



Iatrogenic Cataract in an Infant Following Intravitreal Injection for Management of Retinopathy of Prematurity

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ABSTRACT

Intravitreal injections are administered routinely and are the mainstay of many eye diseases. Extra caution is required when these are given in infants under topical anaesthesia. We discuss here a complication of this procedure and highlight the points to be kept in mind to avoid it.

INTRODUCTION

For retinopathy of prematurity (ROP), a fibrovascular proliferative disease, intravitreal anti-vascular endothelial growth factor (VEGF) injection is one of the main treatments. These injections are usually administered under topical anesthesia due to ease of administration, tolerability by the infant, and risks associated with general anesthesia.

Topical proparacaine and tetracaine are the usual anaesthetic agents used. The usual technique involves repeating the drops every 5 minutes thrice to provide sustained pain-free anesthesia. After stabilizing the globe, the distance from the limbus at which injection is planned is marked, usually at 1.5 mm in infants, the position of pars plana. A cotton-tipped applicator is used to move the eye in the required gaze. The injection is given with a 30-gauge needle perpendicular to the sclera. The pupil is dilated prior to the procedure for post-injection retina evaluation.

Some of the reported complications of the procedure include endophthalmitis, iatrogenic cataract, rhegmatogenous retinal detachment, raised intraocular pressure, intra-ocular hemorrhage, choroidal ischemia, and worsening retinal traction. Cataract may occur due to inadvertent rupture of the posterior capsule or changes in lens epithelial viability and morphology after exposure to bevacizumab.

CASE REPORT

We report here a 30-day-old infant who underwent bilateral Bevacizumab injection for type 1 ROP according to the standard technique described earlier. While the procedure in the left eye was uneventful, there was a slight movement while injecting in the right eye. While no damage was noted on the table, the child developed a central subcapsular type of cataract on the next day (Figure 1) which progressed to total cataract by 1-week follow-up. B scan of the child demonstrated the cataract with no obvious breach in the posterior capsule.

The child was planned for standard lens aspiration with anterior vitrectomy with in-the-bag posterior chamber intraocular lens implantation after 2 weeks. Anterior capsulorhexis was performed. When cortical aspiration was being performed with reduced bottle height the posterior capsular opening seemed to enlarge. A switch was made to the vitrectomy handpiece for completing the procedure. While a thorough cortical clean-up with anterior vitrectomy was possible, the posterior capsular opening had irregularly enlarged to beyond 6 mm making in-the-bag IOL implantation unsafe. A 3 piece IOL was implanted in the sulcus

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Dates:

Received : 25 Oct. 2024

Accepted : 14 Nov. 2024

Published : 25 Nov. 2024

Key Words

Retinopathy of Prematurity

Iatrogenic

Intravitreal Injection

How to Cite:

Goel R., Gupta S.,

Gupta S. K., Agrawal S.

Iatrogenic Cataract in

an Infant Following

Intravitreal Injection for

Management of

Retinopathy of Prematurity

UPJO 2024; 12(3):44-45

with capture of the optic in anterior capsulorhexis. The patient developed inferior pupillary capture of the IOL optic at 3 months follow-up, however, the central axis clarity has been maintained. The patient has been prescribed appropriate refractive correction and is undergoing preventive amblyopia management.

DISCUSSION

We try to summarise our learning from handling this case for the benefit of our colleagues

1. While giving an intra vitreal injection under topical anaesthesia a forceps in the non-dominant hand of the surgeon should be used to fixate the globe. A cotton-tipped applicator was being used in our case which offered little resistance to movement.
2. The direction of the needle should be toward the center of the globe and not perpendicular to the scleral surface as is usually done in adults. The margin for error is small in infants as the point of entry is only 1.5 mm from the limbus. Moreover, the shape and relative size of the crystalline lens make it susceptible to trauma. With limited exposure, as usually occurs under topical anesthesia, it is easy to misdirect the needle. (Figure 2)
3. Using a shorter needle (32 gauge, 3/16 inch), at a distance of 1.75-2 mm posterior to the limbus would also be helpful.
4. If the child is crying after the first injection, it makes sense to allow him to calm down, before proceeding with injecting the second eye. The complication in our case occurred while giving the second injection.
5. Regarding the management of cataract, we would have been wiser by waiting for 4-6 weeks to allow fibrosis and stiffening of the posterior capsule margins. This would have probably enabled in-the-bag IOL implantation. It would however be at the risk of dense visual deprivation amblyopia, considering the unilaterality of the deprivation.
6. Probably a better approach, in this case, would have been pars plana lensectomy with a secondary IOL implantation later.

“Prevention is better than cure” holds true for this iatrogenic condition, for even after the best attempts to treat it, we know the outcomes will never be able to restore normalcy.

Figures

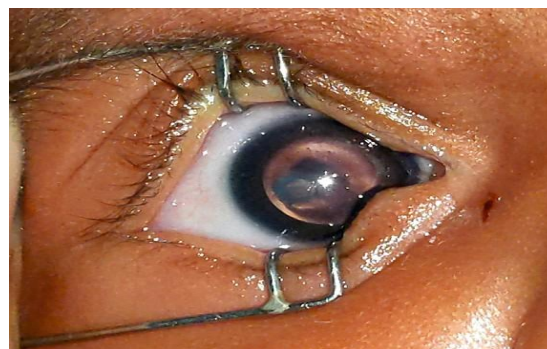


Figure 1 : Posterior subcapsular type cataract noted on initial follow up after intravitreal injection

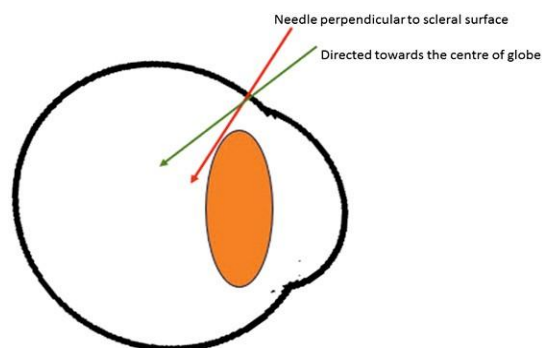


Figure 2: Directing the needle towards the centre of the globe rather than keeping it parallel to scleral surface is a safer option

REFERENCES

- Karkhaneh R, Torabi H, Khodabande A, Roohipoor R, Riazi-Esfahani M. Efficacy of Intravitreal Bevacizumab for the Treatment of Zone I Type 1 Retinopathy of Prematurity. *J Ophthalmic Vis Res.* 2018;13(1):29-33. doi: 10.4103/jovr.jovr_198_16. PMID: 29403586; PMCID: PMC5782452.
- Alselaimey R, Al Tawil L, Abouammoh MA. Anesthesia in retinopathy of prematurity. *Saudi J Ophthalmol.* 2022; 14;36(3):251-259. doi: 10.4103/sjopt.sjopt_229_21. PMID: 36276254; PMCID: PMC9583347.
- Lai TY, Liu S, Das S, Lam DS. Intravitreal Injection--Technique and Safety. *Asia Pac J Ophthalmol (Phila).* 2015 ;4(6):321-8. doi: 10.1097/APO.0000000000000146. PMID: 26649760.
- Falavarjani KG, Nguyen QD. Adverse events and complications associated with intravitreal injection of anti-VEGF agents: a review of literature. *Eye (Lond).* 2013;27(7):787-94. doi: 10.1038/eye.2013.107. Epub 2013 May 31. PMID: 23722722; PMCID: PMC3709385.
- Jun JH, Sohn WJ, Lee Y, Kim JY. Effects of anti-vascular endothelial growth factor monoclonal antibody (bevacizumab) on lens epithelial cells. *ClinOphthalmol.* 2016; 27;10:1167-74. doi: 10.2147/OPHTH.S103443. PMID: 27418802; PMCID: PMC4935105.