
RESULTS

The study was conducted on 66 patients who met the inclusion criteria . Patients were excluded upon surgical complications, postoperative complications, or failure to complete the follow-up .

- Seven patients had rupture of the posterior capsule and vitreous loss where they had anterior vitrectomy and insertion of anterior chamber IOL.
- One patient had immediate postoperative vitreous haemorrhage of unknown etiology .
- Another patient had intraocular infection two weeks after surgery which proved to be fungal.
- Seven patients had bad endothelial photographs which could not permit cell counting.

This ends up the study with 50 patients, 23 males (46%) & 27 females (54%) . 23 patients had the surgery under Healon, while 27 patients had the surgery under hydroxypropyl methylcellulose (HPMC). Fig. (16).

The age of the patients in the Healon group ranged from 40 years to 65 years (mean 54.5 ± 8.3), while in the HPMC group the age ranged from 45 years to 70 years (mean 56.7 ± 6.3). (Table 1).

In the Healon group , the mean preoperative corneal thickness (Table 2) was 0.54 mm.(± 3.6) with a range of 0.46 - 0.62 (Table 3) , while in the HPMC group , the mean preoperative corneal thickness (Table 2) was 0.55 mm (± 3.4) with a range of 0.48- 0.64 (Table 4). The

of 6 - 16 , while in the HPMC group , the mean intraocular pressure was 12.1 mm/Hg.($\pm$ 2.6) with a range of (8 - 16) (Table 6).

The mean 24 hours postoperative IOP in the Healon group was 14.0 mm/Hg. ($\pm$ 5.2) with a range of 6 - 28 , with a mean percentage increase of 19.6 % and in the HPMC the 24 hours postoperative IOP was 13.0 mm/Hg. ($\pm$ 6.5) with a mean percentage increase of 7.4 % (Table 6) .

In the Healon group , the mean IOP in the first week was 10.7 mm/Hg.($\pm$ 3.5) , in the second week was 11.4 mm/Hg ,in the third week was 11.6 mm/Hg and in the fourth week it was 11.6 mm/Hg.; While in the HPMC group , the mean IOP in the first week was 11.3 mm/Hg., in the second week was 13.1 mm/Hg. , in the third week was 10.8 mm/Hg. and in the fourth week it was 11.4 mm/Hg (Table 7), Fig. (22).

The percentage of patients with IOP of more than 22 mmHg in the 1st postoperative day in cases of Healon was 8.7 % (2 cases), and no patients were higher than 22 mmHg in the next follow-up visits. In the HPMC group, the percentage of patients with IOP of more than 22 mmHg in the first postoperative day was 11.1 % (3 cases), while in the first week it was 7.4 % (2 cases), and in the 2nd. week it was 3.7 % (1 case) and no more rises after 20 mmHg in the next follow - up visits. (Table 8).

The mean preoperative endothelial cell density (ECD) in the Healon group was 2450 cells/mm² ($\pm$ 316.6) (Table 11) with a range of 1750 - 2890 (Table 9), while the mean ECD in the HPMC was 2564 cells/mm² ($\pm$ 247.4) (Table 11) , with a range of 2129 -2942 (Table 10).

The 3 months postoperative mean ECD in the Healon group was 2161 ($\pm$ 303.4) with a range of 1515 - 2604 , while the 3 months postoperative mean ECD in the HPMC group was 2307($\pm$ 259.4) with a range of 1835 - 2832 (Table 11). Fig. (24).

The endothelial cell loss in case of Healon group was 11.8 % while in case of HPMC group it was 10.0 % (Table 11).

The mean, and standard deviation were calculated and compared for statistically significant differences (cell loss or gain) between the preoper-ative and the three months postoperative results by the student's t-test. $P < 0.05$ was considered to be statistically significant. This was taken as the absolute cell loss for each group.

Figures (25, 26, 27) show examples of photomicrographs taken before and after surgery for patients in both groups.

The mean preoperative cell area measurement in the Healon group was $414.1 \mu\text{M} (\pm 59.9)$ (Table 14) with a range of 346.0 -571.4 measured as the inverse value of the cell density (Table 12), while in the HPMC group , the mean preoperative cell area measurement was $390.8 \mu\text{M} (\pm 39.5)$ with a range of 327.1 - 469.7 (Table 13).

Postoperatively , the mean cell area in the Healon group was $469.6 (\pm 77.9)$ with a range of 384.0 - 660.0 with an increase of 13.4 % in the cell size , while in the HPMC group the mean cell area was $436.8 (\pm 51.1)$ with a range of 353.1- 544.9) with an increase of 11.7 % in the cell size (Table 14) . Fig. (28).

Figures (29 , 30) show the difference in cell area before and after surgery in both groups.

Preoperatively , the cells in both groups were mainly hexagonal , and homomegethous . Postoperatively , many of the cells lost their hexagonal shape and changed to pentagonal and heptagonal but , the majority still were hexagonal. Polymegethism was very pronounced where cells of very big size and very small size appeared in the same endothelium. Fig. (31).

Table (15 a,b,&c) shows the overall picture of the 50 patients included in the study.

AGE & SEX

	HEALON n= 23	HPMC n= 27
AGE	54.5	56.7
SEX	10 M & 13 F	12 M & 15 F

(Table No. 1)

CORNEAL THICKNESS AND ENDOTHELIAL CELL LOSS

	HEALON n= 23	HPMC n= 27
* Mean preop. thickness (Range)	0.54 0.46 - 0.62	0.55 0.48 - 0.64
* Mean thickness on the 1st. postop. day (Range)	0.59 0.53 - 0.72	0.60 0.50 - 0.78
* Mean percent increase in thickness	9.2 %	9.0 %
* Mean cell loss (Range)	11.8 % 6.2 - 17.1	10 % 4.3 - 20.9

(Table No. 2)

PRE & POSTOPERATIVE CORNEAL THICKNESS (HEALON)

NO.	PRE PACHY	PACHY (1)	PACHY (7)	PACHY (14)	PACHY (21)	PACHY (30)	RECOV. TIME
7.	0.52	0.65	0.62	0.57	0.54	0.52	30
8.	0.61	0.72	0.66	0.64	0.63	0.61	30
10.	0.62	0.70	0.66	0.64	0.63	0.62	30
11.	0.53	0.59	0.58	0.55	0.53	0.53	21
14.	0.50	0.58	0.51	0.50	0.50	0.50	14
15.	0.57	0.59	0.61	0.61	0.60	0.60	30
16.	0.50	0.56	0.54	0.53	0.51	0.50	30
17.	0.56	0.66	0.64	0.62	0.60	0.56	30
18.	0.54	0.58	0.61	0.60	0.58	0.56	> 30
29.	0.55	0.57	0.55	0.55	0.55	0.55	7
34.	0.54	0.56	0.55	0.55	0.54	0.54	21
42.	0.54	0.61	0.55	0.54	0.54	0.54	14
43.	0.46	0.53	0.50	0.48	0.46	0.46	21
44.	0.58	0.60	0.59	0.58	0.56	0.56	14
50.	0.56	0.61	0.58	0.56	0.56	0.56	14
51.	0.53	0.56	0.58	0.58	0.55	0.53	30
52.	0.49	0.56	0.52	0.60	0.55	0.55	> 30
53.	0.53	0.56	0.56	0.54	0.53	0.53	21
54.	0.56	0.58	0.57	0.56	0.56	0.56	14
61.	0.56	0.59	0.57	0.56	0.56	0.56	14
62.	0.52	0.57	0.54	0.54	0.52	0.52	21
63.	0.53	0.56	0.55	0.53	0.53	0.53	14
67.	0.55	0.58	0.55	0.55	0.55	0.55	07

(Table No. 3)

PRE & POSTOPERATIVE CORNEAL THICKNESS (HPMC)

NO.	PRE PACHY	PACHY (1)	PACHY (7)	PACHY (14)	PACHY (21)	PACHY (30)	RECOV. TIME
1.	0.48	0.58	0.55	0.52	0.48	0.48	21
4.	0.56	0.58	0.56	0.56	0.56	0.56	07
6.	0.64	0.78	0.70	0.68	0.65	0.64	30
19.	0.58	0.64	0.60	0.60	0.58	0.58	21
20.	0.60	0.65	0.62	0.60	0.60	0.60	14
25.	0.56	0.60	0.60	0.60	0.57	0.56	30
26.	0.55	0.59	0.58	0.57	0.55	0.55	21
27.	0.54	0.58	0.56	0.58	0.55	0.54	30
28.	0.54	0.58	0.56	0.54	0.54	0.54	14
33.	0.52	0.54	0.52	0.52	0.52	0.52	07
38.	0.61	0.63	0.62	0.67	0.60	0.61	21
40.	0.54	0.58	0.54	0.54	0.54	0.54	07
41.	0.55	0.58	0.55	0.57	0.55	0.55	07
45.	0.56	0.58	0.56	0.56	0.56	0.56	07
46.	0.55	0.62	0.58	0.56	0.56	0.55	30
47.	0.53	0.56	0.58	0.60	0.59	0.55	> 30
48.	0.56	0.58	0.57	0.56	0.56	0.56	14
49.	0.55	0.58	0.55	0.55	0.55	0.55	07
55.	0.56	0.59	0.56	0.56	0.56	0.56	07
56.	0.48	0.50	0.48	0.48	0.48	0.48	07
57.	0.54	0.62	0.58	0.56	0.54	0.54	21
58.	0.54	0.65	0.54	0.54	0.54	0.54	07
59.	0.52	0.69	0.59	0.52	0.52	0.52	14
60.	0.55	0.59	0.56	0.56	0.55	0.55	21
64.	0.57	0.62	0.59	0.57	0.57	0.57	14
65.	0.60	0.67	0.64	0.62	0.60	0.60	21
66.	0.57	0.65	0.62	0.62	0.57	0.57	21

(Table
No. 4)

Mean corneal thickness at various intervals
postoperatively in cases of HEALON

NO.	Preop.	1st. d.	1st. wk.	2nd. wk.	3rd. wk.	4th. wk.
23	0.54	0.59	0.57	0.56	0.55	0.54

Mean corneal thickness at various intervals
postoperative in cases of HPMC

NO.	Preop.	1st. d.	1st. wk.	2nd. wk.	3rd. wk.	4th. wk.
27	0.55	0.60	0.57	0.57	0.56	0.55

(Table No. 5)

AVERAGE INTRAOCULAR PRESSURES

	HEALON n= 23	HPMC n= 27
Average preop. IOP mm Hg. (Range)	11.7 16 - 6	12.1 18 - 6
Average IOP in 1st. post- operative day in mm Hg. (Range)	14.0 28 - 6	13.0 30 - 3
Percent increase	19.6 %	7.4 %

(Table No. 6)

Mean IOP (mmHg) at various intervals postoperatively
in cases of HEALON

NO.	Preop.	1st. d.	1st. wk.	2nd. wk.	3rd. wk.	4th. wk.
23	11.7	14.0	10.7	11.3	11.6	11.6

Mean IOP (mmHg) at various intervals postoperatively
in cases of HPMC

NO.	Preop.	1st. d.	1st. wk.	2nd. wk.	3rd. wk.	4th. wk.
27	12.1	13.0	11.3	13.1	10.8	11.4

(Table No. 7)

Pre & Postoperative ECD in cases of Healon

Pat. No.	Pre ECD	Post ECD
7.	2214	1835
8.	2531	2240
10.	2290	1979
11.	2888	2430
14.	2777	2604
15.	2415	2190
16.	2346	2071
17.	2890	2550
18.	1925	1700
29.	2576	2352
34.	2483	2010
42.	1892	1576
43.	1750	1515
44.	2677	2466
50.	2679	2366
51.	2633	2462
52.	2765	2513
53.	2491	2088
54.	2043	1983
61.	2630	2215
62.	2506	2050
63.	2441	2250
67.	2510	2264

(Table No. 9)

Pre & Postoperative ECD in cases of HPMC

Pat. No.	Pre ECD	Post ECD
1.	2510	2264
4.	2361	2127
6.	2350	2143
19.	2441	2250
20.	2435	1925
25.	2916	2312
26.	2916	2495
27.	2351	2179
28.	2300	2187
33.	2506	2050
38.	3057	2832
40.	2836	2468
41.	2498	2470
45.	2129	2037
46.	2616	2379
47.	2325	2153
48.	2630	2215
49.	2646	2230
55.	2942	2804
56.	2603	2408
57.	2856	2780
58.	2603	2408
59.	2234	1939
60.	2514	2333
64.	2677	2466
65.	2777	2604
66.	2214	1835

(Table No. 10)

Mean Endothelial Cell Density (cells/mm²)

	Preop.	Postop.	% cell loss
HEALON (n=23)	2450	2161	11.8
HPMC (n=27)	2564	2307	10.0

(Table No. 11)

Mean cell area changes after surgery
(HEALON)

NO.	Preoperative Cell Area (uM)	Postoperative Cell Area (uM)
7.	451.6	544.9
8.	395.1	446.4
10.	436.6	505.3
11.	346.2	411.5
14.	360.1	384.0
15.	414.0	456.6
16.	426.2	482.8
17.	346.0	392.1
18.	519.4	588.2
29.	388.1	425.1
34.	402.7	497.5
42.	528.5	634.5
43.	571.4	660.0
44.	372.5	405.5
50.	373.2	422.6
51.	379.7	406.1
52.	361.6	397.9
53.	401.4	478.9
54.	489.4	515.9
61.	380.2	451.4
62.	399.0	487.8
63.	409.6	444.4
67.	398.4	441.6

(Table No. 12)

Mean cell area changes after surgery
(Methylcellulose)

NO	Preoperative Cell Area (uM)	Postoperative Cell Area (uM)
1.	398.4	441.6
4.	423.5	470.1
6.	425.5	466.6
19.	409.6	444.4
20.	410.6	519.4
25.	342.9	432.5
26.	342.9	400.8
27.	425.3	458.9
28.	434.7	459.1
33.	399.0	487.8
38.	327.1	353.1
40.	331.1	354.8
41.	352.6	405.1
45.	469.7	490.9
46.	382.2	420.3
47.	430.1	464.4
48.	380.2	451.4
49.	377.9	448.4
55.	339.9	356.6
56.	384.1	415.2
57.	350.1	359.7
58.	384.1	415.2
59.	447.6	515.7
60.	397.7	428.6
64.	373.5	405.5
65.	360.1	384.0
66.	451.6	544.9

(Table
No. 13)

Mean Cell Area measurement Pre. & Postoperative
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	Preop. Mean cell area (uM)	Postop. Mean cell area (uM)	% increase in size
HEALON (n=23)	414.1	469.6	13.4 %
HPMC (n=27)	390.8	436.8	11.7 %

(Table 14)

No.	AGE	VIS	PRE IOP	IOP 1	IOP 7	IOP 14	IOP 21	IOP 30	PRE PACH	PACH 1	PACH 7	PACH 14	PACH 21	PACH 30	PRE ECD	POST ECD	PRE CELL	POST CELL	F. UP TIME
1.	60	M	14	30	26	20	17	14	0.55	0.58	0.55	0.55	0.55	0.55	2510	2264	398.4	441.6	90
4.	55	M	12	14	14	13	12	12	0.56	0.58	0.57	0.56	0.56	0.56	2361	2127	423.5	470.1	90
6.	48	M	16	14	15	16	14	16	0.64	0.78	0.70	0.68	0.65	0.64	2350	2143	425.5	466.6	120
7.	45	H	12	28	16	14	12	12	0.52	0.56	0.62	0.57	0.54	0.52	2214	1835	425.5	466.6	111
8.	45	H	11	11	7	8	9	10	0.61	0.72	0.66	0.64	0.63	0.61	2531	2240	395.1	446.4	98
10.	45	H	9	10	12	12	11	10	0.62	0.70	0.66	0.64	0.63	0.62	2290	1979	436.6	505.3	92
11.	65	H	16	13	2	4	6	6	0.53	0.59	0.58	0.55	0.53	0.53	2888	2430	346.2	411.5	98
13.	55	H	6	17	6	6	7	7	0.50	0.58	0.51	0.50	0.50	0.50	2777	2604	360.1	384.0	84
15.	60	H	12	14	12	12	13	15	0.57	0.59	0.61	0.61	0.60	0.60	2415	2190	414.0	456.6	84
16.	50	H	13	14	7	9	10	10	0.50	0.56	0.54	0.53	0.51	0.50	2346	2071	426.2	482.8	112
17.	54	H	14	11	12	12	13	10	0.56	0.66	0.64	0.62	0.60	0.56	2890	2550	346.0	392.1	112
18.	43	H	10	10	8	17	18	25	0.54	0.58	0.61	0.60	0.58	0.56	1925	1700	519.4	588.2	90
19.	55	M	10	10	9	10	12	14	0.58	0.64	0.60	0.60	0.58	0.58	2441	2250	409.6	444.4	90
20.	61	M	14	8	7	8	10	12	0.60	0.65	0.62	0.60	0.60	0.60	2435	1925	410.6	519.4	140
23.	45	M	11	11	10	11	10	10	0.56	0.60	0.60	0.60	0.57	0.55	2916	2312	342.9	432.5	100
26.	57	M	11	26	14	14	14	15	0.55	0.59	0.58	0.57	0.55	0.55	2916	2495	342.9	400.8	100
27.	55	M	8	12	10	10	10	10	0.54	0.58	0.56	0.58	0.55	0.54	2351	2179	425.3	458.9	112
28.	70	M	8	6	10	10	8	9	0.54	0.58	0.56	0.54	0.54	0.54	2300	2187	434.7	459.1	105
29.	53	H	15	12	15	17	14	12	0.55	0.55	0.55	0.55	0.55	0.55	2576	2352	388.1	425.1	90

(Table 15a) General Table for all patients

No.	AGE	VIS	PRE IOP	IOP 1	IOP 7	IOP 14	IOP 21	IOP 30	PRE PACH	PACH 1	PACH 7	PACH 14	PACH 21	PACH 30	PRE ECD	POST ECD	PRE CELL	POST CELL	F.UP TIME
56.	65	M	12	12	4	7	10	12	0.48	0.50	0.48	0.48	0.48	0.48	2603	2408	384.1	415.2	90
57.	50	M	13	10	6	11	11	12	0.54	0.62	0.58	0.56	0.54	0.54	2856	2780	350.1	359.7	80
58.	60	M	10	6	1	6	10	10	0.54	0.56	0.54	0.54	0.54	0.54	2603	2408	384.1	415.2	80
59.	55	M	14	10	8	8	9	9	0.52	0.69	0.59	0.52	0.52	0.52	2234	1939	447.6	515.7	90
60.	52	M	10	10	3	9	10	10	0.55	0.59	0.56	0.56	0.55	0.55	2514	2333	397.7	428.6	82
61.	50	H	9	13	12	10	10	10	0.56	0.59	0.57	0.56	0.56	0.56	2630	2215	380.2	451.4	90
62.	60	H	13	16	14	14	12	12	0.52	0.57	0.54	0.54	0.52	0.52	2506	2050	399.0	487.8	100
63.	57	H	11	14	13	13	10	10	0.53	0.56	0.55	0.53	0.53	0.53	2441	2250	409.6	444.4	105
64.	55	M	15	18	15	15	14	14	0.57	0.62	0.59	0.57	0.57	0.57	2677	2466	373.5	405.5	90
65.	55	M	16	18	16	15	16	15	0.60	0.67	0.64	0.62	0.60	0.60	2777	2604	360.1	384.0	90
66.	65	M	12	18	14	10	12	12	0.57	0.65	0.62	0.62	0.57	0.57	2214	1835	451.6	544.9	100
67.	70	H	12	15	13	12	12	10	0.55	0.58	0.55	0.55	0.55	0.55	2510	2264	398.4	441.6	90

(Table 15 c) General Table for all patients (Cont.)

Mean corneal thickness Postoperatively

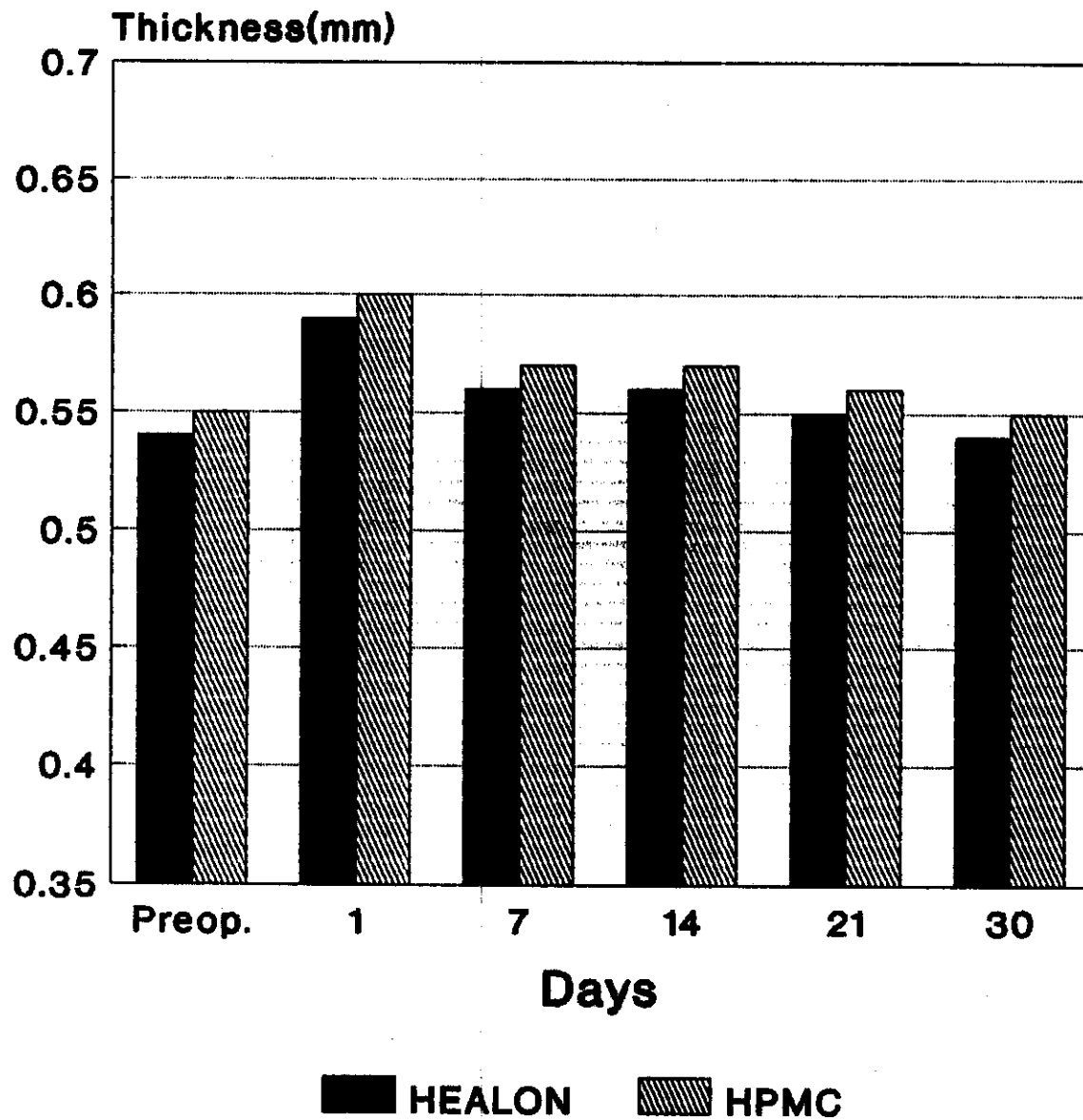


Fig. (18)

Postop. changes of corneal thickness in cases of HPMC

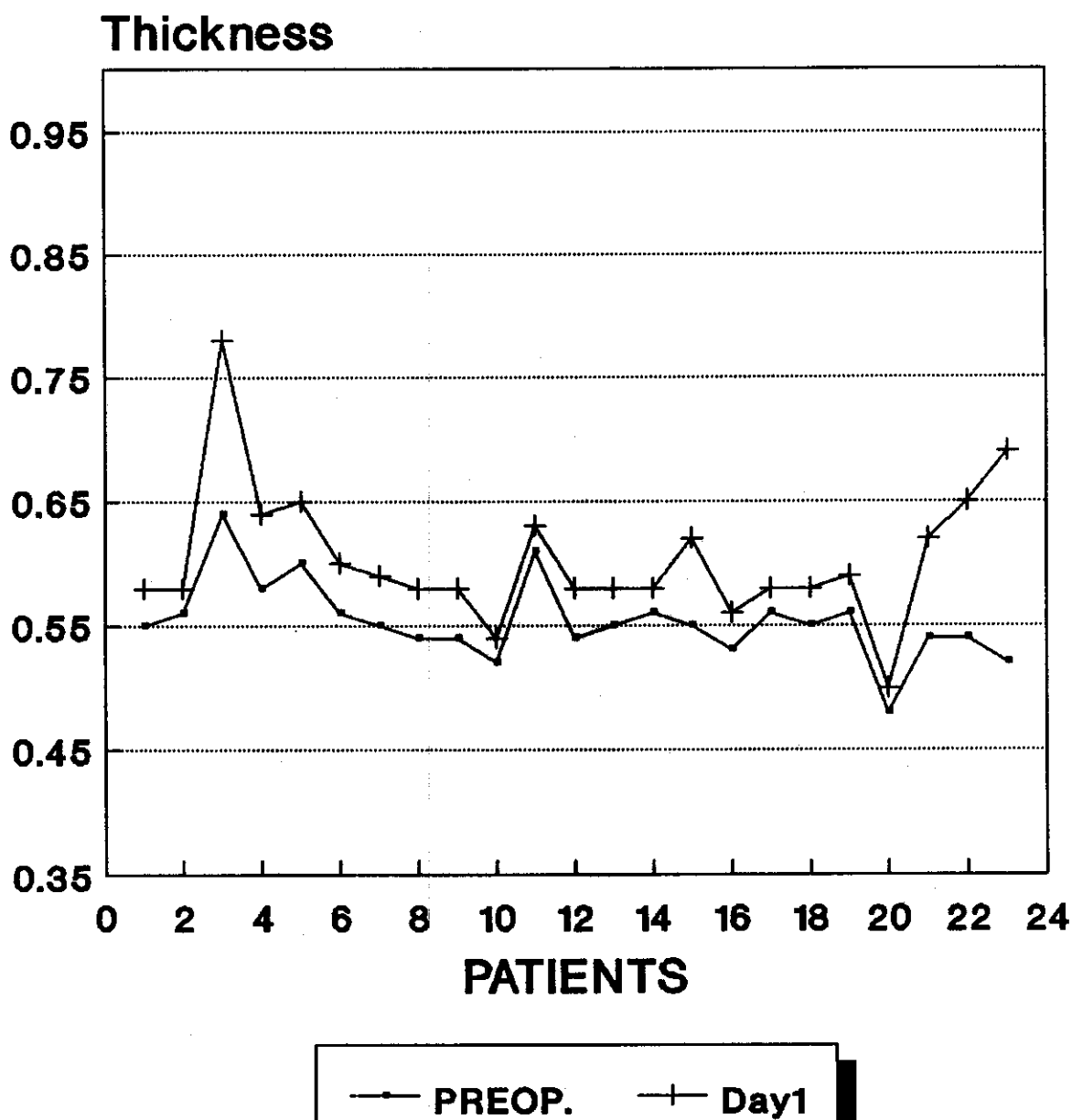


Fig. (20)

Postop. changes of IOP in cases of HEALON

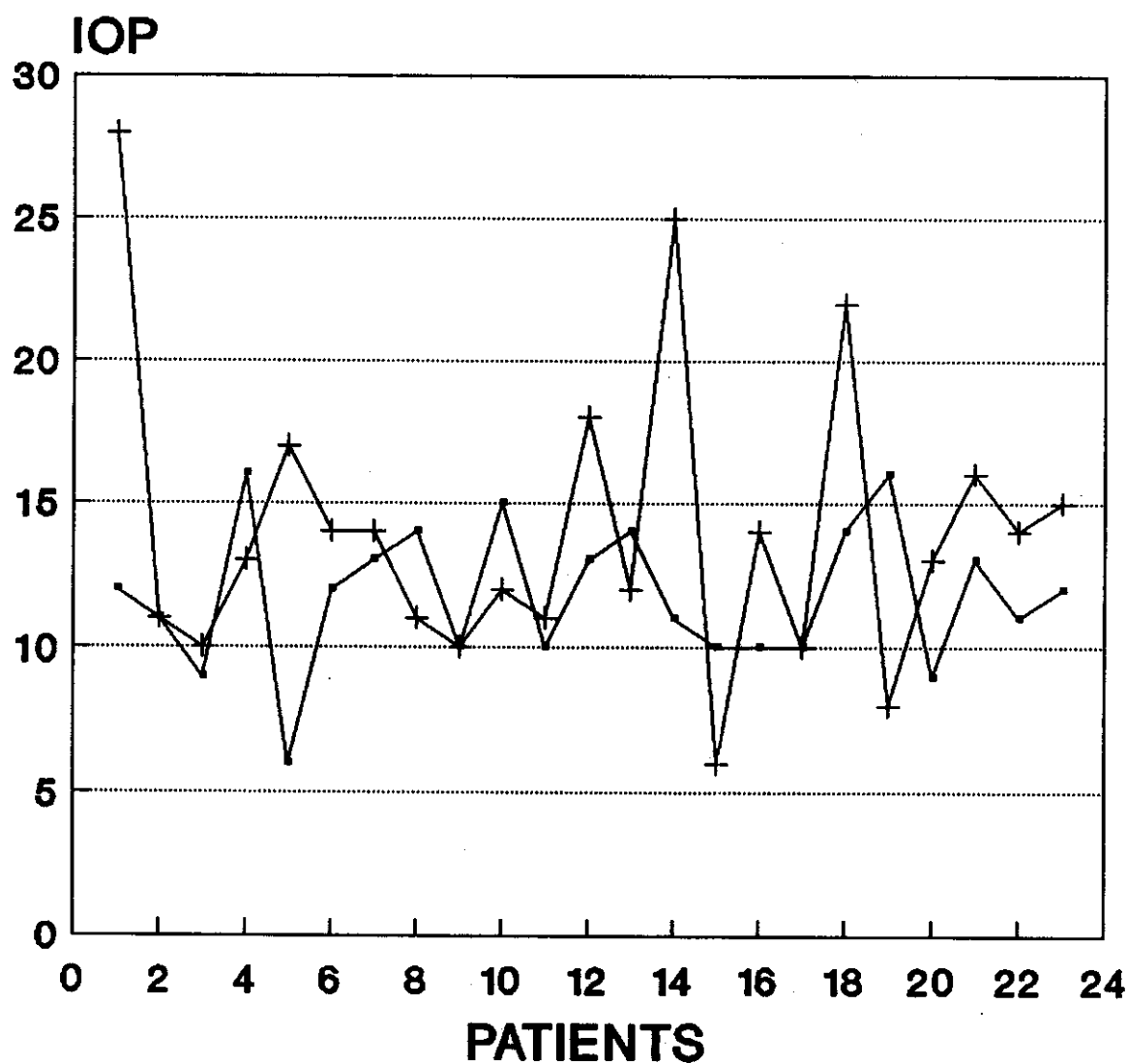


Fig.(23)

Fig. (25) Photomicrographs of a patient before and after
surgery. (HEALON group)

Fig. (26) Photomicrograph of a patient before and after
surgery (HPMC group).

Fig. (27) Mean ce;; size pre & postoperative

93 c



Fig. (29). show the difference in cell size before
and after surgery.

95 a

Fig. (30) Another photomicrographs to show the difference
in cell area before and after surgery.