Case Report

Bilateral Rhegmatogenous Retinal Detachment Following Cataract Surgery In a Young Adult: What Could Have Been Done Differently? A Case Report And Review Of Literature

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ABSTRACT

Cataract remains a leading cause of reversible blindness globally, particularly in low-resource settings. Although cataract surgery is highly successful, complications such as retinal detachment (RD), though uncommon, can result in devastating visual outcomes. We report a 39-year-old male who developed bilateral rhegmatogenous retinal detachment (RRD) following sequential cataract surgeries performed at different centers, including a community outreach setting. Postoperative follow-up was inadequate after the first surgery, and despite subsequent intervention in the fellow eye, he developed bilateral RD and complete blindness. Ocular ultrasonography confirmed chronic RD with macrocyst formation. This case highlights critical gaps in preoperative evaluation, surgical setting standards, and postoperative follow-up. Known risk factors for RD—including young age, possible myopia, and history of RD in the fellow eye—were likely not adequately assessed. Cataract surgery increases RD risk through vitreoretinal interface alterations. Bilateral involvement further emphasizes the importance of risk stratification. Cataract surgery in outreach settings must adhere to strict clinical protocols, including proper patient selection, risk assessment, and structured follow-up systems to prevent avoidable blindness.

Keywords: Bilateral blindness, Cataract surgery, Medical outreach, Retinal detachment, Ultrasonography

INTRODUCTION

Cataract is a leading cause of blindness worldwide, particularly in developing countries, where access to surgical care remains uneven[1]. While cataract extraction is generally safe and effective, postoperative complications such as retinal detachment (RD), although rare, can lead to irreversible visual loss[2].

Rhegmatogenous retinal detachment (RRD), the most common subtype, occurs when a retinal break allows fluid to accumulate in the subretinal space[3]. The risk of RD following cataract surgery is influenced by multiple factors, including age, axial length, refractive status, and surgical technique[4].

In resource-limited settings, cataract surgeries are sometimes performed during medical outreaches, where constraints in infrastructure, patient evaluation, and follow-up may compromise outcomes. This case underscores the consequences of inadequate perioperative care and explores preventable factors.

CASE PRESENTATION

A 39-year-old male from the Niger Delta region presented with **progressive bilateral vision loss** following cataract surgeries performed at different times and locations.

The first surgery (right eye) was performed approximately three years prior during a free medical outreach. The setting was characterized by a high patient load and limited personnel. Postoperatively, the patient developed complications but had **no structured follow-up**, as the outreach team had been disbanded. He subsequently experienced progressive visual decline, culminating in complete blindness in the right eye.

Six months prior to presentation, he underwent cataract surgery in the left eye at a private facility. Despite initial reported success, he again developed progressive visual deterioration.

At presentation to our facility, ophthalmologic evaluation and ocular ultrasonography revealed:

- Right eye: Chronic rhegmatogenous retinal detachment with extensive retro-retinal fluid and peripheral macrocysts
- Left eye: Retinal detachment with limited visualization due to lens opacity

These findings confirmed bilateral retinal detachment, consistent with advanced disease.(See Figure 1)

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Fig. 1. 7MHz ultrasonography of the right eye revealing chronic retinal detachment with extensive peripheral macrocysts and the echogenic detached membrane and retinal detachment on the left.

DISCUSSION

Cataract surgery is one of the most successful surgical interventions globally; however, complications such as RD, though uncommon, remain clinically significant[5]. The incidence of RRD in the general population is approximately 0.01–0.02%, but the risk increases following cataract extraction[4,6].

Several established risk factors likely contributed:

- Young age (39 years) – significantly increases RD risk[1,5,6]
- Male gender – higher incidence reported[7]
- Sequential cataract surgeries
- Possible unassessed myopia or axial length abnormalities
- History of RD in fellow eye – major predictor[8]

Retinal detachment (RD), particularly rhegmatogenous retinal detachment (RRD), remains one of the most severe vision-threatening complications following cataract surgery, despite major advances in surgical techniques. Although cataract extraction is widely regarded as one of the safest surgical procedures globally, its complications can be devastating when they occur. The incidence of RRD in the general population is estimated at approximately 0.01–0.02%, but this risk increases significantly following cataract surgery due to alterations in vitreoretinal dynamics –'—7,9.

In this case, the development of bilateral RRD in a relatively young patient highlights the interplay of multiple high-risk factors. Age is one of the most consistently identified determinants of postoperative RD. Younger patients undergoing cataract surgery are at significantly higher risk compared to older individuals, largely due to the absence of pre-existing posterior vitreous detachment (PVD). In such patients, the intact vitreous body transmits tractional forces to the retina during and after surgery, predisposing to retinal breaks and subsequent detachment 8,10. This mechanism is likely central to the pathogenesis observed in this patient.

Gender has also been shown to influence RD risk, with males demonstrating a higher incidence compared to females 7. Although the underlying reasons remain incompletely understood, it has been suggested that differences in ocular anatomy, hormonal influences, or occupational exposures may contribute. Additionally, refractive errors—particularly high myopia—are well-established risk factors for both early cataract formation and RD, owing to increased axial length and retinal thinning –'—9,11. While refractive status was not documented in this case, the early onset of cataract raises the possibility of underlying myopia, which may not have been adequately assessed preoperatively.

Patients with RD in one eye have significantly increased risk in the fellow eye. The Scottish Retinal Detachment Study reported ~7% bilateral involvement aligning with

this case.

The bilateral occurrence of RD in this patient is particularly noteworthy. Although less common, bilateral RRD has been reported in both global and regional studies.——7,12 The Scottish Retinal Detachment Study demonstrated that approximately 7% of patients develop involvement of the fellow eye ——7,12. Similarly, African and Nigerian studies have reported comparable or slightly higher rates of bilateral involvement, emphasizing the importance of close monitoring once RD occurs in one eye. Benson et al. further established that the presence of RD in one eye significantly increases the risk in the contralateral eye, particularly in the presence of additional risk factors such as cataract surgery 8. In the present case, the occurrence of RD in the first eye should have prompted a more cautious and individualized approach before proceeding with surgery in the second eye.

From a mechanistic perspective, cataract surgery—especially phacoemulsification—induces structural changes within the vitreous body, including liquefaction and posterior vitreous detachment, which increase vitreoretinal traction –'—9. These changes can lead to retinal tears, which serve as the initiating event for RRD. In addition, intraoperative complications such as posterior capsular rupture or vitreous loss can further increase this risk, although such details were not available in this case.

The presence of intraretinal macrocysts in the right eye is an important radiologic and clinical finding. These cystic structures are indicative of long-standing retinal detachment and arise from degenerative changes within the detached retina 11. Their presence suggests delayed diagnosis and prolonged disease progression, which is consistent with the patient's history of poor postoperative follow-up.

In the African context, several studies have highlighted that previous ocular surgery, including cataract extraction, is a significant contributor to RD-related blindness. For instance, reports from sub-Saharan Africa indicate that cataract surgery is among the leading non-traumatic causes of RRD, although trauma remains a predominant factor in many settings. Furthermore, delayed presentation is a recurring challenge, with many patients presenting only after significant visual deterioration has occurred, often limiting the effectiveness of surgical intervention.

The role of healthcare system factors in this case cannot be overstated. The first cataract surgery was performed during a medical outreach, a setting that, while beneficial for improving access to care, may be associated with limitations in infrastructure, staffing, and continuity of care. It is highly probable that essential preoperative assessments—such as fundoscopy, axial length measurement, and intraocular pressure evaluation—were either inadequate or not performed 13. These evaluations are critical for identifying patients at increased risk of postoperative complications.

Equally important is the absence of structured postoperative follow-up. Cataract surgery requires ongoing monitoring to detect and manage complications early. In this case, the absence of follow-up after the first surgery allowed complications to progress unchecked, resulting in irreversible damage. This highlights a significant gap in outreach-based surgical care, where continuity of care is often not guaranteed.

This case strongly highlights health system gaps, particularly in outreach settings. Inadequate preoperative evaluation (e.g., fundoscopy, biometry, tonometry) , poor intraoperative standards (possible sterility concerns), absence of structured postoperative follow-up and lack of continuity of care.

The UK National Cataract Dataset, which analyzed over 55,000 procedures, reported complication rates of less than 5%, with the majority of patients achieving favorable visual outcomes 14. This stark contrast underscores the importance of standardized surgical protocols, skilled personnel, and robust follow-up systems.

Ocular ultrasonography played a crucial role in the diagnosis of RD in this patient. It is a highly sensitive and specific modality, particularly useful in cases where direct visualization is limited by media opacities such as dense cataracts 15,16. The ultrasonographic findings in this case, including echogenic detached retinal membranes and retro-retinal fluid collections, are characteristic of advanced RD.

Overall, this case represents a convergence of multiple risk factors—young age, male gender, probable unrecognized ocular predisposition, sequential surgeries, and inadequate perioperative care—set against a background of systemic healthcare limitations. It underscores the need for comprehensive patient evaluation, individualized risk assessment, and the establishment of structured follow-up systems, particularly in outreach settings where the risk of complications may be heightened.

CONCLUSION

This case illustrates a preventable cause of bilateral blindness following cataract surgery, emphasizing the need for rigorous preoperative risk assessment, standardized surgical protocols, mandatory postoperative follow-up systems and regulation of outreach surgical programs. Failure to meet these standards can result in devastating outcomes, particularly in young patients.

RECOMMENDATIONS

Based on the findings from this case, several important measures are necessary to improve patient outcomes and prevent similar occurrences of avoidable blindness following cataract surgery. Comprehensive preoperative evaluation must be mandatory for all patients, regardless of the setting in which the surgery is performed. This should include detailed ocular history, visual acuity assessment, fundoscopy, intraocular pressure measurement, and where indicated, ocular biometry and ultrasonography, with particular attention to identifying high-risk individuals such as younger patients, males, and those with suspected myopia or pre-existing retinal pathology.

There is also a need for careful risk stratification and individualized surgical planning. Patients identified as having a higher risk for retinal detachment should be adequately counseled, and where possible, surgery should be conducted in well-equipped centers with access to

vitreoretinal expertise. In such cases, closer postoperative monitoring is essential.

Cataract surgical outreach programs should be strengthened and appropriately regulated to ensure that quality of care is not compromised in the effort to improve access. While these programs play a vital role in reducing the burden of cataract-related blindness, they must adhere to established clinical standards, including proper surgical environments, trained personnel, adequate equipment, and effective infection control practices. Most critically, these programs must incorporate structured postoperative follow-up systems, as the absence of continuity of care significantly increases the risk of poor outcomes.

Early detection and prompt management of postoperative complications should be prioritized, and patients should be adequately educated on warning symptoms such as sudden visual loss, flashes, or floaters, with clear instructions to seek immediate medical attention. Furthermore, strengthening diagnostic capacity, particularly through the availability and utilization of ocular ultrasonography in resource-limited settings, can greatly enhance early diagnosis where direct visualization is limited.

Finally, from a broader public health perspective, there is a pressing need for policy frameworks that regulate and monitor surgical outreach programs to ensure accountability and quality assurance. Collaboration between governmental agencies, teaching hospitals, and non-governmental organizations is essential to ensure that initiatives aimed at reducing cataract blindness are implemented safely and effectively without increasing the burden of preventable complications.

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