novel technique to enhance the survival of trabeculectomy in primary congenital glaucoma

By

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- Primary congenital glaucoma (PCG) is a disease with a diagnostic and therapeutic challenge to ophthalmologists. Trabeculectomy with MMC is still the gold standard and most frequently performed
- Mitomycin C is an antineoplastic/antibiotic agent act as DNA cross-linker, which inhibits fibroblast proliferation. And hens it has modulatory effects on wound healing.
- Its bleb has a characteristic white thin avascular appearance

MMC complications : exposure may resultant in

- corneal epithelial toxicity.
- over filtration ⟹ choroidal detachment
- hypotony maculopathy ⟹ reduced visual acuity.
- late bleb leaks, bleb infections ⟹ endophthalmitis.

So we tried to modify the trabeculectomy operation aiming to gain the same or biter results as MMC trabeculectomy but without the use of MMC

Patients included

* 50 eyes of 50 patients diagnosed as primary congenital glaucoma
* Patients were assigned into two groups,(25eyes) each
* The 1st group (group I) treated by newly modified trabeculectomy operation
* The second group (group II) standered mitomycin C augmented trabeculectomy(0.4mg/ml) and served as a control group

The new modification on trabeculectomy

The edges of the scleral bed were trimmed using fine Vanas scissors after suturing of the scleral flab , this is done for the three edges of the scleral bed beside the flap allowing free fluid exit from the eye to the subconjunctival space

The MMC augmented trabeculectomy

involve inta-operative application of MMC (0.4mg/ml) using a sponge soaked with it and put under the scleral flab and extend d to the adjacent sub conjunctival area –kept in place for 3min then removed and the area was copiously irrigated by 50 ml BSS

Criteria of success

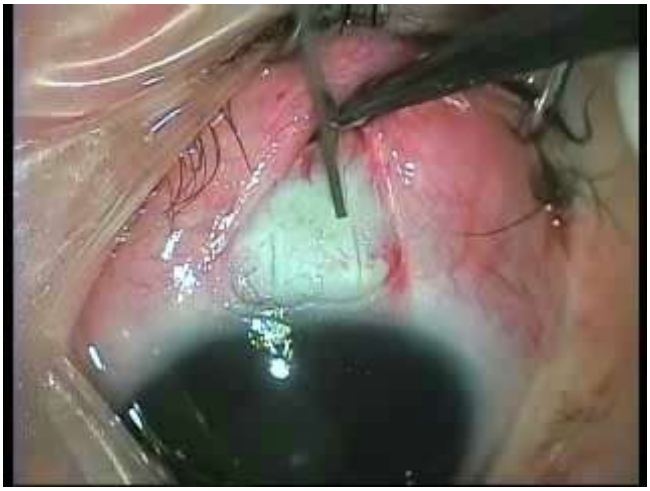
complete success

was defined as IOP equal to or less than 21 mmHg and equal to or greater than 5 mmHg without antiglaucoma medications or additional glaucoma surgery and without visually devastating complications such as endophthalmitis or phthisis bulbi and no loss of light perception.

Qualified success

was considered when the above criteria were fulfilled but with the administration of anti-glaucoma topical treatment.

Video



The benefits of this modification

creation of three pockets of free fluid exit at each side of flab

space separation between the edges of scleral flab and the edges of its bed

retard healing in the early postoperative period until the bleb is established

enhancement of the survival of trabeculectomy opening

Results:

Table (1); Demographic data of the patients

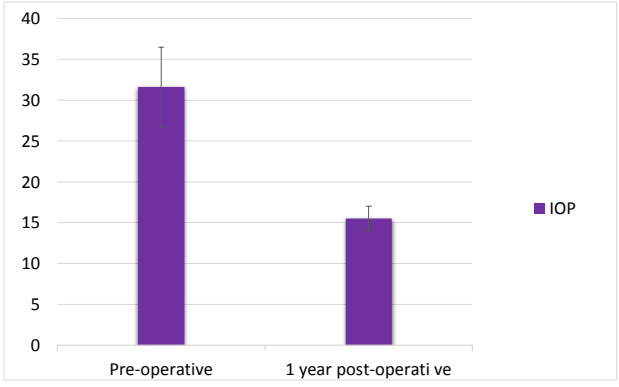
	Modif trab	MMC trab	Sig test	P value
No of pt	25	25		
No of eyes	25	25		
Age mean±sd (m) Rang	2.4 ± 0.5 2.5-6 m	2.5 ± 0.4 1.5 – 4.5 m	0.78*	0.44
Gender Male Female	 12 13	 14 11	0.32#	0.57
Preoperative primary cong. gl	25	25	--	
Preop. IOP (mean ±SD)	31.6 ± 4.9	32.1 ± 4.0	0.395*	0.69
Preop. Corneal diameter (mean ±SD)	12.5 ± 1.5	13. ± 1.2	1.3*	0.199

Table (2) Surgical success of both groups

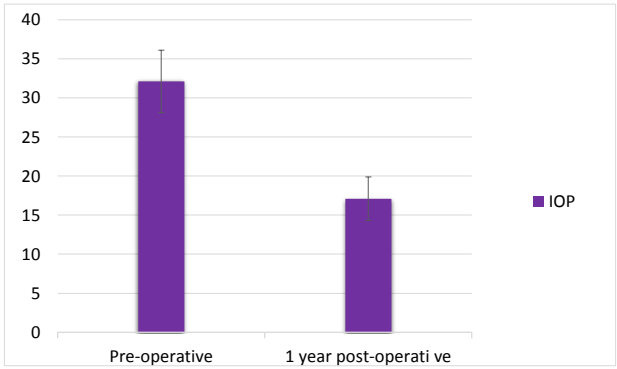
groups	Complete success		Qualified success		Failure		Total	
	No	%	No	%	No	%	No	P
Group 1	19	76	2	8	4	16	25	0.46
Groups II	17	68	5	20	3	12	25	
Total	36	72	7	14	7	14	50	
(chi-sq. test) P value	(0.397#) 0.53		(1.5#) 0.22		(0.166#) 0.68			

Table (3): Show the mean IOP level preoperative and post operative visits of follow up:

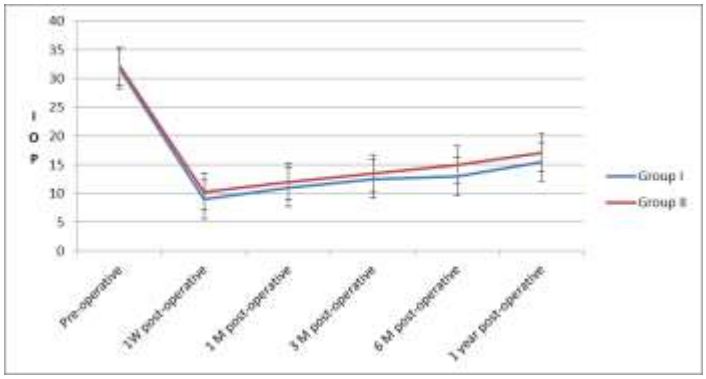
	Pre op Iop X ± SD	1w post op X ± SD	1m Iop X ± SD	3m Iop X ± S	bm^{Iop} X ± SD	Iop^{1year}
Group I P	31.6 ± 4.9	9 ± 1.0	11 ± 3.2	12.5 ± 0.9	13 ± 2.9	15.5 ± 1.5
Group II P	32.1 ± 4.0	10.3 ± 1.2	12 ± 2.5	13.5 ± 1.7	15 ± 1.5	17.1 ± 2.8
t-test	0.395	3.86	3.18	4.3	3.4	4.04
P	0.69	<0.001*	0.002**	<0.001*	0.002**	<0.001*



difference in IOP among patients of group I pre-operative and 1 year post-operative.



difference in IOP among patients of group II pre-operative and 1 year post-operative.



Difference in IOP among both groups pre- and post-operative.

Table (4): The complications encountered in the two studded group

	Group I 25 eyes		Group II 25 eyes		Total		(chi-sq.) P value
	No	%	No	%	No	%	
Operative:							
hyphema	1	4	2	8	3	6	(0.35) 0.55
Early postoperative:							
Shallow ac	3	12	2	8	5	10	(0.22) 0.64
Choroidal effusion	1	4	1	4	2	4	------
Late postoperative:							
Drown up pupil	1	4	--	0.0	1	2	(0.16) 0.69
high IOP>21 e ttt	4	16	2	8	6	12	(0.76) 0.38
infection& no PL	--	0.0	1	4	1	2	(0.16) 0.69

Conclusion and recomendations

***It enhanceent of the survival of trabeculectomy opening**

***By this method the tension on scleral sutures is of no value as the aqueous find its way to the subconjunctival space without the need to loosen one or two of the sutures which cannot be standardized**

***The results were at least as MMC trabeculectomy but without the fear of MMC complications.**

***No added cost to the operation.**

***We invite glaucoma surgeon to use this technique as an alternative to MMC when it is indicated in trabeculectomy.**

THANK YOU