Thirty (30) patients, 12 (40%) male and 18 (60%) female were included in this study (table 1& fig. 15). . Mean age of the patients was 52.07(± 7.06), with a range of 40-65 years (table 1& fig. 16).

As regards to the type of the glaucoma, 20 (66.7%) cases were primary open angle glaucoma (POAG), 4 (13.3%) cases were psedoexfoliation glaucoma (PEX), 3 cases (10%) were chronic angle closure glaucoma (CACG) and 3 (10%) cases were neovascular glaucoma(table 1& fig. 17).

13 eyes had preoperative surgical interventions (9 cases had done trabeculectomy, 2 cases had done trabeculectomy with mitomycin-c and 2 cases had done trabeculectomy with cyclocryocoagulation) (table 1& fig. 18).

The preoperative intraocular pressure (IOP) in the 30 eyes ranged from 18 mm Hg to 45 mm Hg under maximum tolerable systemic and topical antiglaucomatous therapy, with a mean of 31.13 (± 7.66) mm Hg. Patients received mean 2 (±0.18) antiglaucomatous medications preoperatively(Table 1 & fig. 19).

A two tailed Student's t-test was performed to assess the significance of postoperative IOP reduction in the complete success group. Statistical significance was assumed if $p < 0.05$.

Sex distribution among cases
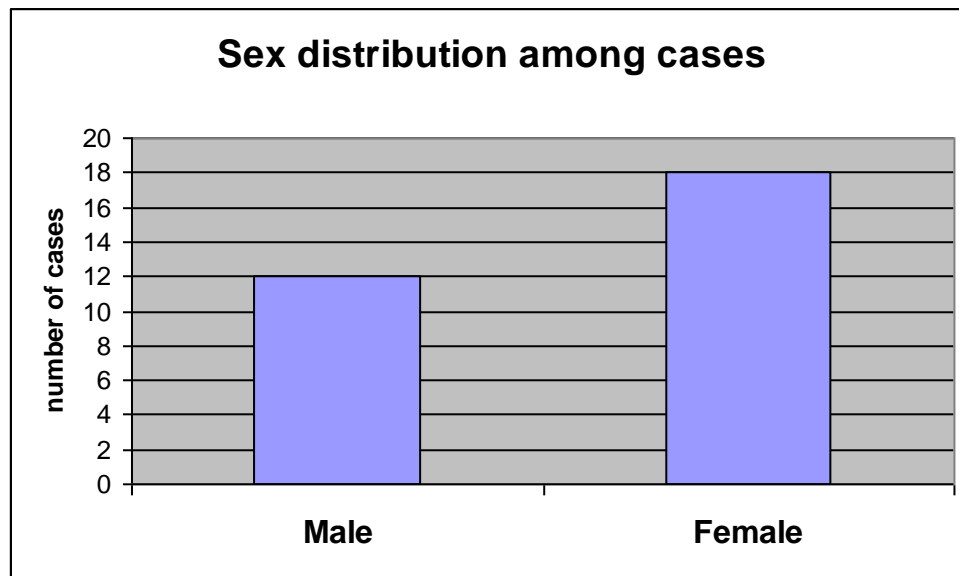
(Fig. 15): The number of male cases is 12 (40%)

And female cases is (60%).

Age distribution amoung cases
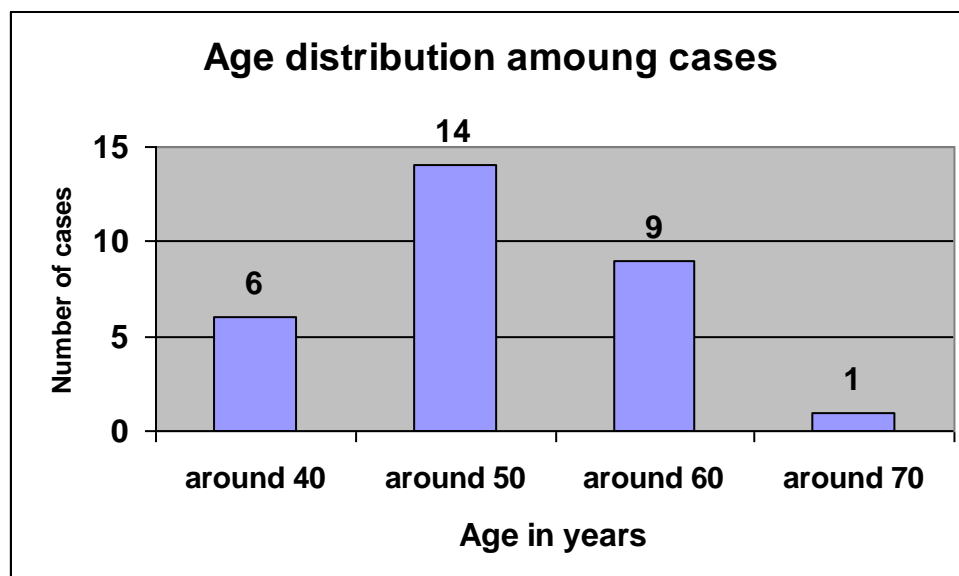
(Fig. 16): The number of Patients around 50 years old was 14 (**46.7**%),
around 60 years old was 9 (30%), around 40 years old was 6
(20%) and around 70 years old was one (3.3%).
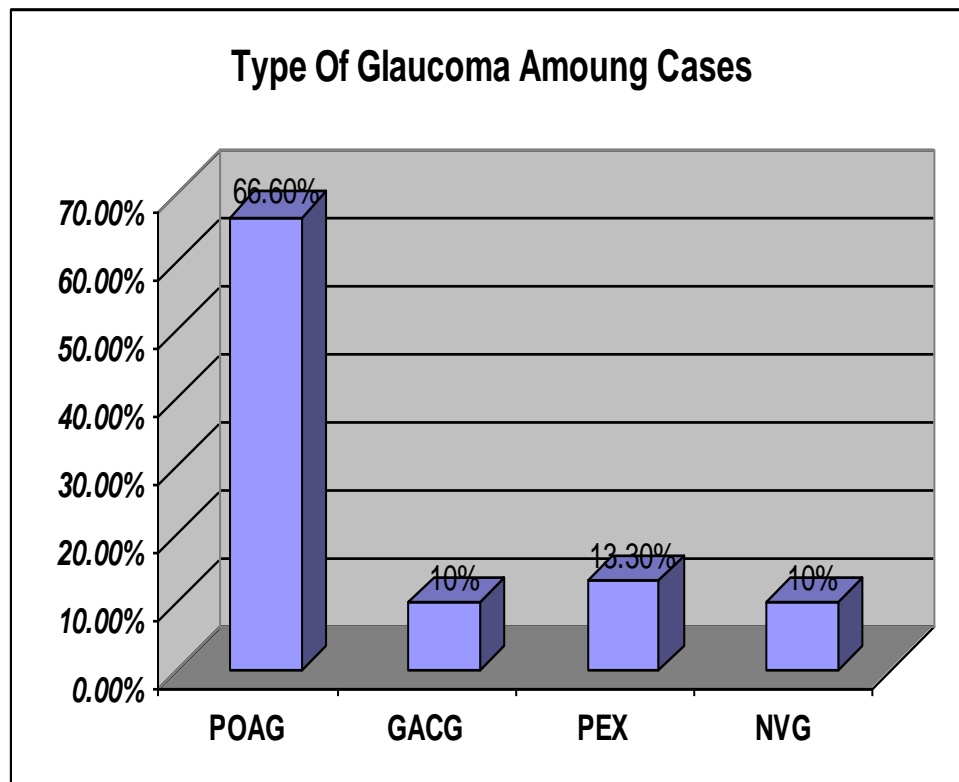
(Fig. 17): , 20 cases (66.7%) were primary open angle glaucom(POAG), 4 cases (13.3%) were pseudoexfoliation glaucoma (PEX), 3 cases (10%) were chronic angle closure glaucoma (CACG) and 3 cases (10%) were neovascular glaucoma(NVG).
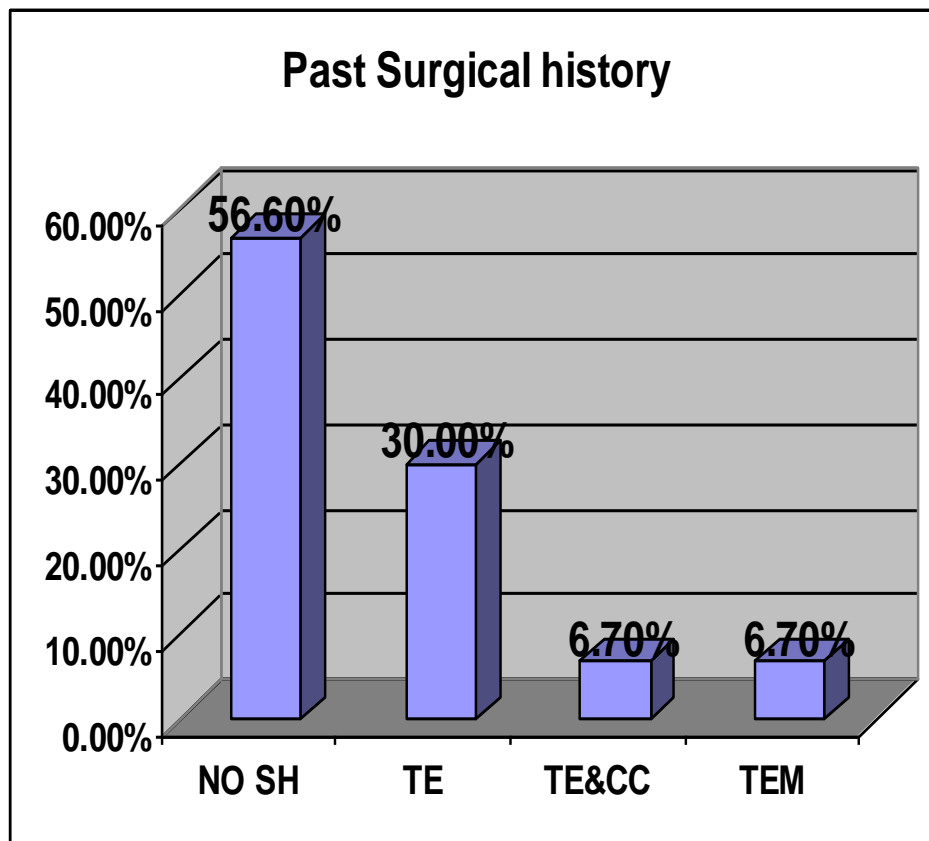
(**Fig. 18**): 17 patients(56.6%) had no surgical history, 9 patients(30%)had done trabeculectomy(TE), 2 patients(6.7%%)had done trabeculectomy with mitomycin-C(TEM) and 2 patients(6.7%%)had done trabeculectomy and cyclocryocoagulation(TE&CC).

(Table 3): The value of preoperative and postoperative (1[st]day, 2 weeks, one month, 3 months,6 months and 12 months)IOP in mmHg.

No	Preop	1[st]day	2weeks	1month	3months	6months	12months
1	40	10	11	11	12	12	12
2	35	8	10	11	11	11	11
3	39	7	11	11	11	11	11
4*	20	5	10	22	12	12	12
5*	18	4	11	12	18	11	11
6	30	10	12	13	14	14	14
7	22	8	10	11	11	11	11
8#	31	14	15	20	20	27	16
9	29	9	11	12	12	12	
10*	45	12	13	19	14	14	14
11	32	11	12	12	13	13	13
12#	34	10	14	15	28		
13#	39	25	20	20	27	32	
14	22	8	10	11	11	11	11
15	27	10	11	12	13	13	13
16*	29	11	12	12	18	14	14
17	35	11	12	12	12	12	12

No	Preop	1stday	2weeks	1month	3months	6months	12months
18	40	12	14	14	14	14	14
19	43	10	10	12	12	12	
20	32	7	10	11	11	11	11
21*	19	7	10	11	18	12	12
22	28	11	11	12	14	14	15
23*	31	10	13	20	14	12	12
24*	26	10	14	19	13	12	12
25	37	9	10	11	11	11	
26	20	7	10	10	10	10	10
27	32	10	11	11	12	12	12
28#	44	25	22	30	28	36	
29	31	11	11	12	12	12	12
30*	24	10	12	18	12	12	12

NB$_1$: * means qualified success (IOP of cases numbers 5, 10, 16, 21, 23 and 24 is controlled with BB while 1 and 30 is controlled with TCI).
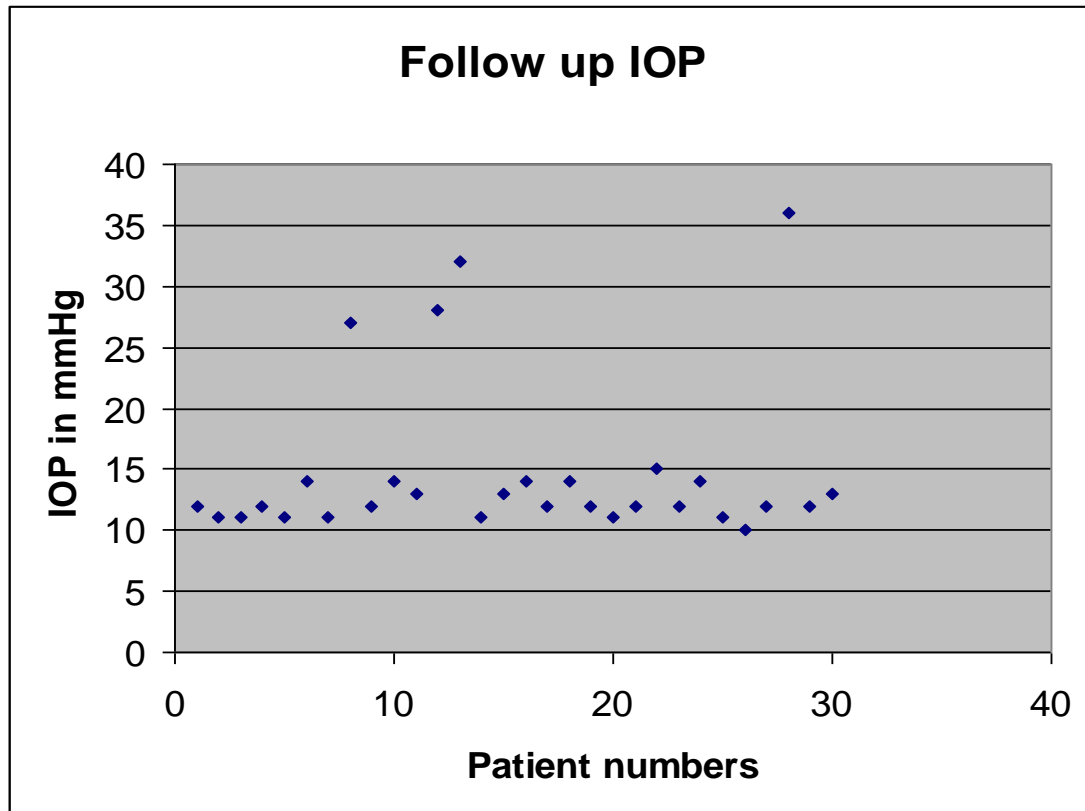
NB$_2$: # means failed cases (IOP of case number 8 was controlled by needling at 6 months)
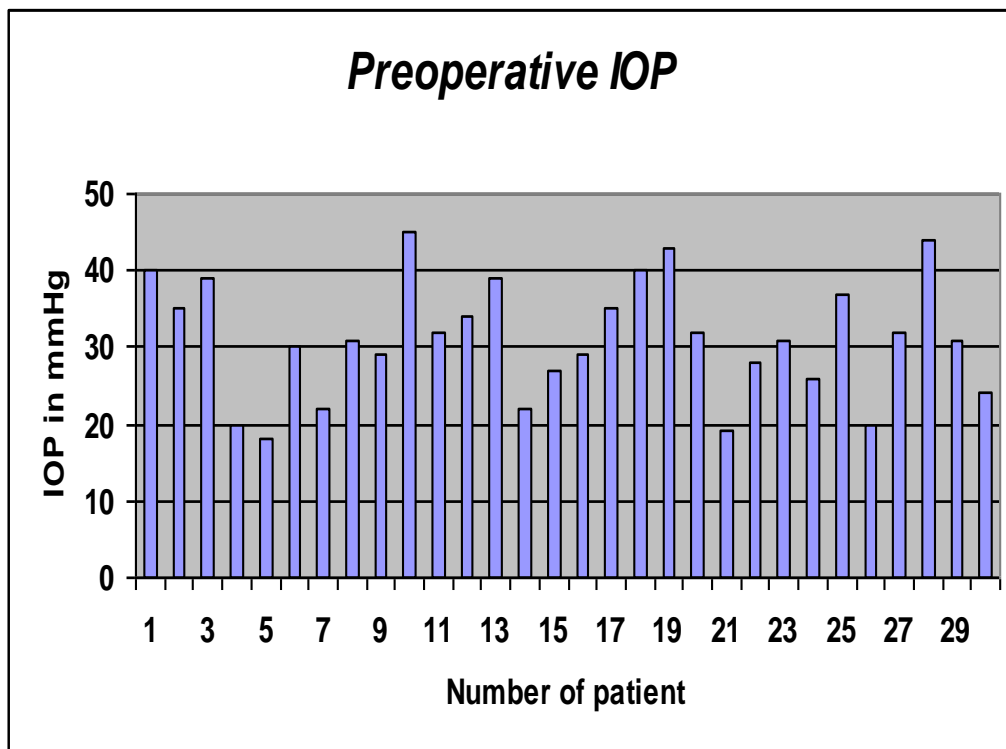
(Fig. 19): Preoperative IOP of 30 patients with medical

treatment ranged (18- 45 mmHg) with

a mean of 31.13(± 7.66) mm Hg.
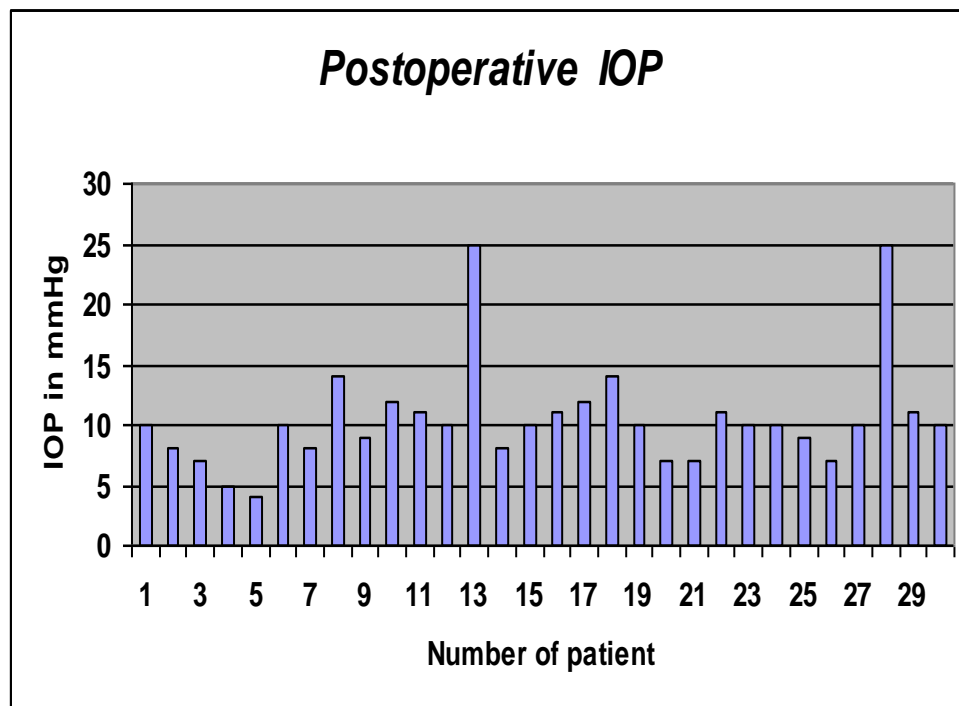
(Fig.20): Postoperative IOP of 30 patients

ranged (4- 25 mmHg) with

a mean of 10 (SD 4.54) mm Hg.

Follow up IOP

(IOP in mmHg vs Patient numbers)

(Fig. 21): Follow up IOP of 30 patients ranged (10- 36 mmHg) with a mean of 14.73 (SD 6.634) mm Hg

.

Assessment of efficacy

The IOP during the first postoperative days ranged from 4 mm Hg to 25mm Hg, with a mean of 10.5 (4.54) mm Hg. After a mean follow up of 10.7 months (range 3–12 months), out of the 30 eyes, 18 eyes showed an IOP reduction of >20% from preoperative IOP level and/or an IOP constantly reduced below 21 mm Hg, to mean 11.94 (1.1) mm Hg (60%, complete success). Eight eyes showed IOP reduction below 21 mm Hg under topical antiglaucomatous therapy to mean 12.75(1.16) mm Hg (26.7%, qualified success). Four eyes failed due to scarring after 2–48 weeks postoperatively (13.3%), resembling a pronounced wound healing process despite the application of BCECF-AM and photodynamic therapy (fig. 22).
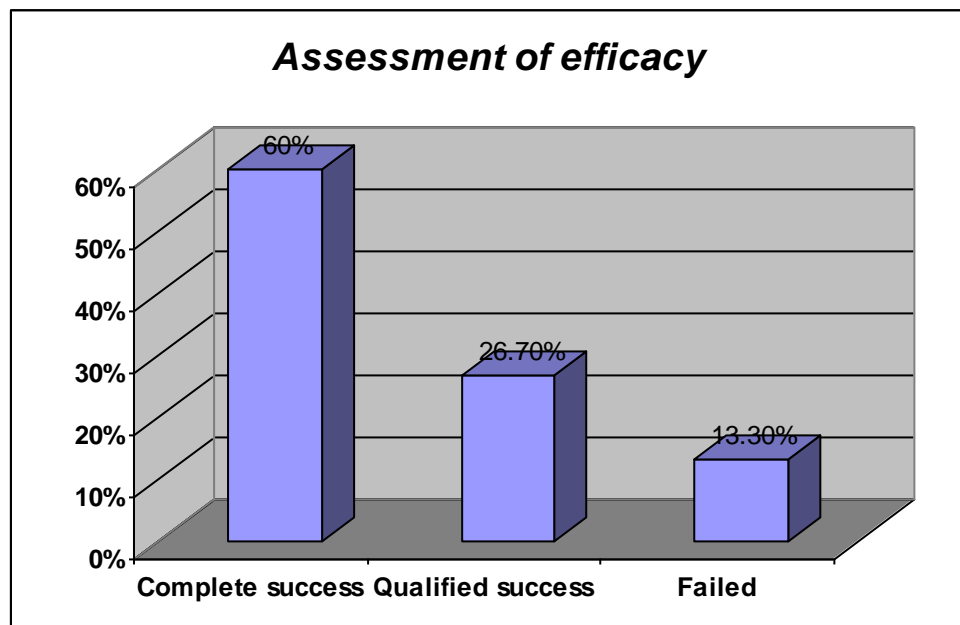

(Fig. 22): Assessment of efficacy (60% complete success, 26.7% qualified success and 13.3% failed).

The postoperative reduction in IOP in the eyes resembling complete success proved to be significant by $p < 0.0001$ in the two tailed Student's
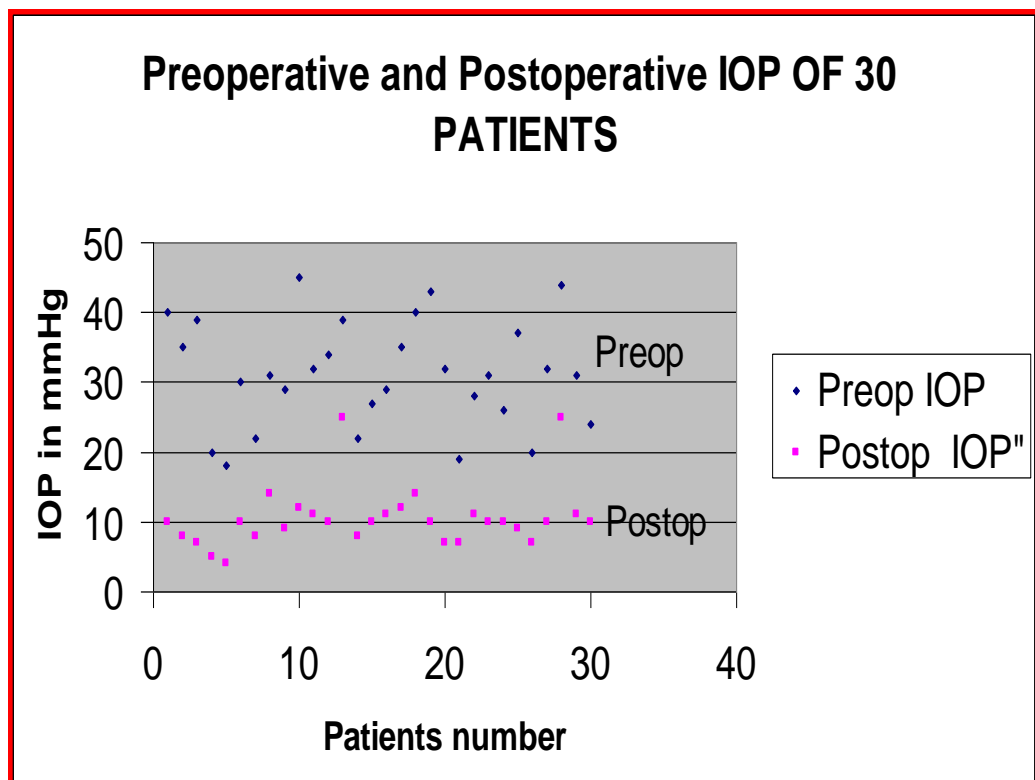
(Fig. 23): An overview of the preoperative and postoperative IOP for each eye .

There is a statistical significant difference in the Mean and standarad of deviation between preoperative and postoperative IOP (P value < 0.0001) (fig. 24).

mean and std of preop-IOP and postop-IOP
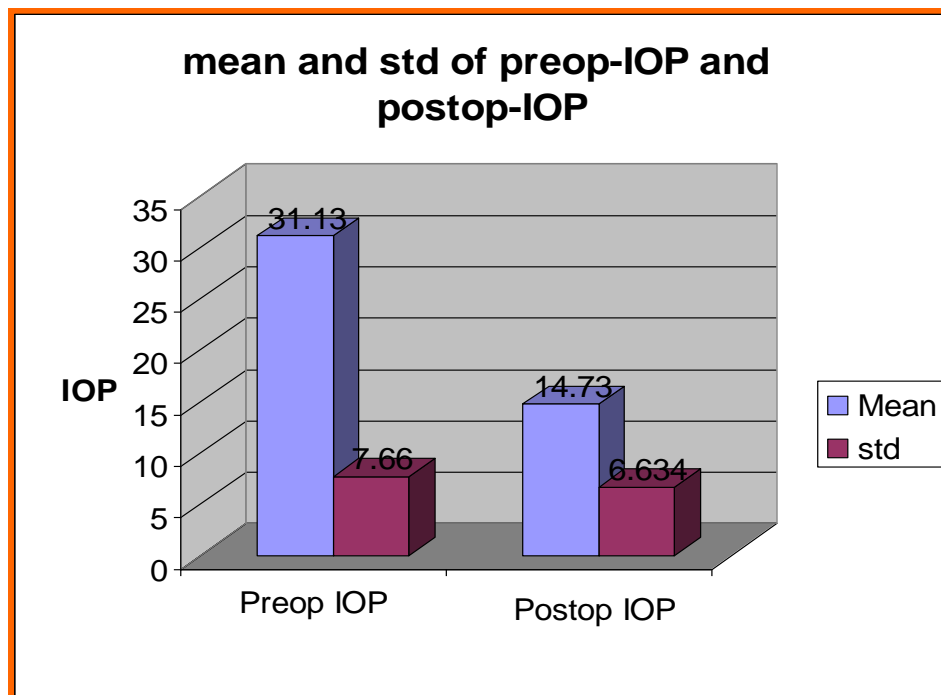
(Fig. 24): The mean and standard of deviation of preoperative IOP (31.13± 7.66) and postoperative IOP (14.73± 6.634).

Postoperative results ,within the first 5 days postoperatively, only mild conjunctival hyperaemia and mild anterior chamber flare was detected in all patients. The patients did not report pain or uncomfortable sensations, unusual or severe postoperative symptoms, or complication. two patients developed a shallow anterior chamber with mild choroidal detachment due to postoperative hypotony (IOP <6 mm Hg), but resolving spontaneously and without the need for surgical intervention. No hypotony maculopathy was seen in these eyes.

With respect to the application of BCECF-AM, no tissue damage of the conjunctiva or the cornea was seen. No inflammation of the bleb or its surrounding tissue was observed. There were no signs of endophthalmitis in any of the eyes.avascularity of the filtering bleb, as it is known to appear after the application of antimetabolites, was not seen.

The morphous and function of the filtering blebs tested by UBM.

As regards to the function, according to the standard of Singh et al,(Singh et al; 2007) 18 (60%) of the 30 blebs were functioning and 12 (40%) were non functioning.

As regards to the morphology,the blebs were classified based on the UBM images, using the method of Yamamoto et al. They were classified into 8 type L blebs, 10 type H blebs, 4 type E blebs and 8 type F blebs (fig. 25). Using the standard of Singh et al, of 8 type L blebs, 7

blebs were successful and one bleb was non-functioning. Of 10 type H blebs, 8 blebs were successful and 2 blebs were non-functioning. Of 4 Type E blebs, one bleb 2 blebs were successful and 6 blebs were non-functionin (table 3).

We determined the sensitivity and specificity for the UBM test. With UBM, 3 successful blebs were classified as Type F or Type E filtering blebs, and the sensitivity for predicting a functioning bleb was 83.3% (15/18 eyes), with reference to the standard of Singh et al. 3 non-functioning blebs were classified as Type L or Type H blebs, giving a specificity of 75% (9/12 eyes).

A visible route beneath the scleral flap was present in 14/18 (77.8%) eyes (mean IOP, (12.2±0.97) mmHg) in the functioning bleb group and in 2/12 (16.7%) eyes (mean IOP, (29.5±3.5) mmHg) in the non-functioning bleb group (P=0.002 Fisher's exact test).

Regarding functioning blebs ,83.3% (15/18) had high or low reflectivity and 77.8% (14/18) visible route under the sclera. While the non-functioning blebs , 75% (9/12) were flat or encapsulated and 83.3% (10/12) no visible route under the scleral flap.

Classification Of Filtering Bleb By UBM
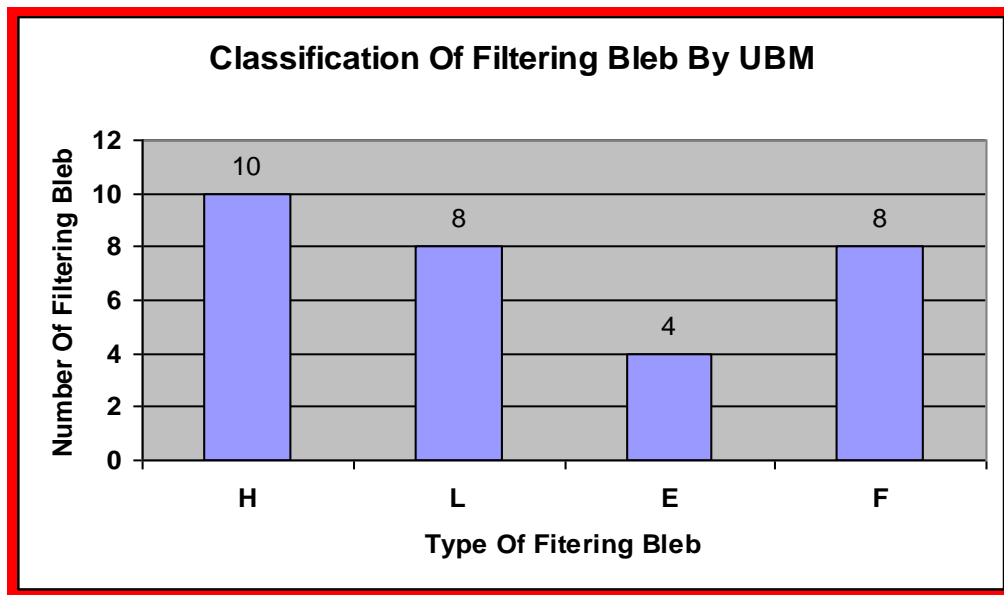
(Fig. 25): The blebs of high reflective (H) type were 10 (33.3%), low reflective(L) type were 8 (26.7%),encapsulated (E) type were 4 (26.7%) and flat (F) type were 8 (13.3%).

(Table 3): UBM result of the filtering bebs (18 Functioning and 12 Non functioning).

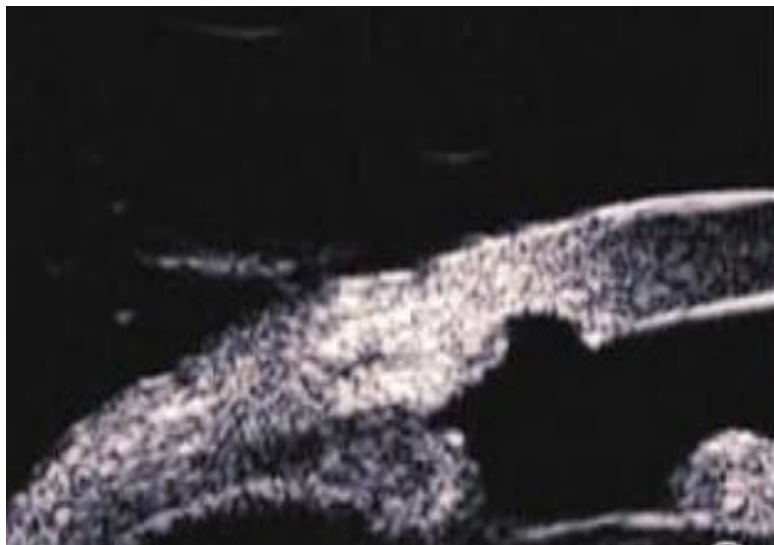| The type of bleb by UBM	Functioning 18 (60%)	Non functioning 12(40%)
10　H	8	2
8　L	7	1
8　F	2	6
4　E	1	3

(Fig. 26): High reflective filtering bleb.
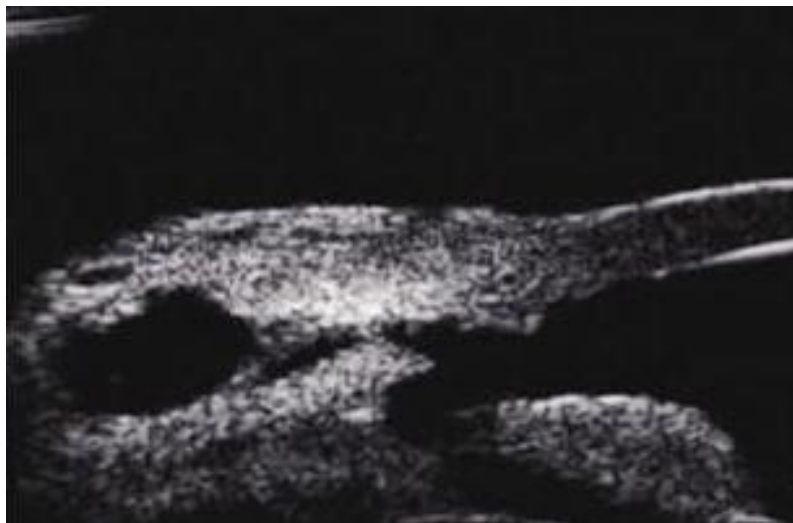
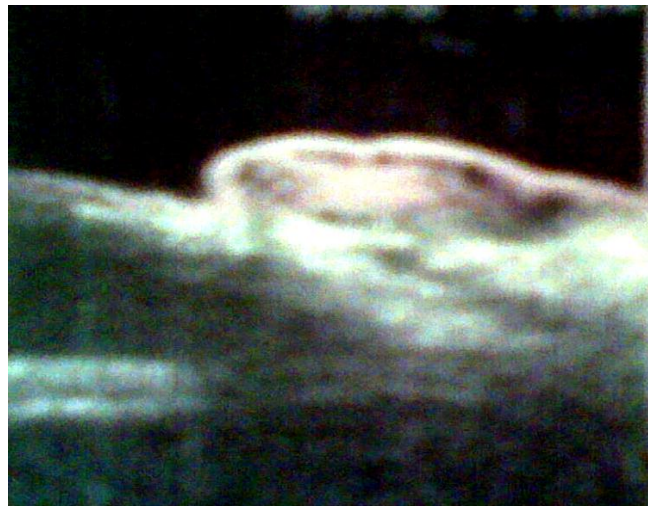**(Fig. 27):** Low reflective filtering bleb.

(Fig. 28): Encapsulated filtering bleb
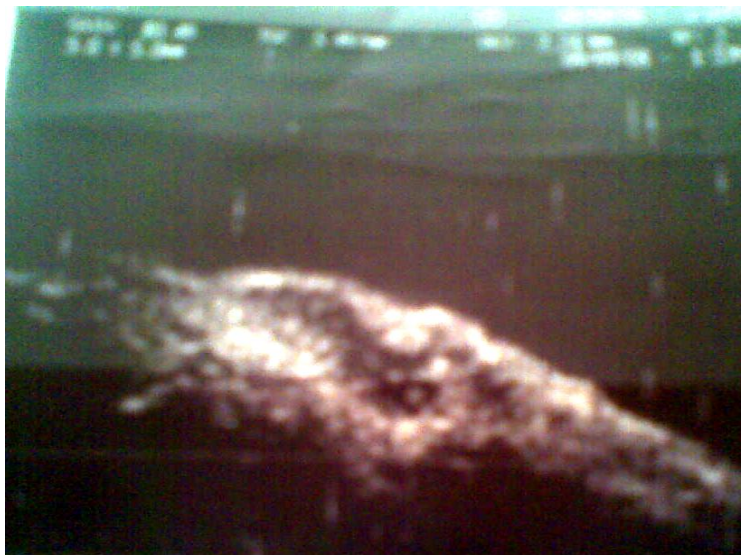

(Fig. 29): Flat filteri

(Fig. 30): Ultrasound Biomicroscopy (UBM) images of high reflective filtering bleb during the 1 month (A), 6 month (B) and 12 month (C) after combined trabeculectomy and photodynamic therapy with BCECF-AM.

A

B

(Fig.31): Ultrasound Biomicroscopy (UBM) images of low reflective filtering bleb during the 1 month (A), 6 month (B) and after combined trabeculectomy and photodynamic therapy with BCECF-AM.