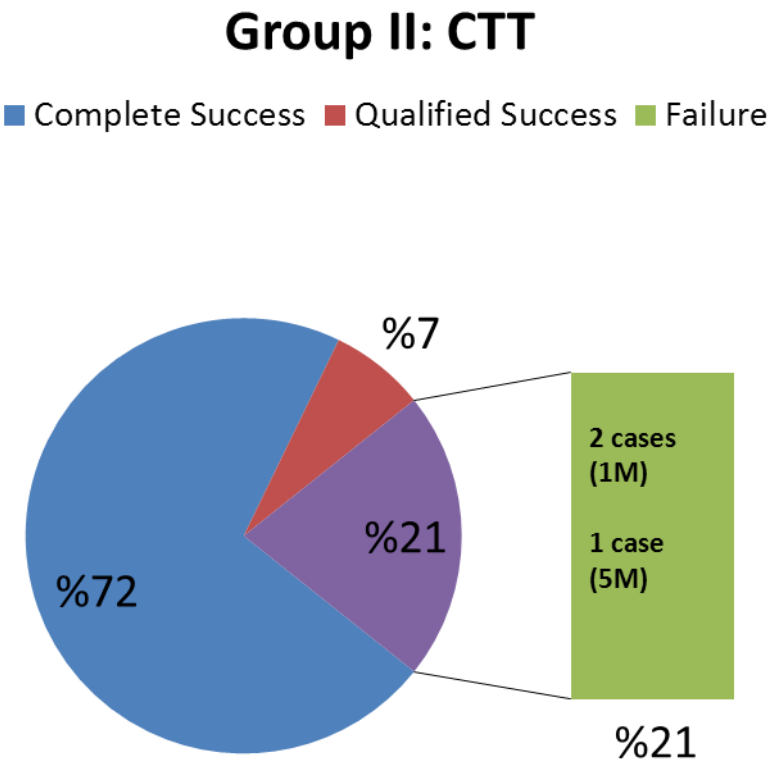
INDEX	Group 1 (DS) MEAN (±SD)	GROUP 2 (CTT) MEAN (±SD)	P VALUE
PREOP. IOP	30.3 (±5.8)	29.6 (±6.1)	0.7
HCD	12.6 (±0.9)	12.1 (±1.2)	0.206
PREOP. HAZE	2.2 (±0.9)	1.9 (±0.9)	0.501
PREOP. C/D RATIO	0.71 (±0.5)	0.58 (±0.5)	0.500
CORNEAL THICKNESS	667 (±231)	579 (±414)	0.513
# OF MEDICATIONS	1.9 (±0.7)	1.8 (±0.7)	0.909

RESULTS

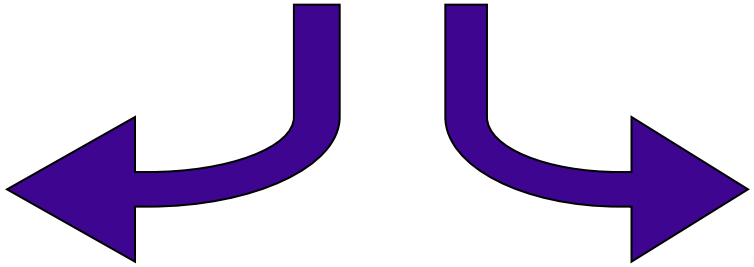
INDEX		GROUP 1 : DS			GROUP 2 : CTT		
		PREOP	POSTOP	P VALUE	PREOP	POSTOP	P VALUE
	IOP	30.3(±5.8)	18.5(±7.5)	0.006	29.6(±6.1)	19.9(±11)	0.016
	DEGREE OF HAZE	2.2(±0.9)	0.57(±0.85)	0.002	1.9(±0.9)	0.67(±0.9)	0.002
	C/D RATIO	0.71(±0.5)	0.46(±0.52)	0.113	0.58(±0.5)	0.55(±0.5)	0.987
	# OF MEDS	1.9(±0.7)	0.38(±0.96)	0.005	1.8(±0.7)	0.64(±1.1)	0.026

RESULTS


Group I: DS
Complete Success
Qualified Success
Failure
%7
%14
%79
1 case
(1M)
1 case
(5M)
%14


Group II: CTT
Complete Success
Qualified Success
Failure
%7
%21
%72
2 cases
(1M)
1 case
(5M)
%21

POSTOPERATIVE COMPLICATIONS

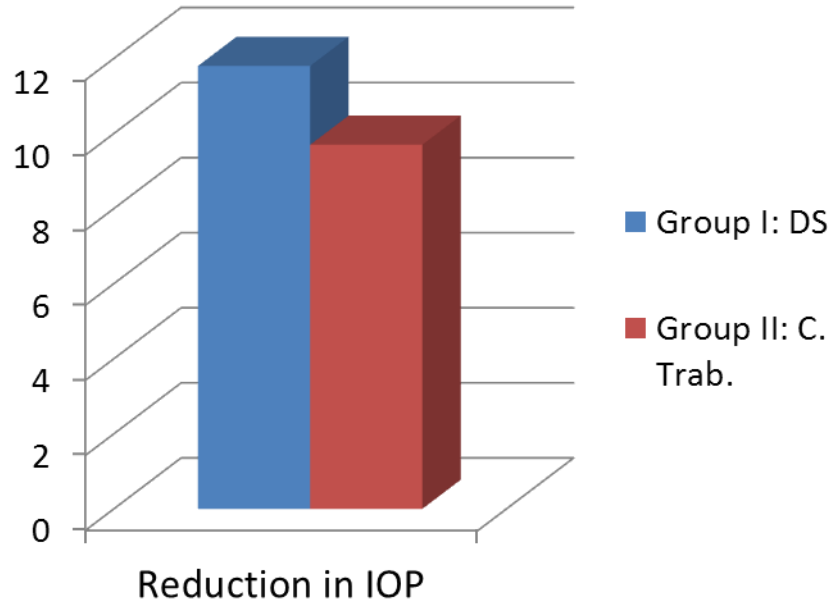


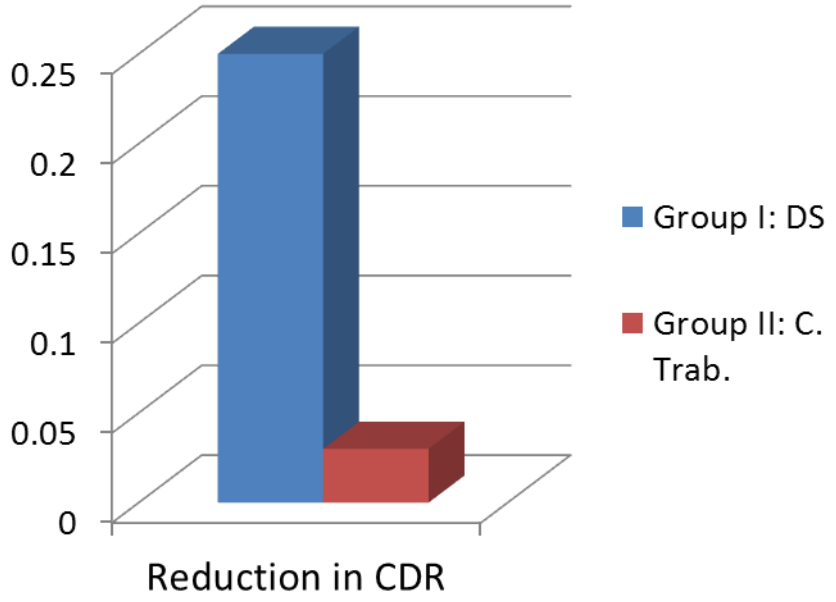
DS

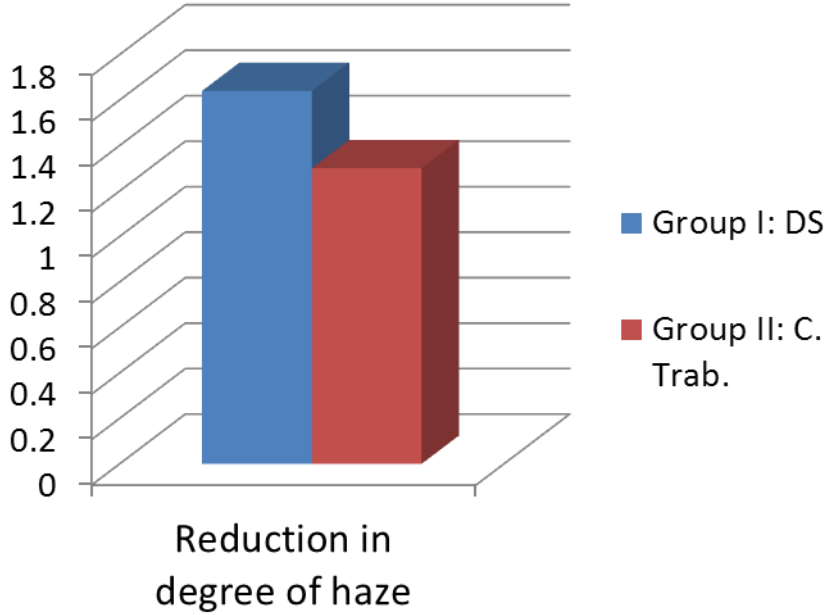
- No complications

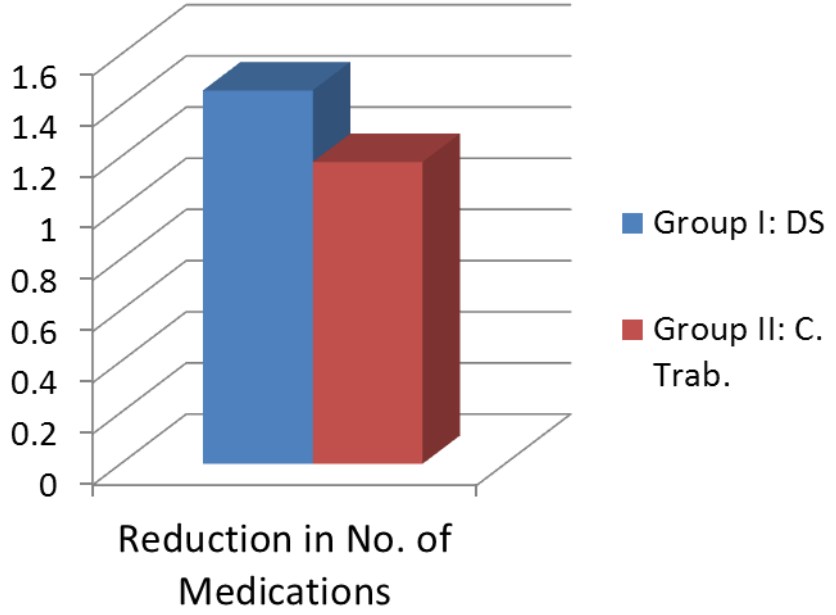
CTT

- Induced cataract (1)
- Vitreous loss (1)
- Zonular dialysis (1)
- Hyphema (3)
- Shallow chamber (5)


12
10
8
6
4
2
0
Group I: DS
Group II: C. Trab.
Reduction in IOP


0.25
0.2
0.15
0.1
0.05
0
Group I: DS
Group II: C. Trab.
Reduction in CDR


1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Group I: DS
Group II: C. Trab.
Reduction in degree of haze


1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Group I: DS
Group II: C. Trab.
Reduction in No. of Medications

RESULTS

VARIABLE	GROUP 1 : DS	GROUP 2 : CTT	P VALUE
COMPLETE SUCCESS RATE	78.6%	71.4%	0.997
OVERALL SUCCESS RATE	85.7%	78.5%	0.997
RATE OF COMPLICATIONS	0%	36.5%	0.044
REDUCTION IN IOP	11.8 (±9.5)	9.7 (±11.8)	0.536
REDUCTION IN C/D RATIO	0.25 (±0.33)	0.03 (±0.34)	0.338
REDUCTION IN HAZE	1.6 (±1.2)	1.3 (±0.8)	0.171
REDUCTION IN # OF MEDICATIONS	1.5 (±1.3)	1.2 (±1.4)	0.212

DISCUSSION

- There was no difference in the IOP reduction in both groups as well as the complete & overall success. But the rate of complications was zero in the deep sclerectomy group compared to 36.5% in the combined TT group

- Denis et al reported a success rate of 82% in deep sclerectomy in a 38.2 months follow-up *J Fr Ophthal 2008*

- Mullaney et al reported 78% success rate in 49 eyes in combined trabeculectomy & trabeculotomy which is comparable to our results *Archive Ophthalm 1999*

DISCUSSION

- Al Hazmi et al reported 75% success rate at the end of 20 years follow-up in 85 patients (148 eyes) *BJO2005*

- In our study, complications were observed in the combined group (36.5%) & mostly was shallow chamber followed by hyphema

- Al Hazmi et al & Dietlein et al reported the same rate of complications in combined surgery but with more devastating outcome *Ophthalmology 1998 – BJO 1999*

DISCUSSION

- The safety profile of deep sclerectomy seems to exceeds combined trabeculectomy & trabeculotomy as proven in our results with the same IOP reduction

- Roche et al reported a success rate of 83% in22.8 months follow-up *Opthalmology 2007*

- Trixier et al reported 75% success rate in 10 months follow-up which is comparable to out study *J Fr Ophthalm 1999*

CONCLUSION

- The safety profile of deep sclerectomy seems to exceeds combined trabeculectomy & trabeculotomy

- The pressure reduction is almost the same in both deep sclerectomy & the combined tabeculectomy & trabeculotomy groups

- Long term follow-up in needed to assess the outcome of both procedures


Thank you