Commentary: Sutureless fixation of scleral fixated intraocular lens: Relevance and applicability

Scleral fixated intraocular lens (SFIOL) implantation is undoubtedly an important technique in absence of capsular or zonular support. The technique has evolved over the last two decades with several successful modifications, thereby captivating the significant interest of ophthalmic surgeons. Intraocular lens (IOL) stability and centration is ensured either by fixation of the haptics to sclera using sutures or simply tucking them into scleral pockets.\(^1\) A gradual transition toward sutureless fixation has gained wide acceptability in the last decade.

Malbran et al. described the technique of sutured SFIOLs for the very first time in 1986 by using 10-0 polypropylene suture to fix IOL-haptics to the sclera at a distance of 2 mm from limbus.\(^2\) Consistent modifications have been seen in terms of technique as well as the material used. However, a definitive trend in favor of sutureless methods has been established in view of fewer complications such as suture-knot exposure, postoperative decentration/tilt, and suprachoroidal hemorrhage. The most attractive among them probably was a shorter learning curve with far less surgical time.\(^3\)

The technique of sutureless SFIOL was first described by Scharioth et al. in which haptics fixation into a scleral pocket was done after the creation of diametrically opposite ab-externo sclerotomies and intrascleral tunnels parallel to the limbus.\(^3,4\) Initial modifications remained centered around the technique of the creation of sclerotomies and the placement of haptics. Prenter et al. used 23-gauge trocars to fashion sclerotomies and scleral tunnels, while Abbey et al. modified it further to obviate the need for conjunctival peritomy altogether.

In recent years, the exploration of better alternatives to conventional haptic-fixation techniques has garnered major attention. Yamane et al. introduced significant modification by using 27-gauge needle-guided intrascleral fixation of a 3-piece foldable IOL to avoid a mismatch between the diameters of sclerotomy and haptic, thus achieving a reliable wound closure without sutures.\(^5\) Yamane et al. further improvised their technique by using a 30-gauge needle for haptic exteriorization and cauterization of their tips to obtain a flange with a larger diameter. This simple and minimally invasive technique achieved firm haptic fixation and good IOL stability without using sutures.\(^6\)

Another important and challenging step in SFIOL fixation, that is, exteriorization of haptics by threading them into the hub of a bent hypodermic needle was addressed by Baskaran
et al. in their innovative “X-NIT” procedure, performed via a 5.5 mm sclerocorneal incision.[9] This technique helped to convert open incisional intraocular manipulation into an easily performed extracapsular procedure, while using 3-piece rigid IOLs, especially in the setting of manual small incision cataract surgery that is frequently performed in high surgical volume centers in India and other developing countries.[9]

Securing the haptics of a 3-piece rigid PMMA IOL using fibrin glue was first described by Agarwal et al. in 2008.[10] This technique involves the creation of two diametrically opposite scleral flaps, which are sealed using fibrin glue available commercially.[10] However, long-term studies regarding the safety and efficacy of this technique are lacking.

Oli and Balakrishnan[11] in their current article have suggested modifications in the technique of SFIOL fixation, wherein instead of a liberal conjunctival peritomy, haptic exteriorization is carried out via a small conjunctival incision, located precisely over the sclerotomy site. In addition to this, a lamellar scleral tunnel avoids scleral-flap creation, thus saving intraoperative time and flap associated complications. The use of autologous blood in place of commercially available fibrin glue seems to reasonably address the concerns regarding the potential transmission of viral infections and significantly brings down the cost of the procedure. Overall, this innovative technique holds the promise of being truly a sutureless and glue-less procedure.

It is important to consider certain limitations associated with this method, primarily regarding postoperative IOL stability. Since autologous blood is being used to close the conjunctival wound and not during haptic fixation, patients with attenuated conjunctival vessels may not yield enough autologous blood after a single prick of the vessel and frequent attempts to achieve this result may be undesirable and contrary to the minimally invasive nature of the proposed technique. There remains a significant risk of subconjunctival hematoma formation that may preclude adequate view of the surgical site, should it need readjustment at the end of surgery; while simultaneously increasing the possibility of intraocular ingress of loose blood.

Although, sutureless techniques do help in eliminating suture related complications, like knot exposure or breakage; yet, haptic-fixed IOLs continue to have a potential to decenter or dislocate; and data regarding long-term IOL stability and delayed complications are lacking. Nevertheless, the current technique described by Oli and Balakrishnan,[11] holds the potential to be accepted among a wider peer group, who are forever willing to apply such advances to their clinical practice. And whether these techniques stand the test of time, probably forms the best way to gauge their true success. Thus, additional data from prospective controlled studies in comparative models, with long follow-ups are needed to best assess IOL stability in varied indications so as to report objective conclusions relating to the efficacy of the technique.

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References
1. Stem MS, Todorich B, Woodward MA, Hsu J, Wolfe JD. Scleral-Fixed Intraocular Lenses: Past and present. J Vitreoretin Dis 2017;1:144-52.
2. Malbran ES, Malbran E Jr, Negri I. Lens guide suture for transport and fixation in secondary IOL implantation after intracapsular extraction. Int Ophthalmol 1986;9:151-60.
3. Gabor SG, Pavlidis MM. Sutureless intrascleral posterior chamber intraocular lens fixation. J Cataract Refract Surg 2007;33:1851-4.
4. Scharioth GB, Prasad S, Georgalas I, Tataru C, Pavlidis M. Intermediate results of sutureless intrascleral posterior chamber intraocular lens fixation. J Cataract Refract Surg 2010;36:254-9.
5. Prener JL, Feiner L, Wheatley HM, Connors D. A novel approach for posterior chamber intraocular lens placement or rescue via a sutureless scleral fixation technique. Retina 2012;32:853–5.
6. Abbey AM, Hussain RM, Shah AR, Faia LJ, Wolfe JD, Williams GA. Sutureless scleral fixation of intraocular lenses: Outcomes of two approaches. The 2014 Yau Suo Tano Memorial Lecture. Graefes Arch Clin Exp Ophthalmol 2015;253:1-5.
7. Yamane S, Inoue M, Arakawa A, Kadonosono K. Sutureless 27-gauge needle-guided intrascleral intraocular lens implantation with lamellar scleral dissection. Ophthalmology 2014;121:61-6.
8. Yamane S, Sato S, Maruyama-Inoue M, Kadonosono K. Flanged intrascleral intraocular lens fixation with double-needle technique. Ophthalmology 2017;124:1136-42.
9. Baskaran P, Ganne P, Bhandari S, Ramakrishnan S, Venkatesh R, Gireesh P. Extraocular needle- guided haptic insertion technique of scleral fixation intraocular lens surgeries (X-NIT). Indian J Ophthalmol 2017;65:747-50.
10. Agarwal A, Kumar DA, Jacob S, Baid C, Agarwal A, Srinivasan S. Fibrin glue-assisted sutureless posterior chamber intraocular lens implantation in eyes with deficient posterior capsules. J Cataract Refract Surg 2008;34:1433-8.
11. Oli A, Balakrishnan D. Autologous blood-assisted scleral fixation of intraocular lens. Indian J Ophthalmol 2020;68:2479-81.

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