

Long-term results of a suture burial technique

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PURPOSE. *To report the long-term (minimum 24 months of follow-up) results of a scleral suture fixation technique.*

METHODS. *Surgical databases from one surgeon were reviewed for consecutive cases from March 2003 to August 2005 in which the scleral suture fixation technique was used and a minimum follow-up of 24 months was completed. In this study, by knotting the suture onto itself, the author has buried the end and the knot of the suture into the sclera for scleral fixation, to stay put within the sclera. Intraoperative technical complications, postoperative visual outcomes, intraocular pressures, and suture-related complications were evaluated for each patient.*

RESULTS. *A total of 150 scleral-sutured free suture ends were evaluated after a minimum 24 months of follow-up in 75 eyes of 75 patients. No technical or suture-related complications (suture exposure, irritation, granulomas, giant papillary conjunctivitis, suture abscess) were recorded throughout the follow-up period.*

CONCLUSIONS. *Long-term follow-up of the suture burial technique - which allows avoidance of scleral incision, flap, or tunnel formation, as well as patch grafts for scleral fixation of intraocular lenses - showed it to be safe and effective. (Eur J Ophthalmol 2008; 18: 368-70)*

KEY WORDS. *Cataract surgery, Complication, Secondary lens implantation, Scleral fixation*

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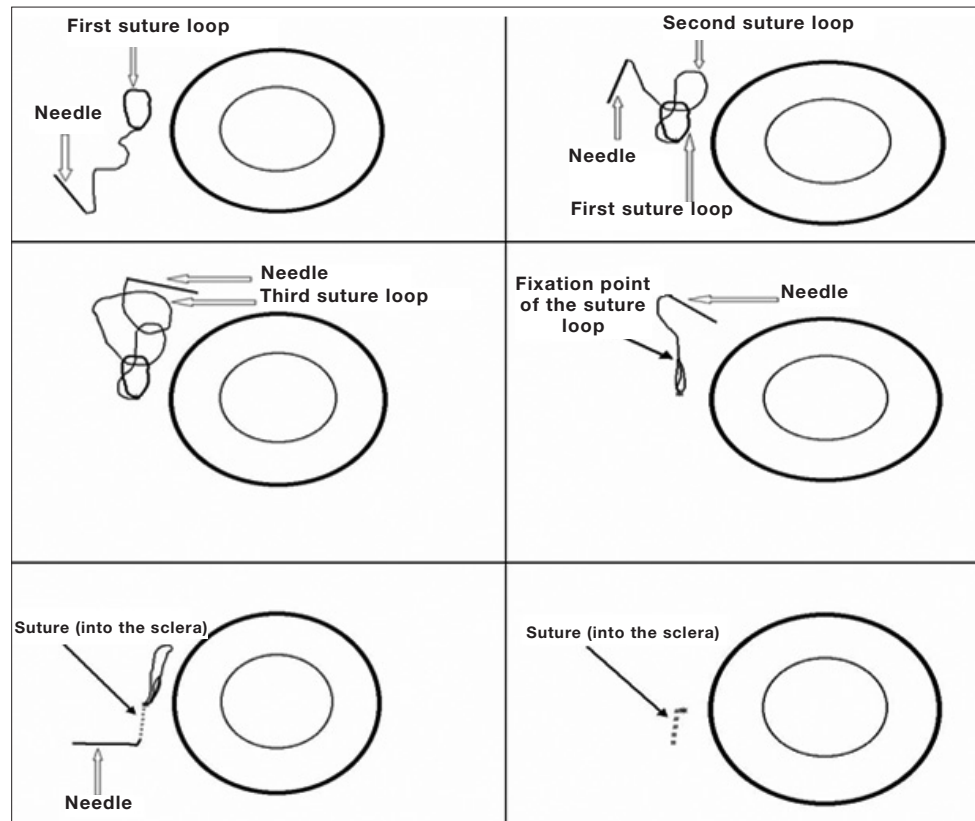
INTRODUCTION

I have previously described a technique in which the suture knots and ends were buried into the sclera for any procedure requiring transscleral fixation (1). For decades, scleral-fixated intraocular lenses (IOLs) and scleral sutured capsular tension rings have been the popular types of apparatus used in secondary IOL implantation in the absence of capsule or zonule support (2-4). Polypropylene suture is used and the suture ends over the sclera after the knot has been formed may erode through the conjunctiva and become exposed. Thus, the erosion may lead to the development of endophthalmitis (5). In order to prevent the aforementioned complication, scleral flaps, autologous cornea, dura mater, or fascia lata patches have been used to cover the knot and also rotation of the knot into the tissues has been described (6-10). I report my experience with 75 cases using this suture burial technique.

METHODS

Surgical databases from one surgeon were reviewed for consecutive cases from May 2003 to August 2005 in which the scleral suture fixation technique was used and a minimum follow-up of 24 months was completed. In this study, by knotting the suture onto itself, I buried the end and the knot of the suture into the sclera for scleral fixation, to stay put within the sclera. This study concerned 75 eyes of 75 cases with ages ranging from 28 to 84 years (51 men, 24 women) who required transscleral fixation. All surgeries were performed by the same surgeon (M.B.). Preoperative and postoperative evaluations included subjective refraction, uncorrected visual acuity (UCVA), IOLMaster (Zeiss Humphrey, Zeiss Meditec, Jena, Germany) evaluation, slit lamp examination, Goldmann applanation tonometry, and indirect fundus examination. The intraocular lens (IOL) power was calculated by using the SRK/T formula. In all cases, the surgical technique was as follows.

Fig. 1 - Sequences of the scleral suture burial technique.



Surgical technique

Ocular anesthesia was general, retrobulbar, or peribulbar, depending on patient needs and surgeon preference. Eyes were prepared by cleaning the area with povidone-iodine (Betadine), isolating the lashes, and inserting a lid speculum. The surgical technique was as follows under retrobulbar anesthesia (4 mL proportional combination of mepivacaine 2% and bupivacaine 0.75%): the operative eye was prepared properly and draped in a sterile manner. In this technique 10/0 polypropylene suture with a straight needle at each end for fixation of an IOL or capsular tension ring is used. Tying the suture to the IOL externalizing the suture for scleral fixation is preferred. The needle is passed through the sclera in a lamellar fashion just next to the point where the suture protrudes from the sclera. Afterwards, the free end with the needle and the other end are tied by classical suture tying method. As the suture is being tied, a free end with the needle and a second piece in form of a loop will appear. Achievement of a smaller loop is particularly required for the burial technique. Therefore,

when the suture is being tied, the suture attached to IOL should be gripped at the closest point to the scleral entry and then knotted. Thus, the suture loop will have become smaller. For the burial procedure, the free stranded needle is passed through the loop and repassed along the same direction so that a secondary loop is obtained over the first one. The free end is passed through the recently formed loop once more. Therefore, the free needle will have gripped the loop bound to sclera. The needle is inserted into the sclera at a point closest to the preformed knot and advanced in a lamellar fashion. Then the needle is retrieved after having been advanced more than the length of the loop onto which the sutures are held. Thus, the loop tied to the pulled suture is rotated and buried into the sclera. Solely the suture mounted on the needle will have been noticed at the scleral wound. If the suture is cut at the exit site, then the suture end will have been completely retained in the sclera providing the entire burial of both the loop and the end mounted on the needle (Fig. 1). Buried suture in the sclera at the first week postoperatively is shown in Figure 2.

Suture burial technique

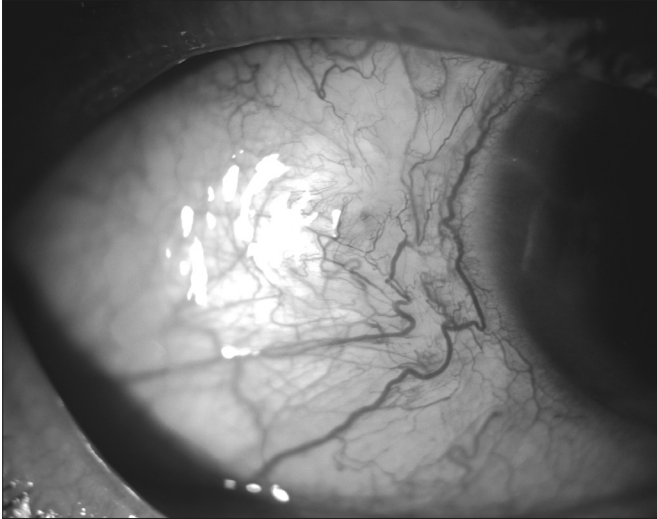


Fig. 2 - Postoperative appearance of the buried suture in the sclera.

RESULTS

The scleral fixation sutures are buried into the sclera with suture burial technique in 75 eyes of 75 patients. Mean age was 56.2 years (28–84). Mean follow-up time was 36.8 months (range: 24–52). In all cases because of absence of adequate capsular support, scleral-fixated IOLs, made of polymethylmethacrylate (PMMA), were used. Postoperatively a gain of at least two lines of uncorrected visual acuity was observed in 84% of eyes (63 eyes of 75 patients) at 6 months of follow-up. We observed no intraoperative or postoperative complications related to the suture burial technique itself. In addition, we did not observe any persistent corneal edema, cystoid macular edema, or increased intraocular pressure throughout the follow-up period related to the procedure itself. Ten (13.3%) of the eyes were found to have mild elevation of intraocular pressure at the postoperative first week that did not need treatment. Patients whose visual acuity remained essentially unchanged as before treatment were those who had macular or optic nerve damage preoperatively.

DISCUSSION

Ophthalmic surgeries requiring scleral suture fixation have several difficulty levels, increasing the probability of encountering complications intraoperatively or postoperatively. Among those, suture-related complications have addi-

tional importance. In IOL applications requiring scleral suturation, the suture erosions may lead to endophthalmitis (5). In order to prevent these complications, scleral flaps, dura mater, autologous cornea, fascia lata patches, and techniques involving suture burial into the globe are being tried (6-9). In view of the above results, this technique in which the sutures are easily buried into the sclera would be an alternative beside the other techniques.

The author has no proprietary interest in any of the instruments or products mentioned in the article.

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