Correction of Aphakia using Scleral-Fixated Intraocular Lenses

Mohamed Essam Mohamed Al Damasy, Taha Al Rashidy Sarhan, Adel Kamal Abdeen, Ayman Mohamed Lotfy

Ophthalmology Department, Faculty of Medicine - Zagazig University, Egypt

Corresponding author: Mohamed Essam Mohamed Al Damasy

E-mail: MEMmostsfa@medicine.zu.edu.eg, Dr.mohamedaldamasy@gmail.com

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Abstract

Inadequate support for installation of intraocular lenses (IOLs) in the capsular bag can occur as a consequence of complex cataract surgery, metabolic or hereditary disorders such Marfan's syndrome or pseudoexfoliation, or ocular trauma. When the capsular support is insufficient, patients may have surgical options such as iris or sclera fixation, alternate placement in the anterior chamber (ACIOLs), or both. Both of these methods' surgical techniques have come a long way in the recent few decades, leading to better eye and vision results. In the absence of iris or capsular support, the surgeon has two options: either affix the intraocular lens (IOL) to the sclera or leave the patient aphakic. Both sutures and tunneling the IOL haptics into the sclera without sutures are methods for fixing IOLs to the sclera. The following is a synopsis of the literature on scleral-fixated IOL implantation, including its specific risks, surgical approaches, outcomes, and pre-operative concerns.

Keywords: Scleral-Fixated, Intraocular Lenses, Aphakia

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Introduction

Placing the intraocular lens (IOL) in the capsular bag has become the gold standard for successful IOL insertion in patients having cataract surgery. When this occurs, the intraocular lens (IOL) is centered within the lens capsule and suitably supported by the lens zonules. The IOL-capsular complex is also properly positioned relative to the pupillary axis. IOLs are most effectively placed "in-the-bag" to improve surgical and refractive outcomes. When the posterior capsule is violated during complex cataract surgery or when there is insufficient posterior capsular support, it is frequently feasible to implant an intraocular lens (IOL) into the ciliary sulcus and get good visual

results.1When in-the-bag insertion is not an option, 3-piece intraocular lens (IOL) systems like the Acrysof MA60AC (Alcon, Fort Worth, TX) are frequently inserted into the ciliary sulcus. However, this placement method has not been authorized by the Food and Drug Administration (FDA). Surgeons must resort to alternate surgical techniques when the eye's capsular support is insufficient to implant an intraocular lens (IOL).

There are numerous situations that can lead to compromised anterior and posterior capsular integrity. These include ocular trauma, conditions characterized by inherent zonular weakness, such as Marfan's syndrome, homocystinuria, pseudoexfoliation syndrome, etc., and complex cataract surgeries. As surprising as it may appear, poor capsular support is really rather common. Before anything else, it's important to note that patients who have traumatic open globe injuries are more likely to sustain damage to the lens capsule and/or iris. A recent study looked at emergency room visits for ocular complaints in the US and found that there were 4.1 per 100,000 people in 2011 with an estimated 311 million people living there. That works out to more than 12,000 open globe injuries annually in the US. Second, the most common systemic condition associated with weakened zonules and crystalline lens subluxation, Marfan’s syndrome, has an incidence of 1 in 5,000 people.5 Third, pseudoexfoliation, the most common risk factor for late IOL-capsular bag dislocation, has an estimated incidence of approximately 1 in 4,000 individuals.6 Pseudoexfoliation accounts for over 50% of cases of late IOL dislocation, a complication that is estimated to occur in 1.7% of post-cataract surgery patients after 25 years.7 Fourth, an estimated 1–2% of cataract surgeries in developed countries will be complicated by vitreous loss, which may prohibit placement of the new IOL in the capsular bag.8 When considering that over 3 million cataract surgeries are performed in the U.S. each year,9 even a 1% rate of vitreou In sum, these numbers highlight the importance of having viable surgical alternatives to insert an IOL in the capsular bag.

Surgical solutions for intraocular lenses (IOLs) in eyes that do not have sufficient support from the anterior or posterior capsular regions include iris-fixated (IFIOLs), scleral-fixated (SFIOLs), and anterior chamber intraocular lenses (ACIOLs). In 2003, the American Academy of Ophthalmology conducted a thorough literature analysis on intraocular lens implantation without capsular support.10 The authors compared the results and rates of complications among ACIOLs, IFIOLs, and SFIOLs. For patients who have all three viable options, the available comparative studies did not support recommending one type of intraocular lens implant (IOL) over the other.11–15 One study from 2007 compared primary ACIOL vs. SFIOL implantation after complex cataract surgery and found that ACIOL implantation resulted in better visual acuity outcomes and fewer complications than SFIOL surgery.16 On the other hand, more recent studies have not shown a significant difference in postoperative visual acuity or complication rates among ACIOLs, IFIOLs, and SFIOLs.17–20 Every method has its own set of advantages and disadvantages.

Procedures to Be Considered

For patients who do not want to be aphakic and do not have capsular or iris support, scleral-fixated IOLs are the way to go. Sulcus intraocular lens (IOL) candidates may include patients whose capsules are unbroken. An undamaged iris is a prerequisite for ACIOL or IFIOL implantation in a patient. Patients with shallow anterior chambers or corneal diseases like Fuch's dystrophy, corneal edema, or a corneal transplant may benefit more from an SFIOL, even though an ACIOL could be a viable option in some situations.21,22

Alternatives to Secondary Placement, IOL Repositioning, and Exchange

There are three possible preoperative situations that a surgeon may face when implanting an SFIOL: 1) a patient with a repositionable intraocular lens (IOL) that has subluxed or dislocated; 2) a patient with an exchangeable IOL; or 3) an aphakic patient who needs a secondary IOL. For instance, in certain situations, such as ocular trauma, pseudoexfoliation, or high myopia, a 3-piece intraocular lens (IOL) may be "rescued" and fixed to the sclera instead of being replaced with an achromatic intraocular lens (ACIOL) or intraocular lens implant (IFIOL). On the other hand, in most cases, a single-piece IOL that has dislocated into the vitreous needs to be replaced. However, in rare cases, a single-piece IOL that has subluxed within the capsular bag can occasionally be stitched into the correct position using techniques that will be detailed later in this review.

Unique Groups: Minorities

There is currently no effective care strategy for the special population of children who require intraocular lenses (IOLs) yet do not have capsular support. Potential complications in this age group from ACIOLs or IFIOLs include iris chafing, glaucoma, and persistent inflammation.22 Since there are no randomized studies comparing the outcomes of SFIOLs, ACIOLs, or IFIOLs in children, surgeon preference and patient circumstances are the main factors determining the decision. Longitudinal and retrospective case series of children implanted with primarily sutured SFIOLs have shown encouraging short-term results at follow-ups ranging from one to about six years. However, some clinicians are hesitant to use aphakic spectacles or contact lenses as a first-line treatment for children due to concerns about glaucoma, endophthalmitis, lens decentration/dislocation, and the need for additional surgery.39,40 Recently, IOL implantation via sutureless intrascleral fixation has been done in children without lens dislocations after six months of follow-up, but long-term data is necessary to thoroughly evaluate the effectiveness and safety of this technique.41

Before and After Segment Surgeon

Successful implantation of SFIOLs has been achieved by surgeons specializing in both the anterior and posterior segments. No randomised controlled studies have compared the effectiveness of anterior vitrectomy (AV) vs pars plana vitrectomy (PPV) in the management of SFIOLs. Patients with SFIOLs with AV (n = 36 eyes) or PPV (n = 47 eyes) were studied in a

recent retrospective study that looked at visual outcomes and complications.44 Both groups showed similar improvements in visual acuity. The incidence of lens dislocation was 28% in the SFIOL/AV group and 9% in the SFIOL/PPV group, with a p-value of just 0.036. Myopic shift and intraocular lens capture were more common in the PPV group (23% vs. 3% in the AV group; p = 0.01). Nevertheless, biases are inherent to this design, and this research was retroactive. It is not possible to draw firm conclusions when, for instance, the physician considered patient and surgeon factors when deciding whether to undertake AV or PPV.

When performing surgery from the back, physicians have a better chance of being prepared to handle unexpected intraoperative complications like posterior intraocular lens displacement or retinal tears or detachments. Contemporary vitreoretinal instrumentation enables the "rescue" and fixation of an intraocular lens (IOL) to the iris or sclera, particularly in instances when the IOL has posteriorly dislocated.

When to Have Surgery

Prior to or at the time of complex cataract surgery, patients undergoing SFIOL implantation must make a determination as to whether the intraocular lens (IOL) will be placed principally (during the surgery itself) or secondary (at a later date). The decision to implant an IOL primarily or secondaryly will likely be based on the surgeon's comfort level and experience with SFIOL placement as well as the clinical circumstances surrounding the need for an SFIOL. There have been no prospective, randomized trials comparing surgery timing options, but data from retrospective studies suggest that both methods result in similar visual outcomes and complication rates.45,46

Choosing an IOL

It is important to consider the clinical setting and the surgeon's intention to utilize sutures when choosing an intraocular lens (IOL) to be sclerally fixed. Various types of IOLs are available. This paper will go on to describe specific instances of intraocular lenses (IOLs) utilized in SFIOL surgery. The target spherical equivalent to use when implanting an SFIOL is not universally agreed upon, but we have found that an in-the-bag target of about -1.00 diopters works relatively well.43 Since the post-operative refraction is more unpredictable with SFIOL surgery compared to placing an IOL in the capsular bag, we prefer to err on the side of myopia to avoid hyperopic surprises.

SCLERAL-SUTURED IOLS: A Surgical Approach

Internal Ocular Lenses Sutured to the Sclera: The History

Using a 10-0 polypropylene suture, the haptics of the intraocular lens (IOL) were secured to the sclera at 3 and 9 o'clock, 2 mm posterior to the limbus. This technique was initially described in the 1980s by Malbran and colleagues for the treatment of aphakia after intracapsular cataract

extraction(22,48). A 28-gauge needle is used to construct an internal loop of suture at each horizontal clock hour by inserting loops from the outside of the eye to the inside using the ab externo technique. After making an incision in the cornea or using a "open sky" technique like a penetrating keratoplasty (PKP), the two loops of suture are brought out and fastened to each haptic using a hitch. Sutures are secured onto the sclera, and the intraocular lens (IOL) is inserted into the eye and placed behind the iris.

When Malbran introduced his method in 1986, most surgeons were either making huge corneal incisions or operating under an open sky so that sutures could be passed from inside the eye to outside the eye (ab interno). However, Lewis popularized the idea of ab externo suture passes in 1991 and used scleral flaps to cover the knots. The risks of this blind maneuver included retinal detachment, bleeding, and the lens haptics being placed in an unanticipated spot. "Docking" a straight needle onto a 10-0 polypropylene suture onto a 28-gauge needle that is 180 degrees distant was first proposed by Lewis. Compared to ab interno techniques, measuring the entry locations for both needles 2 mm posterior to the limbus allowed for a more reproducible ultimate position of the intraocular lens (IOL) in the ciliary sulcus. After passing through each sulcus in the eye, the suture was externalized using a second tool inserted through a corneal incision. It was then cut and each end was connected to a haptic on the intraocular lens (IOL). After that, the intraocular lens (IOL) was placed into the eye and guided behind the iris such that its haptics would rest in the ciliary sulcus. For each of the prior scleral entrance points, a new suture bite was made, and the haptics were fastened to the sclera by tying each entry suture to the adjacent scleral suture (Figure 1). A 2015 research of thirteen eyes with follow-up spanning from five to ten years indicated that just two eyes had minor lens decentration; however, the decentration in these two eyes had no effect on visual acuity.50 As a result, this method is still being utilized today with rather good success rates.

To better place the sutures in the ciliary sulcus and prevent harm to adjacent ocular tissues, surgeons have been experimenting with methods including endoscopic placement of ab interno sutures52 and transillumination51 since Lewis's 1991 article. Some have argued that IOLs should be positioned in the pars plana, however doing so would need sutures that are closer to the choroid and retina, which could lead to severe consequences such suprachoroidal hemorrhage and retinal detachment. The results of a recent study comparing ciliary sulcus and pars plana fixation of intraocular lens (IOLs) failed to show an increased risk of complications with pars plana fixation, casting doubt on this long-held belief.54 Despite this, surgeons who perform sutured SFIOL surgery still rarely use this technique.22

Integra scleral-sutured IOLs: Currently

Improvements in both success rates and complication rates have resulted from adjustments to both the technique and materials used in scleral suturing of intraocular lenses (IOLs). Modern intraocular lens (IOL) designs, for instance, include suture eyelets to forestall suture slippage and,

by extension, IOL dislocation; examples of such designs are the CZ70BD (Alcon, Fort Worth, TX) and the Akreos AO60 (Bausch & Lomb, Rochester, NY). Concerns about the long-term stability of the 10-0 polypropylene suture have led to the use of 9-0 polypropylene and 7-0 Gore-Tex (CV-8) sutures in addition to the more common 10-0 polypropylene sutures.22,40,55 The placement of suture knots has also changed because externalized knots can erode through the conjunctiva and increase the risk of endophthalmitis.56-58

In the past, IOL dislocation following sutured SFIOL implantation could occur due to suture slippage around the haptics, which was a problem before haptic suture eyelets were developed. Because it features eyelets on each haptic to put suture through, the Alcon CZ70BD lens has became popular for use in SFIOL situations. This lens is commonly used with a two-point fixation technique, though, because it only has two eyelets. Because of this, it could be prone to lens tilt, which can lead to higher-order aberrations that glasses can't fix. Several studies have demonstrated the potential risks of lens decentration and tilt when using two-point fixation techniques in patients. One study by Holladay indicated that aberrations occur when the lens tilt is greater than 15 degrees, while another by Tsai and colleagues found that even a small tilt of five degrees can cause additional refractive error. Although the CZ70BD lens tilt has not been measured in vivo, an experimental study by Teichmann demonstrated how difficult it is to avoid a torque or tilt effect in vitro. The mean IOL tilt angle was 2.35 degrees for sutured SFIOL patients and 3.18 degrees for in-the-bag IOL patients, according to one study. The authors employed a two-point fixation technique first described by Mittelviefhaus and Wiek in 1993, where sling sutures were passed ab interno through the eyelet of each haptic to secure them to the sclera. The Bausch and Lomb Akreos AO60 lens, in contrast to the CZ70BD lens, had four haptics, each with its own suture passage eyelet. While there haven't been any head-to-head tests comparing the tilt of the Akreos AO60 and CZ70BD lenses, the four-point stabilization that comes included with the Akreos lens should make decentration and lens tilt less of a concern. In contrast to the hydrophilic CZ70BD lenses, the visual opacification that might occur as a result of calcium salt deposition after intraocular gas or air fill is a distinct possibility with the Akreos lenses.66

Creating superonasal and inferotemporal limbal peritomies is necessary for the procedure recently reported by Khan and colleagues (Digital Supplement, Video 1.67) which combines 27 gauge PPV with scleral fixation of an Akreos AO60 lens. The first 27-gauge cannula is inserted for infusion purposes outside of the peritomy sites. Two peritomy sites each have a second cannula inserted three millimeters from the limbus. After that, at a 3 mm limbal distance, a 27 gauge trocar is used to make a sclerotomy 5 mm from this cannula. The procedure is then carried out at the other peritomy site. One half of the CV-8 Gore-Tex suture is threaded through the two eyelets on either side of the Akreos lens after the vitrectomy is finished. After that, the ends of the nasal sutures are inserted into the eye via a corneal incision and, using a handshake approach through the nasal sclerotomy and cannula, MAXGrip (Alcon Laboratories) or comparable

forceps are grasped. The next step is to fold the Akreos lens, implant it into the eye, and place it centrally. Then, using MAXGrip forceps, draw the remaining two ends of the suture through the temporal sclerotomy and cannula. At the sclerotomy sites, the knots of the Gore-Tex sutures are rotated. The sutures are covered by the closed conjunctiva.

For scleral fixation of intraocular lens (IOLs), there has been a shift away from the conventional 10-0 polypropylene and toward thicker sutures like 9-0 polypropylene and 7-0 Gore-Tex, as previously indicated, on the theory that these sutures will last longer. Multiple case series, retrospective analyses, and prospective studies have reported late IOL dislocation due to suture breakage when 10-0 polypropylene is used to secure the IOL to the sclera.40,68 This tends to occur years after the IOL is implanted; in one case series, suture breakage occurred 3 – 9 years after the initial surgery in four eyes.69 In another retrospective analysis of 63 eyes with SFIOLs affixed to the sclera with 10-0 polypropylene, two eyes (3%) developed IOL dislocation secondary to suture breakage at 15 and 54 months post-procedure.70 Malta and colleagues reported a similar rate of suture breakage and IOL dislocation in a cohort of 105 eyes that underwent combined PKP with SFIOL implantation using 10-0 polypropylene sutures.42 In their study, two of the 109 eyes (2%) e When Buckley looked at 10-0 polypropylene for SFIOLs in kids, he found that 5.6 years after the first surgery, four out of 26 patients (15%) had IOL dislocation due to suture breakage.40 Based on his findings, 9-0 polypropylene could be a better option than 10-0 polypropylene for fixing the IOL to the sclera in kids. Scleral fixation of intraocular lenses (IOLs) using 9-0 polypropylene34 or 7-0 Gore-tex55 has shown encouraging short-term results, but no long-term data is available. After being relocated with 9-0 polypropylene sutures, five patients with SFIOLs (four from spontaneous causes and one from trauma) experienced 10-0 polypropylene suture breakdown, according to Price's report. At the most recent follow-up, all five eyes—including the longest-followed eye—still had their intraocular lens (IOL) securely attached to the sclera. 68 Of the 85 eyes studied in Khan's 2015 series—using the Akreos or CZ70BD lens with 7-0 Gore-tex suture—no suture breakage cases were reported between three and thirty-three months after the procedure.55

After sutured SFIOL surgery, knot erosion through the conjunctiva can lead to endophthalmitis because the suture allows bacteria from outside the eye to enter. To prevent this, Lewis would make triangle scleral flaps before inserting needles into the eye, and then use the hinged scleral tissue to cover the knots at the end of the procedure. Nevertheless, if the patient needs to have glaucoma surgery in the future, the scleral flap procedure can be problematic because it involves a conjunctival peritomy. During sutured SFIOL implantation or rescue of a subluxated IOL, Hoffman proposed in 2006 the idea of scleral pockets that could be created without a conjunctival peritomy.71 To summarize, in a subluxated IOL case, two transparent corneal incisions would be made 180 degrees apart, on the same meridian as the IOL haptics. The next step is to use a beaver blade to create a partial thickness scleral incision at the limbus, directly behind each corneal wound. The incision should be dissected approximately 3 mm from the

limbus. Next, a paracentesis is performed just in front of each corneal incision. After that, one mm behind the surgical limbus, via the conjunctiva and one scleral pocket, inserts a 27-gauge needle. Docking the 27-gauge needle either above or below the displaced IOL haptic requires passing one end of a long, straight needle with two arms of 9-0 polypropylene suture into the eye from the opposite paracentesis. Once the scleral pocket is prepared, the suture and needle are externalized. To obtain the haptic, the procedure is repeated using the opposite end of the polypropylene suture. The suture is externalized through the conjunctiva and scleral pocket. The ends are then retrieved from the scleral pocket using a Sinskey hook and tied; as the knot is tightened, it buries itself within the scleral pocket.

Although it can be challenging with short suture passes and thicker sutures like 9-0 polypropylene and 7-0 Gore-Tex, burying the knot in the sclera is another strategy to assist avoid suture erosion via the conjunctiva72,73. In order to prevent suture erosion through the conjunctiva, one innovative approach is to tie knots instead. Then, using a "zigzag" pattern, run the end of the externalized 10-0 polypropylene suture partial thickness through the sclera multiple times.74 This should be enough to secure the intraocular lens (IOL) in place. After follow-up spanning from six to thirty-eight months, there were no incidences of intraocular lens (IOL) dislocation in a series of forty-five eyes where this so-called "Z-suture" was used to anchor the IOLs.

Although patients' outcomes in long-term trials following sutured SFIOL implantation have been positive, the procedure is not free of its own particular risks. There are a number of potential complications that can arise from sutured SFIOL surgery. These include postoperative lens dislocation, tilt of the lens, suprachoroidal or vitreous hemorrhage, retinal detachment, endophthalmitis, and endophthalmitis rates can vary depending on the surgeon, patient circumstances, and technique used to attach the IOL to the sclera. Most surgical difficulties stem from less-than-ideal suture placement or the use of less-than-durable suture materials. Sutured SFIOL surgery has a complication rate ranging from 10% to 54%, according to recent studies. Postoperative complications that are not related to suturing the IOL include hypotony, ocular hypertension, and cystoid macular edema (CME). It is interesting to note that endoscope assisted intraocular surgery may offer a way to reduce this complication rate. Using an endoscope to see where the sutures were going greatly reduced the rate of problems in a research that compared endoscope assisted with non-endoscope assisted trans-scleral fixation of intraocular lenses (IOLs).85

Operating on Sutureless Sfiolis

It is not surprising that surgeons started to investigate the possibility of sutureless intrascleral (SIS) fixation of the intraocular lens (IOL) in patients without capsular support, considering the possible drawbacks of suturing the IOL to the sclera in these patients. Prior to the creation of 50% thick scleral tunnels parallel to the limbus near each of the initial sclerotomy sites, 24-gauge

cannulas were utilized to create diametrically opposite ab externo sclerotomies 1.5-2.0 mm from the limbus.86 This technique was initially described by Scharioth and colleagues. Following this, a conventional three-piece intraocular lens (IOL) is implanted into the eye. One by one, the haptics are put into the scleral tunnels via the sclerotomy incisions, with only a tiny bit of each haptic visible between the scleral tunnel and the sclerotomy site.

Several other surgeons have improved upon the SIS procedure since its inception by making use of vitreoretinal instruments to do the sclerotomies. For instance, in their study, Prenner and colleagues utilized a microvitreoretinal blade in conjunction with 23 gauge trocars to create sclerotomies and scleral tunnels. These were then used to insert the haptics of a 3-piece intraocular lens (IOL). The results after one year were promising, with an average improvement in visual acuity from around 20/400 to 20/70. Abbey and colleagues later detailed a comparable method for SIS that avoided conjunctival peritomy; this method involved using 25-gauge trocars to make two 3-mm transconjunctival scleral tunnels that were 180 degrees apart; however, three out of the twenty-four cases (12.5%) experienced IOL dislocation. One of the haptics of a three-piece intraocular lens (IOL) is placed into the eye through a limbal incision after the cannulas have been left in the sclerotomies and tunnels. The 25-gauge forceps are then put into one of the cannulas and used to grab the haptic's tip. The haptic is drawn through the sclerotomy and scleral tunnel after the cannula is progressed up the forceps shaft. Turn the haptic so it's facing the opposite direction and repeat the process. No haptics had eroded through the conjunctiva and no IOL dislocation had occurred in any of the fifteen eyes that received cannula fixation after an average follow-up of one year. The average patient's vision sharpened from about 20/300 before surgery to 20/50 thereafter. The likelihood of exogenous endophthalmitis in the time following surgery should be reduced since the conjunctiva will continue to cover the haptics. A variant of this method utilizing 27-gauge fixating trocars has been recently detailed (Digital Supplement, Video 2).90. This method has the ability to create a more snug tunnel around the haptics, which could lessen the likelihood of post-operative hypotony.

Yamane and colleagues recently detailed an alternative SIS technique.91 Following the insertion of a 3-piece IOL into the anterior chamber, a scleral tunnel was created 1.7 mm from the limbus using a 27-gauge needle. The 27-gauge needle was then threaded with one haptic using microforceps. For the second haptic and scleral tunnel, the procedure was turned counterclockwise. All 27 gauge needles are taken out of the eye at the same time so the haptics can relax in the scleral tunnels. Retinal detachment, endophthalmitis, intraocular lens displacement, or vitreous hemorrhage were not reported after an average of 10 months of follow-up in 35 eyes. Two eyes had ocular hypertension, while three eyes had optic capture.

The haptics of an intraocular lens (IOL) can be fastened to the sclera using fibrin glue instead of sutures. This method, initially detailed in 2008 by Agarwal and colleagues, entails making two scleral flaps that are 180 degrees apart. Sklerotomies are created within the flaps. Once the intraocular lens (IOL) has been inserted into the eye, the haptics are externalized by grasping

them through the sclerotomies with forceps. The next step is to seal the scleral flap by applying fibrin glue to its bed and then folding its outer portion over the haptic. Only one eye (4% of the total) experienced intraocular lens decentration after one year of follow-up in a recent study of 25 eyes that had fibrin glue-assisted SIS fixation. There are no long-term studies evaluating the effectiveness and safety of this technique; however, one study did report vitreous hemorrhage, intraocular pressure elevation, and haptic erosion through the scleral bed.

SFIOLS WITH AND WITHOUT SUTURES

Few research have explicitly compared different types of SFIOL techniques. The postoperative visual acuity was similar between the two groups undergoing fibrin-glue assisted SFIOL (n = 25) implantation and those undergoing sutured SFIOL (n = 25). However, there were significantly more complications in the sutured IOL group (56% vs 28%, respectively, p = 0.045) compared to the fibrin glue group. Inflammation and postoperative glaucoma were more common in the fibrin glue group than in the sutured IOL group. In another study, patients with post-traumatic or post-operative aphakia were compared to one another using a mean follow-up duration of 14.5 months. One surgeon performed all of the surgeries in both groups. The study compared sutured SFIOL surgery utilizing the Hoffman pockets (n=31) and the Scharioth SIS technique (n=11). Postoperative visual acuity was not different in the two groups, according to the authors (p = 0.161). Contrarily, no intraocular lens (IOL) dislocations occurred in the sutured pocket fixation group, while two did in the SIS group. We need longer-term research with more patients recruited before we can say one method is better than the other.

Surgical techniques for SFIOLs are improving as innovative surgeons attempt modifications of existing techniques. Methods to reduce the perioperative complications associated with inaccurate suture placement and to decrease the risk of IOL decentration and dislocation merit additional study. As industry improves suture material options and IOL designs, surgeons will have more options to improve SFIOL placement while minimizing postoperative complications. Long-term data comparing the various techniques used to place SFIOLs will be crucial to identify optimal strategies for SFIOL implantation.

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