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RETINAL DETACHMENT FOLLOWING RETRO FIXATED IRIS CLAW INTRAOCULAR LENS (RFIC-IOL) IMPLANTATION.

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The primary objective of this study is to evaluate the timing, characteristics, and risk factors for retinal detachment (RD) following retrofixated iris claw intraocular lens (RFIC-IOL) implantation. Additionally, this study aims to assess the surgical outcomes and safety profile of the RFIC-IOL implantation, with particular emphasis on retinal detachment as a potential postoperative complication. Given the increasing adoption of retrofixated iris claw IOLs in pediatric and complex ocular surgeries, understanding the incidence and risk factors for retinal detachment in this context is crucial for optimizing patient management and improving long-term visual outcomes.

This study presents a retrospective case series involving 9 eyes from 7 male patients, aged between 5 to 7 years, who underwent retrofixated iris claw IOL implantation at a tertiary referral center. All patients were carefully selected based on their unique clinical conditions that necessitated RFIC-IOL implantation. The indications for surgery included ectopia lentis (4 patients) and megalocornea with microspherophakia (5 patients), both of which are associated with lens instability and subluxation.

Preoperative evaluation involved a thorough assessment of risk factors that could predispose patients to developing retinal detachment. These included the presence of pre-existing retinal lesions, retinal degeneration (such as lattice degeneration), prior vitrectomy, or history of ocular trauma. Additionally, axial myopia, thin retina, zonular instability, and lens subluxation were considered high-risk factors. Peripheral fundus screening was performed under general anesthesia prior to surgery to identify and address any treatable retinal lesions, ensuring that any underlying retinal pathology was managed before proceeding with RFIC-IOL implantation.

All patients underwent retrofixated iris claw IOL implantation, a technique often utilized in pediatric cases or in patients with complicated ocular histories, including congenital cataracts and trauma. This method involves fixation of the IOL to the posterior iris via a surgical approach that avoids the need for posterior capsulotomy or anterior chamber IOL placement. Postoperatively, patients were monitored closely for visual outcomes, IOL stability, and the development of any complications, particularly focusing on the occurrence of retinal detachment.

Retinal detachment (RD) occurred in 9 eyes (from 7 patients) following retrofixated iris claw IOL implantation. The onset of RD varied significantly among the cases, with 4 eyes presenting with RD within 6 months of the IOL implantation. In contrast, 3 eyes developed RD more than a year following the surgery. This indicates that retinal detachment may occur both as an early and late complication of RFIC-IOL implantation, which underscores the need for long-term monitoring in these patients.

The most common type of retinal detachment in these patients was subtotal rhegmatogenous retinal detachment, which was observed in 5 eyes. This type of detachment is typically associated with retinal tears and can result from tractional forces exerted by an unstable IOL or by pre-existing retinal conditions such as lattice degeneration. Retinal detachment with choroidal detachment was the second most common type, occurring in 3 eyes, and giant retinal tear-associated RD was observed in

1 eye. Giant retinal tears, which are more severe and complicated, often present a unique challenge in surgical management due to the difficulty in sealing the tear and preventing recurrent detachment.

The inferotemporal quadrant was identified as the most frequent site of retinal breaks, occurring in 4 eyes. Temporal retinal breaks were found in 2 eyes, while inferonasal breaks were present in 1 eye. In 2 eyes, giant retinal tears occurred in the superior and superotemporal quadrants. These findings suggest that the inferotemporal quadrant may be particularly susceptible to retinal breaks in patients undergoing retrofixated iris claw IOL implantation, possibly due to the IOL fixation technique and the mechanical stress it exerts on the retina.

At presentation, 4 eyes exhibited proliferative vitreoretinopathy (PVR) changes, a complication commonly associated with retinal detachment that complicates the surgical management of RD. PVR leads to the formation of fibrovascular membranes that can contract and further pull on the retina, worsening the detachment and hindering successful retinal reattachment. Pre-existing retinal degeneration, particularly lattice degeneration, was noted in 1 eye, along with zonular instability in 4 eyes, highlighting these factors as significant contributors to the risk of RD postoperatively.

Surgical management of the retinal detachments included pars plana vitrectomy, with 360-degree endolaser photocoagulation and silicone oil tamponade, which were performed in 7 eyes. The decision to use silicone oil tamponade was made to support retinal reattachment by providing a sustained intraocular pressure and ensuring that the retina remained adherent. In addition, encircling band explantation was performed in these cases to provide external support to the sclera and prevent the recurrence of detachment.

Two eyes that had giant retinal tears underwent similar procedures but without encircling band explantation, as this approach was not deemed necessary for these specific cases. Intraoperatively, unstable RFIC-IOLs were explanted in 2 eyes due to IOL instability, and re-enclavation of the iris claw was performed in 1 eye to stabilize the IOL and ensure optimal alignment.

Postoperative follow-up revealed that 3 eyes (33.3%) experienced re-detachment within one month of surgery. The primary cause of re-detachment was PVR, which resulted in the formation of additional fibrovascular membranes and further retinal traction. However, no cases of elevated intraocular pressure (IOP), corneal decompensation, IOL tilt, or hypotony were observed in any of the patients, suggesting that RFIC-IOL implantation, despite its association with retinal detachment, did not result in other significant complications related to IOL positioning or ocular health.

Retinal detachment is a significant and not uncommon complication following retrofixated iris claw intraocular lens (RFIC-IOL) implantation, especially in patients with underlying risk factors such as zonular instability, pre-existing retinal degeneration, and pediatric patients with complex ocular conditions. The most frequently encountered types of retinal detachment in this series were subtotal rhegmatogenous RD and PVR-associated RD. The inferotemporal quadrant was the most common site of retinal breaks, which warrants special attention during both preoperative screening and postoperative monitoring.

Given that retinal detachment can occur both early and late following RFIC-IOL implantation, early recognition, timely surgical intervention, and close postoperative monitoring—particularly during the first 6 months—are essential for minimizing the risk of RD and optimizing visual outcomes. Surgeons should remain vigilant for PVR changes, as these significantly complicate retinal reattachment and contribute to re-detachment.

This study underscores the need for long-term follow-up to ensure the stability of the retina and the IOL, particularly in pediatric and complex cases, where the risk of complications is higher. Further studies are warranted to better understand the long-term stability, safety, and effectiveness of retrofixated iris claw IOLs, particularly in patients with high-risk ocular conditions such as lens instability, high myopia, and previous retinal pathology.