Comprehending IOL Signs and the Significance in Glued IOL Surgery

Glued intrascleral fixation is a technique aimed at restoring pseudophakia in patients with posterior capsular dehiscence and represents the theme of fixing the haptics into the scleral pockets to allow long-term stability with no decentration and tilt.¹,² The technique has evolved from the use of polymethylmethacrylate nonfoldable intraocular lenses (IOLs) to the application of modern three-piece foldable IOLs³ extending all of the advantages of small incision surgery and as a part of combined surgeries.⁴ In this technique, the unfolding of an IOL with an appreciation of a “Lucky 7” sign (term coined by Thomas Oetting) for the leading haptic and a “C” sign for the trailing haptic is of utmost importance.

As the IOL is loaded, the surgeon ensures that the leading haptic extrudes from the cartridge in the form of the “Lucky 7” (Figure 1A). The initial short portion of the “7” should be protruding to facilitate grasping by the glued IOL forceps, ensuring safe IOL unfolding and nullifying the chances of an IOL drop. The IOL is unfolded and the injector is withdrawn at the end so that the trailing haptic lies at the corneal incision. The trailing haptic showcases an “Upright C” sign at this stage (Figure 1B) (Video 1, available in the online version of this article).

The surgeon should be alert for the inability to decipher the “Lucky 7” sign or any variation such as folding the haptic in the cartridge for the leading haptic because any sudden, jerky, uncontrolled unfolding can lead to an IOL drop and the IOL injection should be withheld if possible. If folded in the cartridge, the haptic can be straightened out with an IOL dialer (Figure 1C) and a “Lucky 7” sign can be appreciated. If the IOL has already unfolded in a reverse fashion (Figure 1D), the surgeon can flip the IOL upside down in the eye and proceed with the surgery. Appreciation of an “Upright C” sign for the trailing haptic in the anterior chamber instead of at the corneal incision is a matter of concern and should be taken as a warning sign because slippage of the leading haptic at this juncture can lead to an IOL drop.

The importance of “Z” and “S” signs has been highlighted for IOL unfolding because the angulation and geometry of the IOL have different optical results and undesirable effective lens position in the eye if inserted upside down. In glued IOL surgery, the horizon of error for IOL unfolding is negligible due to absence of posterior capsule. It is imperative for the surgeon to identify this problem at the beginning of an IOL injection. At this juncture, the appreciation of the “Lucky 7” sign comes into play because it is still possible to abort the IOL insertion, withdraw the injector, and load the IOL again.

By comprehending these signs, the surgeon can overcome the hurdles, taking another small step in our pursuit of safe, less invasive glued IOL surgery.

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REFERENCES


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Axial Eye Length Evaluation Before and After Hyperopic Photorefractive Keratectomy

Photorefractive keratectomy (PRK), LASIK, and LASEK correct hyperopia by inducing a peripheral ablation without changing the central corneal thickness (CCT). A careful review of the current literature revealed only two studies evaluating the axial length after myopic but not hyperopic PRK.

We reviewed 61 eyes of 37 patients (23 men) with ages ranging from 18 to 58 years (mean: 38.12 ± 11.84 years) who underwent PRK with attempted corrections ranging from +0.25 to +7 diopters (D) (mean: +3.81 ± 1.62 D). Informed consent was obtained from all patients. Detailed ophthalmic examination with fogging refraction, axial length measurement with an IOLMaster (Carl Zeiss Meditec, Jena, Germany) and CCT measurements from the pupil center with an OCULUS Pentacam (Optikgerate GmbH, Wetzlar, Germany) were performed preoperatively and at 1, 3, and 6 months of follow-up. Patients underwent PRK with a 193-nm ESIRIS excimer laser (Schwind, Kleinostheim, Germany) with an ablation zone of a 7- and 1.5-mm blend zone.

Before PRK, the axial length ranged from 19.9 to 24.21 mm (mean: 21.99 ± 1.09 mm) and the CCT ranged from 493 to 606 μm (mean: 547.9 ± 33.83 μm). One month after PRK, the achieved correction ranged from -5 to +1.5 D (mean: -0.5 ± 1.17 D). Preoperative and postoperative axial length differences ranged from -0.08 to +0.09 mm (mean: 0.02 ± 0.03 mm) (P = .96) with a poor correlation (R² = 0.058). The CCT ranged from 474 to 594 μm (mean: 539.41 ± 32.56 μm) (P = .34).

At 3-month follow-up, the achieved correction ranged from -3 to +3.75 D (mean: 0.04 ± 1.1 D). Preoperative and postoperative axial length differences ranged from -0.05 to 0.1 mm (mean: 0.03 ± 0.03 mm) (P = .99) with a poor correlation (R² = 0.001). The CCT ranged from 485 to 598 μm (mean: 540.12 ± 34.45 μm) (P = .40). At 6-month follow-up, the achieved correction ranged from -1.75 to +4 D (mean: 0.54 ± 1.13 D). Preoperative and postoperative axial length differences ranged from -0.12 to 0.08 mm (mean: 0.02 ± 0.04 mm) (P = .31) with a poor correlation (R² = 0.061). The CCT ranged from 482 to 602 μm (mean: 540.33 ± 34.82 μm) (P = .44). In the control group (33 non-operated fellow eyes), the axial length of the fellow eye ranged from 19.88 to 23.84 mm (mean: 22.29 ± 1.02 mm) preoperatively and from 20.50 to 23.87 mm (mean: 22.34 ± 0.97 mm) at 1 month postoperatively (P = .84).

We found no significant changes in the axial length or CCT after hyperopic PRK. This is different than in myopic PRK, where the CCT does decrease. We measured no change in the central CCT with Pentacam, and therefore it is not just that the CCT changes are below the resolution of the IOLMaster. Central corneal remodeling does not occur to a degree sufficient to change the CCT or axial length because most of the tissue change is in the mid-peripheral cornea. Further studies on the same topic could be helpful in confirming our findings.

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REFERENCES

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