

Phakic IOLs: when things go wrong

Experience of managing complications and recommendations

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When assessing the armamentarium of a practicing refractive physician, it is impossible not to consider using a phakic IOL. Of those available on the market, the iris supported Verisyse IOL (Advanced Medical Optics) has the longest track record. It has been FDA approved and on the market in the US for more than a year now. I have personally used this lens in my practice for eight years with successful outcomes and have recommendations for others on my preferred technique as well as how to manage potential complications when using phakic IOLs.

When considering which patients would benefit from a phakic IOL, I tend to select those with high myopia; -8 D or higher, with an anterior chamber depth of at least 3.2 mm. In patients with thin corneas (<500 μm), I consider using a phakic IOL, even in myopia of -5 D or higher. I also consider patients with high hyperopia as excellent candidates for an iris-supported anterior chamber phakic IOL. For these patients, I would consider those who were $+4$ D or higher if the anterior

chamber depth is 3.2 mm or more in patients younger than 40 years old; for older patients, I would consider refractive lens exchange and implantation of a multifocal IOL (e.g., ReZoom, Tecnis multifocal) as a better option.

The implantation technique

The implantation technique that I find useful in minimizing the amount of induced astigmatism is the "frown-incision"; a scleral tunnel incision still familiar to those who performed phacoemulsification in those days when a foldable IOL was not available. I first inject Lidocaine 1% under the conjunctiva at 12 o'clock. Then, I open the conjunctiva at the limbus and use bipolar cautery to minimize bleeding. Next, the frown incision is performed, creating a 6 mm scleral tunnel which is, in most cases, self-sealing, although I prefer to add a suture to play it safe.

Before I open the anterior chamber at the site of the frown incision, I create two side-port incisions at 3 and 9 o'clock at the limbus. The incisions should be rather steep towards the iris and not parallel to the iris as in phacoemulsification. The reason is that the iris has to be grasped through these incisions with iris enclavation forceps. I inject lidocaine 1% at each of the side-port incisions to avoid any pain during

enclavation. Next, I inject Miochol (acetylcholine), rather than lidocaine, which has a mydriatic effect. Finally, Healon GV is injected and the main incision (the frown incision) is opened. The phakic IOL is now implanted into the anterior chamber and rotated into the horizontal position prior to enclavation.

For enclavation, I prefer the dual-forceps technique; holding the phakic IOL with holding forceps and grasping the iris with iris forceps. I then push the haptic of the IOL over the iris forceps, thereby enclavating the iris. I then re-grasp the iris just beneath the enclavation site and push the haptic over the forceps again to increase the amount of iris tissue enclavated.

After enclavation, I perform a small surgical iridectomy at 12 o'clock. Because of the tunnel incision, the iridectomy is not very peripheral, but usually still covered by the upper lid. Finally, I use a 10-0 nylon running X-suture, wash out the Healon GV with BSS, and tie the suture. The conjunctiva is closed with a single 10-0 nylon suture.

Postoperatively, I use a combination of dexamethasone and tobramycin 3 times daily for one week and pred forte twice daily for four weeks. The conjunctival suture is removed after one week, the scleral suture is usually left in place but cut at three to four weeks in case it induces an astigmatism of more than one diopter.

Complications management

As with any IOL implantation technique, there are some potential complications that must be considered. In general, the number of complications is low, and most of them are either easy to avoid or easy to repair.

Insufficient enclavation

With insufficient enclavation, there is a risk that the IOL may dislodge. Insufficient enclavation is rare and typically occurs during the "learning curve". Insufficient enclavation may cause the IOL to dislodge, or, in minor cases, to move excessively which may in turn lead to endothelial loss as a result of intermittent touch of the endothelium and the IOL. Should excessive movement be observed on the slit-lamp or the enclavation be very small, a surgical re-intervention should be performed to enclavate more iris tissue.

Decentration

It is also important to keep in mind the centration of the Verisyse IOL. Centration is determined in reference to the pupil center during surgery. As the pupil changes position in miosis and after the viscoelastic is injected, it is important to

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recognize pupil centroid shifts during injection of the viscoelastic. During the enclavation, the pupil should be in its normal position and the anterior chamber filled evenly with viscoelastic. This will help to maintain centration of the IOL during enclavation. Alternatively, the enclavation sites can be marked prior to surgery either with a YAG laser or an argon laser. Finally, if the patient is symptomatic in a case with a decentred IOL, it is easily possible to reposition the IOL.

Uveitis

Although rare, uveitis may occur during the first weeks after surgery. If uveitis occurs, visible by precipitates on the IOL, I treat it using pred forte for at least four weeks.

Incision leakage

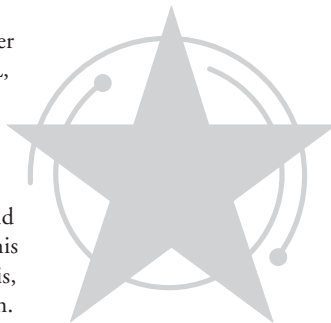
Since the Verisyse lens is iris-fixated, the implantation requires a large incision, which may induce astigmatism and can possibly lead to wound dehiscence if the patient rubs his eye or blunt trauma to the eye occurs. The frown incision is, by design, self-sealing, but it is not resistant to deformation. I therefore prefer the use of a suture to maintain a tight wound closure. The suture sometimes causes astigmatism. It should then be cut about three weeks after surgery. On the other hand, in some cases the wound is not watertight and a small bleb is forming. Should this occur shortly after surgery, re-suturing is the best approach. In late cases, it is probably best to simply observe. If a bleb is present, LASIK should not be used to enhance the result as the increase of pressure or the direct mechanical action may damage the bleb. PRK is a better option in these cases.

Cataract

In my extensive experience with the Verisyse phakic IOL, I have found only two out of 235 eyes (0.8%) of one patient, which developed nuclear cataract. Is this related to the phakic IOL? I believe not. In any case, the incidence of cataract is very low, and it can be easily treated should it occur.

I also looked at corneal endothelial cell counts and could not find any significant loss.

I have found no other long-term complications using the Verisyse phakic IOL. In general, phakic IOLs are a useful tool to correct eyes with high to extreme myopia or hyperopia, which are not eligible for LASIK, therefore expanding our treatment range. I certainly would recommend the incorporation of phakic IOLs into every refractive surgeon's practice.



In short...

As with all IOL implantation techniques there are potential complications such as insufficient enclavation, decentration, uveitis, incision leakage and cataract. However, these can be avoided by employing a few simple measures. Michael Knorz, MD, using his wealth of experience, talks us through how to avoid and deal with any of the problems that may arise and reminds us that serious complications are not common.



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