



Transscleral suture fixation in congenital ectopia lentis

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Congenital ectopia lentis (CEL) is a rare condition characterized by the displacement of the crystalline lens of the eye from its normal position (1). This displacement can cause visual impairment, including blurred vision, double vision, and reduced visual acuity. The condition is usually inherited and can be associated with other ocular and systemic anomalies. The precise cause of CEL is not yet known, but various theories suggest a genetic or developmental origin (2,3).

Diagnosis of CEL typically requires a comprehensive eye exam, including a slit-lamp examination and measurement of refraction (1). In some cases, further testing such as ultrasound or computerized tomography (CT) scans may be necessary to assess the degree of lens displacement and to evaluate for associated conditions (1).

Treatment for CEL can include spectacles, contact lenses, or surgical intervention. The goal of treatment is to restore normal visual function and to prevent complications such as cataract, glaucoma, or retinal detachment.

Surgical options for CEL include lens repositioning, lens replacement, or suture fixation (1).

Suture fixation is a technique that involves attaching the lens to the iris or the sclera using fine sutures. This technique can be used to stabilize the lens in cases where the lens is

highly mobile or at risk of dislocation.

Transscleral suture fixation is a variation of suture fixation that involves suturing the lens to the sclera rather than the iris. This technique can be particularly useful in cases where the lens is highly mobile or in cases where iris suture fixation is not possible due to anatomic limitations. The transscleral suture fixation technique is performed using a specialized surgical microscope and requires precise surgical skills.

Liu *et al.* reports on the results of a clinical study in which the modified knotless transscleral intraocular lens fixation technique was used to treat CEL in 30 eyes (3). The authors report that the technique was effective in correcting the lens displacement and improving visual function by achieving optimal intraocular lens (IOL) position and reducing postoperative astigmatism.

Xu *et al.* performed an *ex vivo* study in which the biomechanical properties of the modified knotless transscleral suture fixation technique were tested (4). The authors found that the Z-suture with a 8-0 polypropylene suture and double scleral grooves improved stability of the lens and reduced the risk of lens dislocation compared to traditional knot-based suture techniques.

A large retrospective study by Byrd *et al.* on long-term

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outcomes for pediatric patients having transscleral fixation of the capsular bag with IOL for ectopia lentis provides valuable insight into the effectiveness of this surgical technique (5). The results indicate that transscleral fixation is a reliable and safe method for treating ectopia lentis in children, with high success rates and minimal complications reported over an extended follow-up period (mean 35.3 months). The authors also highlight the importance of regular postoperative monitoring to ensure the stability of the intraocular lens and the proper functioning of the visual system. Overall, the study provides strong support for transscleral fixation as a viable option for pediatric patients with ectopia lentis.

In addition to its high success rate and low risk of complications, transscleral suture fixation technique has several other advantages. For example, it can be performed through a small incision, which reduces the risk of infection and scarring. The IOL is positioned so that it is closest to the natural position, keeping it away from the trabecular meshwork and corneal endothelium, and acting as a mechanical barrier between the vitreous cavity and anterior chamber (6). Additionally, this approach is appropriate in cases with severe iris trauma (7). It is also a minimally invasive procedure, meaning that patients can recover more quickly after surgery (7).

Despite its many advantages, transscleral suture fixation technique is not without limitations. For example, in some cases, the sutures may break or become loose, leading to a recurrence of lens dislocation, there is a risk of hemorrhage and retinal detachment due to surgical manipulation in the area of the ciliary body, the surgical approach can be challenging to introduce and position the IOL, and surgery can be more time-consuming than other techniques (8). Additionally, this technique may not be appropriate for all patients, especially those with other underlying eye conditions.

In conclusion, transscleral suture fixation technique is a safe and effective method for treating CEL. This procedure has been shown to achieve high success rates in correcting lens dislocation, and it is well-tolerated by patients with minimal postoperative discomfort and a low risk of complications. However, as with any surgical procedure, it is important to carefully consider the potential risks and benefits before undergoing transscleral suture fixation surgery.

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