

CONSIDERATIONS AFTER PREMIUM IOL EXPLANTATION



Advice on how to proceed.

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Explanting an IOL is technically challenging, more so if the implant is a multifocal lens, because patients who elected presbyopic correction have higher expectations regarding their refractive outcome. If less-invasive options have been ruled out and explantation is required, patient counseling must include thorough discussion of the procedure's risks and benefits. Selection of the replacement IOL must take into account the cause of explantation and the degree of capsular support.

CAUSES OF EXPLANTATION

Patient dissatisfaction with a multifocal IOL accounted for 18.3%,¹ 21.1%,² and 6.2%³ of cases of IOL explantation in three studies. Thankfully, improved lens designs may be reducing these rates.⁴ Reasons for patient dissatisfaction with a multifocal IOL include asthenopia, glare, halos, distorted vision, blurred vision, and photic phenomena.^{1,5-9} In these cases, an exhaustive investigation of the cause of symptoms is required to determine if IOL explantation is warranted. The etiologies of patient symptoms most commonly reported are ametropia, dry eye, posterior capsular opacification, and large pupils.^{5,6} In approximately 85% of cases, symptoms improved with conservative treatment, and only a low percentage required IOL explantation. Further, some patients just need time to adapt to their postoperative vision.

In some cases, a patient may not be a good candidate for multifocal IOL implantation after removal of the original multifocal IOL, regardless of the type of multifocal lens, or the patient has a neural adaptation failure of

unknown etiology. In these cases, the substituting IOL must be a monofocal lens. Previous literature on multifocal IOL exchange is scarce. In four series, all explanted multifocal IOLs were substituted with a monofocal.^{1,2,7,9} But, in another study, a monofocal IOL was implanted in 90% of cases, with only 10% of cases undergoing a replacement with a multifocal lens because of incorrect IOL power.⁸

When the cause of patient dissatisfaction is that the design of the original multifocal IOL was ill suited to the patient's needs, a different multifocal lens design may be considered for the replacement lens. If the indication for explantation is a refractive surprise, and options such as laser refractive surgery or a piggyback IOL have been ruled out, the same IOL design with the correct power may be implanted.⁸ In case of IOL opacification, if the patient was satisfied with the procedure before the opacification, a multifocal lens from a different manufacturer could be implanted.

DEGREE OF CAPSULAR SUPPORT

Previous literature on multifocal IOL exchange shows that placement of the new IOL within the capsular bag could be accomplished in 76%,⁸ 74%,⁹ and 58.3% of cases.⁷ If the capsular bag is not intact, the choice of implant is somewhat limited. Perfect centration and stability are crucial for optimal performance of a multifocal IOL, and an open posterior capsule increases the risk of certain complications, including cystoid macular edema and retinal detachment. For these reasons, in the absence of an intact capsular bag, a monofocal IOL is the preferred

choice for replacement in these cases. Multifocal IOL implantation as a substituting IOL with an open posterior capsule could be considered if stability of the IOL could be achieved by means of optic capture, if the need for maintaining a multifocal IOL is adequately justified.

When the posterior capsule is open and the anterior capsulorhexis is intact, a three-piece IOL can be implanted in the sulcus with or without optic capture. One-piece acrylic IOLs and plate-haptic IOLs should never be implanted in the sulcus.¹⁰ One-piece acrylic C-loop multifocal lenses can be implanted in eyes that have an open posterior capsule if posterior optic capture or reverse optic capture is possible. If the posterior capsular tear can be converted into a posterior capsulorhexis, a one-piece acrylic IOL with C-loop haptics can be implanted in the capsular bag, with or without posterior optic buttonholing.

A single-piece acrylic IOL with C-loop haptics could be placed with its haptics in the bag and its optic secured by reverse optic buttonholing, provided that the anterior capsulorhexis allowed the optic to be captured. In these cases, IOL stability requires that the diameter of the anterior capsulorhexis be smaller than that of the IOL optic.

In order to perform optic capture safely, the capsulorhexis should not be larger than 4.5 mm. Because of the more anterior position, the power of the IOL will have to be adjusted in order to avoid a myopic shift. This option would allow implantation of a toric IOL.¹¹

If the reason for explantation is that an IOL with C-loop haptics dislocated

outside of the capsular bag, but the anterior capsulorhexis is intact, anterior optic capture may be an alternative to IOL explantation depending on the size of the capsulorhexis and the design of the IOL. The myopic shift induced could be treated with laser corneal surgery.

In the absence of capsular support, a monofocal IOL would be preferable because of the inherent difficulty of stabilizing and centering the implant. Alternatives for secondary IOL implantation include an angle-supported anterior chamber IOL; prepupillar iris claw IOL; retropupillar iris claw IOL; iris-sutured IOL; scleral-fixated IOL, either with sutures or with the haptics inserted into scleral tunnels (glued or flanged IOL). My preference would be a flanged IOL or a retropupillar iris claw IOL using a scleral tunnel incision.

CONCLUSION

An exhaustive investigation must be performed of dissatisfied patients before IOL exchange is considered. When an IOL exchange will be performed, the choice of replacement IOL should take into account the reason for IOL exchange and the degree of capsular support. The state of the fellow eye is another factor.

Whatever IOL is selected, it is important to have a backup on hand in case capsular support differs from what was anticipated. Careful and detailed discussion of all these issues with the patient should be carried out before surgery in order to set up reasonable expectations. ■

1. Davies EC, Pineda II R. Intraocular lens exchange surgery at a tertiary referral: indications, complications, and visual outcomes. *J Cataract Refract Surg.* 2016;42(9):1262-1267.
2. Jones J, Jones YJ, Jin GJC. Indications and outcomes of intraocular lens exchange during a recent 5-year period. *Am J Ophthalmol.* 2014;157(1):154-162.
3. Fernández-Buenaga R, Alió JL, Muñoz Negrete J, et al. Causes of IOL explantation in Spain. *Eur J Ophthalmol.* 2012;22(5):762-768.

4. Mamalis N, Brubaker J, Davis D, et al. Complications of foldable intraocular lenses requiring explantation or secondary intervention-2007 survey update. *J Cataract Refract Surg.* 2008;34(9):1584-1591.
5. de Vries NE, Webers CA, Touwslager WR, et al. Dissatisfaction after implantation of multifocal intraocular lenses. *J Cataract Refract Surg.* 2011;37(5):859-865.
6. Woodward MA, Randleman JB, Stulting RD. Dissatisfaction after multifocal intraocular lens implantation. *J Cataract Refract Surg.* 2009;35(6):992-997.
7. Galor A, Gonzalez M, Goldman D, O'Brien TP. Intraocular lens exchange surgery in dissatisfied patients with refractive intraocular lenses. *J Cataract Refract Surg.* 2009;35(10):1706-1710.
8. Kamiya K, Hayashi K, Shimizu K, et al. Survey working group of the Japanese Society of Cataract and Refractive Surgery multifocal intraocular lens explantation: a case series of 50 eyes. *Am J Ophthalmol.* 2014;158(2):215-220.
9. Kim EJ, Sajjad A, Montes de Oca I, et al. Refractive outcomes after multifocal intraocular lens exchange. *J Cataract Refract Surg.* 2017;43(6):761-766.
10. Chang DF, Masket S, Miller KM, et al. Complications of sulcus placement of single-piece acrylic intraocular lenses: recommendations for backup IOL implantation following posterior capsule rupture for the ASCRS Cataract Clinical Committee. *J Cataract Refract Surg.* 2009;35(8):1445-1458.
11. Gimbel HV, Marzouk HA. Haptic tuck for reverse optic capture of a single-piece acrylic intraocular lenses. *J Cataract Refract Surg.* 2019;45(2):125-129.

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