

Case Report

Hydrophilic Intraocular Lens Opacification — A Case Report

Shivcharan Lal Chandravanshi¹, Shashi Jain², Divya Tripathi³, Divya Ramraika⁴

Purpose : To report a case of late opacification of the hydrophilic acrylic Intraocular Lens (IOL) after uneventful Cataract Surgery.

Methods : A 60-year-old male presented with chief complaint of gradual diminution of vision in right eye over the past one year. He was Normotensive, Non-diabetic and had a normal Lipid Profile. History revealed that he underwent uneventful phacoemulsification with posterior chamber hydrophilic intraocular in the bag implantation for pre-senile cataract in his Right Eye ten years ago. He had the best corrected visual acuity of 6/6 in his Right Eye for nine years Post Cataract Surgery. Slit-lamp examination confirmed Intraocular Lens Opacification.

Results : Intraocular Lens exchange was performed in his Right Eye. The hydrophilic IOL was replaced with poly methyl methacrylate intraocular lens. The explanted IOL showed uniform grayish-white opacification. Post operative period was uneventful. Intraocular pressure by applanation tonometry was 16.4 mm Hg in both the eyes. Patient's best corrected visual acuity was 6/6 with -1 D Cyl. at 90 degree, Postoperatively. Over a follow up period of one year, the patient did not develop complications like posterior capsular IOL opacification.

Conclusion: Intraocular Lens opacification is an extremely rare late postoperative complication of Phacoemulsification which can be managed effectively by IOL exchange procedure in cases of opacified IOL optics causing visual morbidity.

[J Indian Med Assoc 2023; 121(2): 73-4]

Key words : Calcification, Hydrophilic intraocular lens, Intraocular lens, Posterior capsule opacification, Intraocular lens opacification, Tertiary cataract.

Intraocular Lens (IOL) opacification is an extremely rare unilateral or sometimes bilateral IOL related complication of Cataract Surgery which may affect the surfaces (anterior, posterior or both) or the material of the optic, haptics, or whole lens. Intraocular Lens opacification is postulated to be caused mainly by calcification. Calcification of IOL may be of primary or secondary types. Primary calcification results from the problems of IOL itself in the absence of other significant causes. Secondary calcification of IOL occurs in the presence of pre-disposing factors such as Diabetes, Uveitis and following Vitreoretinal or Keratorefractive surgeries. Patients usually present to the Ophthalmologist with complaints of diminution of vision. Intraocular Lens exchange is universally accepted and safe procedure to restore vision in these cases. This case study aims to report a rare case of Hydrophilic Intraocular Lens opacification in the absence of any risk factors.

CASE REPORT

A 60-year-old male presented with chief complaints of right eye gradual painless diminution of vision since one year. He gave history of right Eye Phacoemulsification

¹MS, Professor, Department of Ophthalmology, Atal Bihari Vajpayee Government Medical College, Vidisha, Madhya Pradesh 464001 and Corresponding Author

²MS, Professor, Department of Ophthalmology, S S Medical College, Rewa 486001

³MS, Senior Resident, Department of Ophthalmology, Government Medical College, Shahdol, Madhya Pradesh 484001

⁴DO, DNB, Senior Resident, Department of Ophthalmology, Hindu Rao Hospital, New Delhi 110007

Received on : 10/01/2022

Accepted on : 14/02/2022

Editor's Comment :

- Intraocular Lens opacification is a rare complication. It is more common in hydrophilic intraocular lenses.
- The ophthalmologists must be aware of this complication and patients to be well informed about Postoperative IOL opacification to avoid litigation.

with Hydrophilic Intraocular Lens implantation 10 years back, elsewhere. There was a negative history of Diabetes, Uveitis or any Keratorefractive or Intraocular Retinal Surgeries. On initial pen light examination, there was Leucocoria in his Right Eye. His best corrected visual acuity was 6/24 in the right eye and 6/9 in the Left Eye. Slit lamp examination disclosed pseudophakia with opacified intraocular lens in the Right Eye while nuclear sclerosis grade II in the Left Eye. Dilated Slit-lamp examination confirmed opacification of both the optic and haptics sparing posterior capsule. No deposits were seen on Intraocular Lens surface on 40X magnification. The patient was posted for exchange of opacified IOL with Polymethyl Methacrylate Intraocular Lens. Postoperative visual acuity was 6/6 with -1 cylinder at 90°. The explanted IOL was sent for light microscopy examination with special stains for detection of Calcium coupled with scanning electron microscopy which did not reveal any deposits over IOL surface. However, special stains, Alizarin red S was positive while Von Kossa was negative for calcium. Postoperative period was uneventful. Postoperative visual acuity in the Right Eye at one month follow-up was 6/6 with -1D cylinder at 90° (Figs 1&2).

DISCUSSION

The Intraocular Lens opacification is an extremely rare

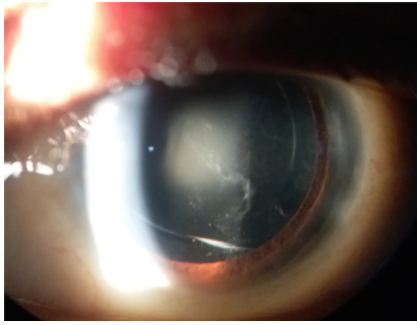


Fig 1 — Slit-lamp photograph showing grayish white opacification of intraocular lens



Fig 2 — Slit-lamp optical section photograph showing grayish white opacification of intraocular lens

late Postoperative complication after Cataract Surgery with IOL implantation which usually occurs in the late postoperative period in Hydrophilic IOLs. Intraocular Lens opacification in Hydroview IOLs after Cataract Surgery was first reported by Chang *et al* in 1999¹. The incidence of IOL opacification ranges from 1.1% to 14.5% depending on the presence of risk factors in the patient². Duration of IOL opacification ranges from one year to seven years or more. Silicone, Acrylic and Poly Methyl Methacrylate (PMMA) IOLs have been reported to undergo opacification. Hydrophilic acrylic IOLs have greater tendency of opacification in comparison with hydrophobic acrylic IOLs³. Patients with IOL opacification usually present with complaints of gradual painless loss of vision after Cataract extraction with IOL Implantation Surgery, decreased contrast and glare⁴. Sometimes patient may also present with Leucocoria, poor vision in dim light and hazy or foggy vision.

Various risk factors for IOL opacification have been described in the literature such as Diabetes, Uveitis, Asteroid Hyalosis, Breakdown of blood aqueous barrier intraoperatively in procedures such as Parsplana Vitrectomy (PPV) with intraocular gas or air injection, penetrating keratoplasty, Descemet Membrane Endothelial Keratoplasty (DMEK) and descemet stripping (automated) Endothelial Keratoplasty (DSEK/DSAEK)⁵⁻⁶. In present case study, no such risk factors are present for IOL opacification.

Mechanism of IOL opacification is not well established. Various mechanisms have been proposed by numerous researchers. Different patterns of IOL opacification have been noted in different IOL substances such as snowflake opacification in PMMA IOLs, discoloration/clouding in silicone IOLs, calcification (hydroxyapatite, dicalcium phosphate, octacalcium phosphate, or hydroxyapatite deposition) in hydrophilic acrylic IOLs and glistening or subsurface nanoglistenings in Hydrophobic acrylic IOLs⁷.

Diagnosis of IOL opacification is easily made by Slit-lamp Biomicroscopy. Sometimes, it may mimic a lamellar cataract. Anterior Segment Optical Coherence Tomography offers help in detection of IOL-capsular bag adhesions. Scanning laser electron microscopy and X-ray diffraction examination of an explanted IOL may be helpful in understanding the mechanism of IOL

opacification. Both the techniques show Calcium deposition over IOL surface. Von Kossa stain is useful in IOL surface calcification while Alizarin red is used for entire IOL material calcification⁸.

Explanation of an opacified IOL and reimplantation of new IOL made up of different material is the procedure of choice for the treatment of opacified IOL at present⁹. However, IOL exchange procedure may become risky in patient who has had Nd-YAG laser capsulotomy in the past. In such cases, capsular bag damage, complete dehiscence of bag, vitreous prolapse, zonular dehiscence, IOL drop, IOL decentration may be the common complications. Scleral fixated IOL, anterior chamber IOL, sutured iris fixated IOL, iris claw IOLs and retro pupillary iris claw IOL are also other viable options in case of capsular bag damage/dehiscence¹⁰. Majority of IOL exchange procedures have excellent Postoperative visual outcome if posterior segment is healthy.

CONCLUSION

Incidence of IOL opacification is extremely low; the patient should be warned in advance of the remote possibility of IOL opacification in long term. This aspect of IOL related complication and the likelihood of repeat surgery for the same, should be mentioned in the informed consent in order to avoid litigation in the future.

REFERENCES

- 1 Chang BYP, Davey KG, Gupta M, Hutchison C — Late clouding of an acrylic lens following routine phacoemulsification. *Eye* 1999; **13**: 807-8.
- 2 Jain P, Pattnaik A — Intraocular lens opacification: A rare enigma. *J Clin Ophthalmol Res* 2021; **9**: 51-4.
- 3 Grzybowski A, Zemaitiene R, Markeviciute A, Tuuminen R — Should we abandon hydrophilic intraocular lenses? *Am J Ophthalmol* 2021; **Nov 26**: S0002-9394(21)00618-8. doi: 10.1016/j.ajo.2021.11.021.
- 4 Grzybowski A, Markeviciute A, Zemaitiene R — A narrative review of intraocular lens opacifications: update 2020. *Ann Transl Med* 2020; **8**: 1547.
- 5 Fernández J, Sanchez Garcia A, Rodriguez Vallejo M, Piñero DP — Systematic review of potential causes of intraocular lens opacification. *Clin Exp Ophthalmol* 2020; **48**: 89-97.
- 6 Neuhann IM, Neuhann TF, Rohrbach JM — Intraocular lens calcification after keratoplasty. *Cornea* 2013; **32**(4): e6-10.
- 7 Neuhann IM, Kleinmann G, Apple DJ — A new classification of calcification of intraocular lenses. *Ophthalmology* 2008; **115**: 73-9.
- 8 McGee Russell SM — Histochemical methods for calcium. *J Histochem Cytochem* 1958; **6**: 22-42.
- 9 YuAK, NgAS — Complications and clinical outcomes of intraocular lens exchange in patients with calcified hydrogel lenses. *J Cataract Refract Surg* 2002; **28**: 1217-22.
- 10 Gashau AG, Anand A, Chawdhary S — Hydrophilic acrylic intraocular lens exchange: Five year experience. *J Cataract Refract Surg* 2006; **32**: 1340-4.