

Short Communication**Air bubble and Viscoelastic agents in production of posterior capsular opacity and pigment deposition over the intraocular lens***H. Attarzadeh MD****ABSTRACT**

Background: In cataract surgery, viscoelastic agents form anterior chamber, complicating to posterior capsular opacity and pigment deposition over intraocular lens after lens implantation. We compared the rate of these complications for air bubble and viscoelastic agents.

Methods: Patients with senile cataract and candidate for routine cataract extraction were studied. They were randomly divided into group A (n=62) and group B (n=66). During operation and at the time of intraocular lens implantation, anterior chamber was formed by air bubble (in group A) and with viscoelastic agents (in group B). All patients were followed for 3 to 6 months.

Results: The rate of posterior capsular opacity and pigment deposition over the intraocular lens were significantly higher in group B (40.9% vs. 21%) than group A (30.3% vs. 9.7%), respectively.

Conclusion: Air bubble is a good substitution for viscoelastic agents in the formation of anterior chamber during cataract, either for decreasing complications or expensive materials.

Keywords: Posterior capsular opacity, cataract extraction, viscoelastic agent, air bubble

JRMS 2006; 11(2): 111-112

Cataract is the first etiologic factor in painless decreased vision in all of the world, which is found at 10% of American population and its incidence is 50% at the age 65 to 75 years and 70% at the age over 75 years¹. Every year, 1 million cataract extractions are performed in the USA².

Posterior capsular opacity (P.C.O) is one of the most frequent and late onset complications of cataract surgery which results in decrease of visual acuity several months after operation. If it become so dense, YAG laser capsulotomy is inevitable which capsular opening may be accompanied by increase in the rate of retinal hole and tears, cystoid macular edema and retinal detachment. Schaumberg reported 25% in the rate of P.C.O in the first 5 years after cataract extraction¹. There are several factors that increase this rate; such as younger age patients,

intraocular lens (IOL) material, roundness or sharpness of IOL optic edges, materials reforming anterior chamber (for implantation of IOL), rate of post-operative inflammation and retained lens material³.

For these reasons, prophylactic treatment of P.C.O seems to be better than any types of capsulotomy. According to previous studies that showed higher rate of uveitis in viscoelastic group^{4, 5}. We compared air bubble and viscoelastic agents in the rate of P.C.O production and pigment deposition over the lens.

Materials and Methods

In a descriptive and prospective study, the patients whom referred to Farabi eye center, Isf-

*Assistant Professor, Ophthalmology Department, Isfahan University of Medical Sciences, Isfahan, Iran
Correspondence to: Dr Hosein Attarzadeh, Farabi Hospital. E-mail: attarzadeh@med.mui.ac.ir

ahan, for cataract surgery were randomly selected from April to November 2001. The patients with diabetes mellitus, chronic inflammatory eye diseases and glaucoma were excluded. They were randomly divided into air bubble group (A; 62 patients) and viscoelastic group (B; 66 patients).

The operative procedure was classic extra-capsular cataract extraction. After complete clearing of lens capsule from lens material, anterior chamber was filled with air bubble or viscoelastic agent (coatel), IOL was implanted in posterior chamber and then, anterior chamber was cleared from air bubble or coatel through irrigation aspiration by balance salt solution as much as possible.

The patients were followed up 3 to 6 months, and the rate of P.C.O and pigment deposition over IOL was clinically estimated by slit lamp examination.

Results

All patients (n=128) were more than 45 years old (75 female and 53 males). The mean age of group A (66.7±10.8) and group B (65.1± 5.8) was not statistically significant.

Posterior capsular opacity was seen in air group (27%) and viscoelastic group (40.9%) which was significantly different (p= 0.03) (Kruskal Wallis test). Table 1 reveals that the density of posterior capsular opacity is higher in viscoelastic group than air group (P=0.025). Pigment deposition over the IOL was seen in air

group (9.7%) and in viscoelastic group (30.3%), which was statistically significant (p= 0.02)

Table 1. The incidence of P.C.O. density

Density Of P.C.O	Air bubble group (A)		viscoelastic group (B)	
	No	%	No	%
1+	11	17.7	12	%18.2
2+	1	%1.6	12	%18.2
3+	1	%1.6	3	%4.5
Total	13	%21	27	%40.9

Discussion

Posterior capsular opacity and pigment deposition over the IOL is dramatically decreased when air bubble was used instead of viscoelastic agent for implantation of IOL.

Previous study compared air bubble and viscoelastic agents for the rate of corneal edema⁴ or sterile endophthalmitis⁵, and found higher incidence of these complications when the surgeon have used viscoelastic agents instead of air bubble.

We did not find any other study for comparison of our result with them, but our result is highly suggestive that the rates of P.C.O and pigment deposition will decrease when the surgeons use air bubble instead of viscoelastic agents for implantation of IOL.

So, we recommend ophthalmic surgeons to use air bubble instead of viscoelastic agents during intra ocular lens implantation.

Reference

- 1- McIntyre DJ. *Extra capsular cataract surgery*. Mosby 1998 pp; 3-7
- 2- Vaughan V. *General ophthalmology*. 15th edition, 1999; pp: 11-12, 159 -161
- 3- Jaffe *Text book of cataract surgery* 2001 pp: 221-230
- 4- BakhtAvar C. *The comparison between air bubble and viscoelastic agents in the production of corneal edema*. Dissertation for MD. Isfahan University of Medical Sciences 1996
- 5- Rasoolian B. *The comparison between air bubble and viscoelastic agents in the production of sterile endophthalmitis*. Dissertation for Ophthalmology. Isfahan University of Medical Sciences 2001