

Research Article

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A Study on Hydro Implantation of Intraocular Lens (IOL) in Cataract Surgery Using Anterior Chamber Maintainer

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1. Hydro implantation Using Anterior Chamber Maintainer

- An anterior chamber maintainer is an additional infusion cannula which is inserted via the cornea or limbus in order to create a strong inflow of balanced salt solution. In a typical cataract surgery there is one source of fluid inflow: from the phaco tip's side ports.
- In this case the AC maintainer is an additional inflow source which helps balance the two outflow paths: down the throat of the phaco needle and from incision leakage



TYPES OF ANTERIOR CHAMBER MAINTAINER (68)

1) BLUMENTHAL ANTERIOR CHAMBER MAINTAINER 20 GAUGE

This unique 20 gauge anterior chamber maintainer features a threaded tip for fixation in the side port incision while maintaining the anterior chamber. Uses 25cm of silicone tubing.



Bluementhal ACM (69)

- TROCAR-ACM for complicated surgeries, fluid infusion can be regulated with the help of an anterior chamber maintainer (ACM), a trocar-ACM combination, or a trocar placed in the pars plana.
- The trocar-ACM is a novel concept that overcomes the shortcomings of standard ACMs. It does not require creation of a paracentesis incision matching the dimensions of the bore

of an ACM. The trocar-ACM is introduced into the eye at a distance of 0.5 mm from the limbus, with care being taken that the needle enters the eye in front of the iris tissue.

The trocar-ACM is introduced by creating a biplanar incision that is self-sealing. The trocar ACM was designed by Dr Amar Agrawal and Dr Ashwin Agrawal.



2. Aims and Objectives

- The current study was done at Dept. of Ophthalmology, Government Hospital, to study the merits of hydro implantation of intraocular lens (IOL) in cataract surgery using anterior chamber maintainer.
- Objective
- To analyze the advantages of hydro implantation of IOL during phacoemulsification and SICS cataract surgeries.

3. Materials and Methods

This Interventional Study was conducted between 2020 to 2022 on 25 patients including indoor patients for cataract surgery.

3.1 Inclusion Criteria

All the patients in our study presented in our OPD with

complains of diminution of vision due to cataract. (Patient with age-related cataract)

- Patients who are willing to take part in the study.
- Patients undergoing SICS and Phacoemulsification surgery

3.2 Exclusion Criteria

- Patients with subluxated lenses, poorly dilated pupils and corneal dystrophies have been excluded.
- Patients having history of uveitis and any other ocular inflammatory disease like lens induced glaucoma glaucoma medication with pilocarpine previous intraocular surgery
- Patients with diabetic or hypertensive retinopathy.
- Any abnormality (malformation) present in the anterior segment of the eye.
- Patients who are not willing to take part in the study.



AGE	GENDER	
	MALE	FEMALE
40-50	3	3
51-60	7	4
61-70	2	3
>70	2	1
Total	14	11

Table 1: AGE DISTRIBUTION OF PATIENTS UNDERGOINGHYDROIMPLANTATION OF IOL



TYPE OF SURGERY	FREQUENCY	PERCENTAGE
SICS	5	20
Phacoemulsification	20	80
Total	25	100





V/A	POST OP (AFTER 1 MONTH)	POST-OP BCVA	
PL+ PR Full HM+	-	-	
< 1 MFC	-	-	
1 to 6 MFC	-	-	
6/60	-	-	
6/36	-	-	
6/24	-	-	
6/18	-	-	
6/12	3	-	
6/9	12	5	
6/6	10	20	



The above table shows that on a post-op follow up of 1 month, 5 (20%) patients had best corrected visual acuity of 6/9 and 20 (80%) patients had best corrected visual acuity of 6/6.

CORNEAL EDEMA GRADE	SICS	PHACOEMULSIFICATION
0	1	16
1	4	4
2	-	_
3	-	-
Total	5	20

Table 3: Corneal Oedema After Cataract Surgery in Patients Undergoing Hydro Implantation of IOL – Post Operative 1st Day

Table 3: indicate numbers (%) of eye with corneal edema on post-operative day-1 after cataract surgery. Corneal edema is related to manipulation in anterior chamber of eye during cataract surgery. On comparison, 1st post-operative day in SICS 4 (16%) has grade 1 corneal edema and 1 (4%) had no corneal edema. In PHACO 4 (16%) patients had grade1 corneal edema and 16 (64%) had no corneal edema.

ЮР	PRE-OP IOP	POST-OP IOP (DAY 1)
<10 mm Hg	2	2
10-13 mm Hg	15	16
14-17 mm Hg	8	7
>17 mm Hg	-	-

Table 4: Pre-op and Post-op IOP of Patients Undergoing Cataract Surgery (Hydro Implantation of IOL)

Table 4: Indicates patients having pre-op IOP less than 10 mm Hg are 2 (8%). Patients having pre-op IOP between 10-13mm Hg are 15 (60%) and patients having pre-op IOP between 14-17 mm Hg are 8 (32%). Patients having post-op IOP less than 10 mm Hg are 2 (8%). Patients having post-op IOP between 10-13mm Hg are 16 (64%) and patients having post-op IOP between 14-17 mm Hg are 7 (28%).



ACR	SICS	РНАСО
0) <1 cell	-	-
0.5) 1-5 cells	1(4%)	2(8%)
1) 6-15 cells	4(16%)	16(64%)
2) 16-25 cells	1(4%)	2(8%)
3) 26-50 cells	-	-
4) >50 cells	-	-



Table 5: Anterior Chamber Cells After Cataract Surgery (Hydro Implantation of IOL) - Post Operative Day 1

4. Conclusion

- Viscoelastic are one of the most important devices for phacoemulsification for years. Despite their many benefits, they can cause some side effects.
- One of the most side effect is elevated IOP in early postoperative process. The most common cause of this complication is usually retention of viscoelastic.
- This study shows that hydro implantation has advantages in terms of IOP changes and post-operative inflammation.

In the present times where people want to be operated with less operative time and rapid post-operative visual rehabilitation, cataract surgeries including hydro implantation of IOL is one of the best options.

- It is a more controlled procedure.
- The post-op IOP spikes are minimal.
- There is decrease in the amount of post-operative inflammation and pain.
- It provides rapid post-operative rehabilitation.

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