Surgery of dislocated intraocular lenses

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Intraocular lens (IOL) dislocation is a well-known complication of cataract surgery that usually requires surgical repositioning either through an IOL exchange or by repositioning of the existing IOL. Neither technique is superior to the other, according to the literature. In addition, the presence or absence of a capsular bag (i.e., in-the-bag or out-of-the-bag type of dislocation) is seldom considered when choosing the surgical technique. This thesis aimed to deepen the knowledge regarding surgery of different types of dislocated IOLs and the management of uveitis–glaucoma–hyphema (UGH) syndrome.

Study I was a retrospective case-control study that evaluated the efficacy and safety of out-of-the-bag dislocated IOL suturing to the iris by comparing this method with an IOL exchange with a new IOL sutured to the sclera (**Figure 1**). The study showed that both surgical methods were similar, except that surgically induced corneal astigmatism and the number of postoperative visits were significantly lower in the iris group.

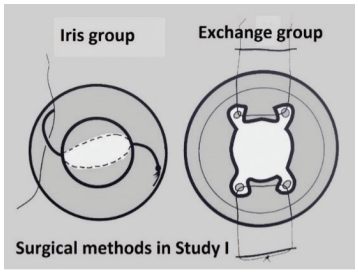

Figure 1. Surgical methods in Study I

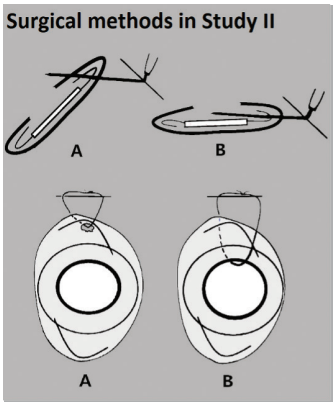

Figure 2. Surgical methods in Study II

Study II was a randomized study that focused on in-the-bag dislocations and compared the traditional surgical method ab externo scleral suture loop fixation (method A in **Figure 2**) and a new surgical technique developed by Dr. Armonaite: Embracing the continuous curvilinear capsulorhexis (CCC; method B in **Figure 2**). The difference between the methods is that in the traditional method, the suture perforates through the capsule and does not include the CCC, whereas in the CCC method the suture embraces the CCC. Both methods resulted in a good 3D IOL position, although the CCC method might be more advantageous in the presence of a thin and fragile (i.e., not fibrotic) capsule because the round CCC provides a tear-resistant opening; therefore, tearing of the bag by the suture is unlikely. In patients without fibrosis, the IOL tilt was 7° when the modified method was used, compared to 15.5° of IOL tilt with the traditional method. However, the result was not statistically significant because the subgroup of patients without capsule fibrosis was very small. Additionally, swept-source anterior segment optical coherence tomography (SS-AS-OCT) was found to be useful for IOL 3D position measuring after IOL repositioning, as well as for measuring the capsular bag thickness. IOL-induced astigmatism is low: 0.075 D for 1° of IOL tilt.

On May 12, 2023, Laura Armonaite defended her thesis "Malpositioned and dislocated intraocular lenses: management, complications and surgical repositioning" at Karolinska Institute, Department of Clinical Neuroscience, Division of Eye and Vision, Stockholm, Sweden. Her main supervisor was Professor Anders Behndig, Umeå University, Department of Ophthalmology, with co-supervisor Professor Anders Kvanta, St. Erik Eye Hospital/ Karolinska Institute, Department of Eye and Vision.

Key points:

- Out-of-the-bag dislocated IOL suturing to the iris is a safe and effective method with less surgically induced corneal astigmatism and fewer postoperative appointments than IOL exchange.
- The modified method Embracing the CCC is another alternative for IOL fixation that might be advantageous when the capsular bag is not fibrotic.
- Surgical treatment does not necessarily stop UGH syndrome, and half of patients will need IOP-lowering therapy despite UGH resolution. Therefore, the follow-up time for these patients should be long. IOL-donesis may cause UGH syndrome, and iris defects are not specific to UGH syndrome unless they are shaped like a haptic or optic edge.

Study III, which investigated UGH syndrome, showed that surgical treatment was effective in 77% of patients and significantly improved visual acuity compared to the conservative treatment. Various types of IOL malposition can cause UGH syndrome, and the absence of visible iris–IOL contact on examination does not rule out this condition. Clinical examination on slit-lamp was more useful for detecting iris–IOL contact than AS-OCT or ultrasound biomicroscopy. IOL-donesis is a risk factor for developing UGH syndrome. Approximately half of patients with UGH syndrome may need IOP-lowering therapy in the long run after UGH resolution; all patients with UGH require a long follow-up time after UGH resolution.

Future directions:

- To investigate different surgical techniques for IOL repositioning.
- To find the most effective treatment for UGH syndrome.

References

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