

Chorioretinal Folds after uneventful cataract surgery

¹Priyanka Sisodiya, Consultant Ophthalmologist, Anil Eye Hospital, India.

²Prakhar Bokade, Consultant Physician and Diabetologist, Sapphire hospital, India.

Corresponding Author: Priyanka Sisodiya, Consultant Ophthalmologist, Anil Eye Hospital, India.

How to citation this article: Priyanka Sisodiya, Prakhar Bokade, “Chorioretinal Folds after uneventful cataract surgery”, IJMACR- November – December - 2022, Vol – 5, Issue - 6, P. No. 252 – 255.

Copyright: © 2022, Priyanka Sisodiya, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License 4.0. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Purpose: This case report discusses the possible causes of Chorioretinal Folds post cataract surgery. Observation – A 66-year-old female presented with Chorioretinal folds (CRF) and small choroidal detachments 3 days after Left eye (LE) cataract surgery. Cataract surgery with intraocular lens implantation was uneventful. Her pre-operative refraction showed hypermetropia of +2.0D. Ancillary testing showed Normal axial length which rules out and high hyperopia and nano phthalms, MRI was Normal which rules out any evidence of Orbital tumour. B scan showed no evidence of Choroidal tumour. Conclusion - Our report highlights the possibility that Chorioretinal folds after cataract surgery can occur without any hypotony incidents.

Keywords: Chorioretinal folds, Cataract Surgery

Introduction

Chorioretinal Folds are striae, lines or grooves which mostly involves the posterior pole. Arrangement of CRFs is often in a parallel and horizontal fashion but may be vertical, oblique or irregular. These folds are the

undulations of the choroid, retinal pigment epithelium with the overlying wrinkled retina. [1]

They were first described clinically by Nettleship et al as choroidal folds and then it was re termed as Chorioretinal Folds by Gas [2].

CR folds are associated with a variety of ocular and orbital tumour, Thyroid eye disease or Graves Ophthalmopathy, Choroidal naevi and tumour, optic nerve drusen, microphthalmos, following ophthalmic surgery e.g Scleral buckling and trabeculectomy, hypotony, Central serous chorioretinopathy, Idiopathic Intracranial hypertension or secondary pseudotumor cerebri syndrome, Orbital cellulitis [3 - 5]. Chorioretinal folds are classified Idiopathic, when the cause cannot be determined.

The most common associated condition with CR folds in the literature has been identified as Hyperopia and Age-related maculopathy [6,7]. With improved diagnostic testing, majority of cases which were considered idiopathic presented a smaller portion of the total. Till date, no case of Chorioretinal folds after uneventful Phacoemulsification has been reported. This case report

discusses the possible causes of Chorioretinal Folds formation after uneventful cataract surgery.

Case report

A 66 yr. old Female presented with LE Chorioretinal folds on Fundus examination and OCT macula 3 days after cataract surgery.

Her past medical history included history of diabetes and Hypertension since 6 years. Her Recent Blood sugar levels before cataract surgery was Fasting Blood Sugar (FBS)–93mg/dl, Post Prandial Blood Sugar (PPBS) – 129 mg/dl.

A. Refraction history –

2015 – RE: +2.00Sph / +1.00 cyl *160 deg – 6/6, Near add +1.75D – N6

LE: +2.50Sph / +1.00 cyl *180 deg – 6/6, Near add +1.75D – N6

2021 - RE: -1.00sph/ -2.00cyl*100 deg – 6/12, Near add +2.75D - N6

LE: -0.5sph/ -1.5cyl*100 deg – 6/12, Near add +2.75D - N6 Myopic shift due to cataract.

IOL was implanted in each eye with power RE - +23D, LE - +24D

B. On Examination (post cataract surgery) –

UCVA – RE 6/6, N6

LE 6/9p, N6

- Eye motility- Full and free
- Anterior segment examination was unremarkable
- PCIOL was in place and in good position
- LE IOP – 30mmHg (NCT) - 2nd day post op so started on oral acetazolamide
- Fundus examination showed RE – WNL, LE showed Chorioretinal folds at posterior pole and equator with small peripheral choroidal detachment. [Fig 1a]

C. Ancillary test

OCT macula showed- chorioretinal fold at macula, no cystoid macular edema, IS/OS junction intact, normal foveal contour [Fig 1b]

MRI brain with optic nerve cuts – no abnormality detected

B scan - WNL

Post cataract surgery blood sugar levels – FBS, 180mg/dl, PPBS – 295mg/dl

D. Treatment –

Locally, Predforte eye drop and Nepafenac eye drop

Short course of Systemic steroids in a tapering manner

OCT macula done after 1 month of treatment showed resolution of Chorioretinal folds. [Fig 2]

Discussion

We report a case of Chorioretinal folds formation after uneventful cataract surgery (Phacoemulsification). The case excluded the currently known causes of chorioretinal folds (CRFs). The patient's medical history and associated symptoms excluded any autoimmune disease, intraorbital tumour, idiopathic orbital inflammation, thyroid related Ophthalmopathy, posterior scleritis, Lyme disease and Intracranial hypertension. An autorefractometer excluded hyperopia. Fundus examination excluded papilloedema, choroidal mass or choroiditis.

Oct macula excluded Choroidal neovascularization and Central Serous Chorioretinopathy.

The CRFs formation occurred possibly because of subclinical inflammation due to phacoemulsification. The blood ocular barrier separated the inner portion of the eye from blood that enters the eye. Breakdown of blood ocular barrier and increased retinal permeability in phacoemulsification is due to turbulence and thermal

injury. These changes are due to inflammatory response of immune system [8, 9].

This may lead to extravasation of fluid within the choroidal and retinal tissues. The fluid accumulated at the focal retinal and choroidal tissue, while the surrounding tissue remain unchanged. CRFs occurred due to uneven tension force [10, 11]. After steroid use CRFs regressed. Although we did not perform fluorescent angiography (FFA) or indocyanine green angiography (ICG), the OCT macula showed the CRFs.

Another cause is decrease in scleral rigidity due to high myopia. One of the factors for CRFs could be the relationship between IOP and biochemical properties of ocular structure. Myopic eyes have less extracellular matrix mostly at posterior pole [12].

During the development of axial myopia there is loss of scleral tissue which leads to weakened biochemical properties of sclera [13]. Weakened sclera in myopes cannot sustain low IOP and hence cannot maintain the globe contour, ultimately the tractional forces can result in CRFs [14].



Fig 1 a. Fundus colour photo of chorioretinal folds at posterior pole extending to equator.

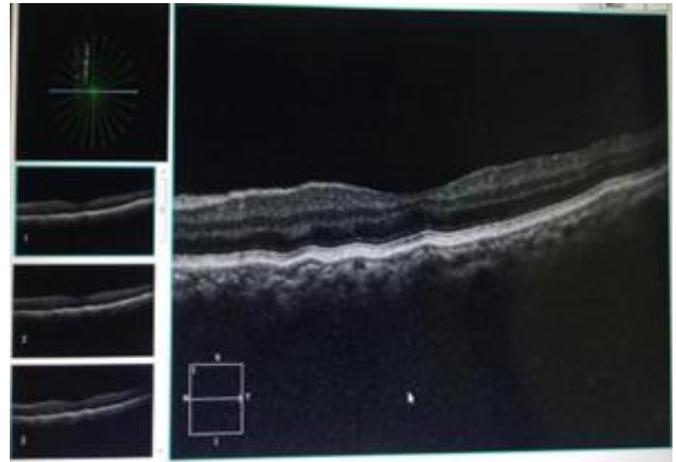


Fig 1 b. Optical coherence tomography shows wrinkling of retinal layers due to chorioretinal folds at macula

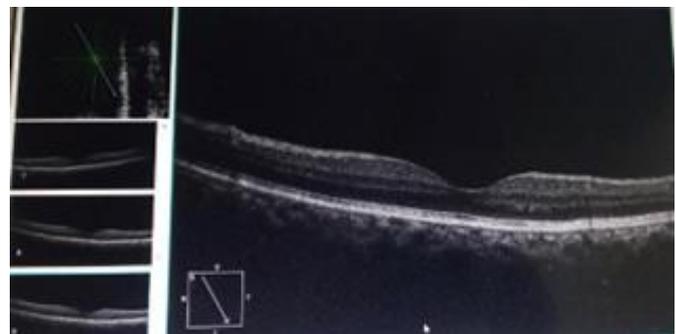


Fig 2. Optical coherence tomography after 1 month shows resolution of chorioretinal folds

Conclusion

As discussed in our case report CR folds can occur without any hypotony incidents in intraoperative and post-operative period. We recommend a detailed fundus examination in patients with blurred vision after cataract surgery for early detection of CRF formation, so that it can be managed with immediate intervention resulting in preservation of the vision.

Abbreviations

CRFs – Chorioretinal folds

OCT – Optical coherence tomography

PCIOL – Posterior chamber intraocular lens

IOP – Intraocular pressure

NCT – Non contact tonometer

References

1. Bullock JD, Egbert PR. The origin of choroidal folds a clinical, histopathological, and experimental study. *Doc Ophthalmol.* 1974. Doi: 10.1007/BF00147262
2. Nettleship E. Peculiar lines in the choroid in a case of postpapillitic atrophy. *Trans Ophthalmol Soc UK.* 1884; 4:167–168.
3. Vahdani K, Rose G.E. Chorioretinal Folds in Thyroid Eye Disease. *Ophthalmology.* 2019; 126: 1106. Doi: 10.1016/j.ophtha.2019.04.045. [Pub med PMID: 31327376] [Cross Ref] [Google Scholar].
4. Yi-Fen Lai, Ching-Long Chen, Ke-Hao Huang, and Yi-Hao Chen. Chorioretinal Folds in the Trabeculectomized Eye with normal Intraocular Pressure after phacoemulsification. *Case report 2021; 57(9):896.* Doi: 10.3390/medicina57090896. [PubMed PMID: 34577819] [CrossRef] [Google Scholar].
5. Cohen S.Y., Ducos de Lahitte G., Gaudric A., Mrejen S. Chorioretinal folds in patients with central serous chorioretinopathy. *Retin. Cases Brief Rep.* 2019. Doi: 10.1097/ICB.0000000000000944. [PubMed PMID 31764887] [CrossRef] [Google Scholar]
6. Can Gemi FE, Tremper CL, Walsh JB. Choroidal folds. *Am J Ophthalmol.* 1978. Doi: 10.1016/0002-9394(78)90243-X
7. Leahey AB, Brucker AJ, Wyszynski RE, Shaman P. Chorioretinal Folds: A Comparison of Unilateral and Bilateral Cases. *Arch Ophthalmol.* 1993.
8. Andrew Lee, MD and Sandra R Montezuma, MD. A 61-year-old man with Cystoid Macular Edema and Chorioretinal Folds after cataract surgery. *Digit J Ophthalmol.* 2017; 23(3):81-84. doi: 10.5693/djo.03.2017.02.002. [Pub Med PMID: 29162993] [Google Scholar].
9. Hwang H.S., Ahn Y.J., Lee H.J., Kim M.S., Kim E.C. Comparison of macular thickness and inflammatory cytokine levels after microincision versus small incision coaxial cataract surgery. *Acta Ophthalmol.* 2016; 94: e189- e 194. Doi: 10.1111/aos.12716. [PubMed] [CrossRef] [Google Scholar]
10. Friberg T.R. The etiology of choroidal folds. A biochemical explanation. *Graefes Arch. Clin. Exp. Ophthalmol.* 1989; 27:459-464. doi: 10.1007/BF02172899. [PubMed] [CrossRef] [Google Scholar]
11. Sato T., Koh moto R., Fukumoto M., Morishita S., Kimura D., Tajiri K., Kobayashi T., Kida T., Kojima S., Ikeda T. A Case of Diabetic Macular Edema with Prominent Choroidal Folds. *Case Rep. Ophthalmol.* 2017; 8:163-169 doi:10.1159/000461574. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
12. Norton T.T., Rada J.A. Reduced extracellular matrix in mammalian sclera with induced myopia. *Vision Res.* 1995; 35: 1271 -1281. doi:10.1016/0042-6989(94)00243-F. [PubMed] [CrossRef] [Google Scholar]
13. Mc Brein N.A., Cornell L.M., Gentle A. Structural and ultrastructural changes to the sclera in a mammalian model of high myopia. *Investing. Ophthalmol. Vis. Sci.* 2001; 42:2179-2187. [PubMed] [Google Scholar]
14. Bagnis A., Cutolo C.A., Corallo G., Musetti D., Nicolo M., Traverso C.E. Chorioretinal folds: A proposed diagnostic algorithm. *Int. Ophthalmol.* 2019; 39: 2667-2673. doi:10.1007/s10792-019-01083-y. [PubMed] [CrossRef] [Google Scholar].