

Three point lens fixation in patients with subluxed intraocular lens and capsular tension ring

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Purpose

The objective is to describe a new surgical technique for subluxed or dislocated intraocular lens-capsular tension ring complex and the outcomes in 4 patients.

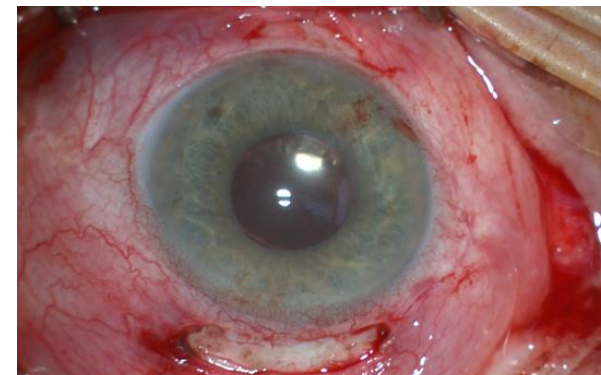
Introduction

Implantation of a capsular tension ring (CTR) during cataract surgery is recommended when there is zonular weakness. Although the implantation of a CTR relieves zonular tension, the intraocular lens – capsular tension ring (IOL-CTR) complex is also susceptible to dislocation and subluxation in cases where there is a severe or progressive zonulopathy. There are various options for managing a subluxed complex IOL-CTR. Although explantation may appear to be technically easier, the possibility of vitreous traction, the large incision required, and the placement of an anterior chamber IOL are potentially serious risks that can derive in corneal edema, high astigmatism, cystoid macular edema, pigment dispersion and retinal detachment. There are few studies describing scleral lens fixation with 2 and 1 point but there is no serial cases describing 3 point scleral fixation technique and the outcomes.

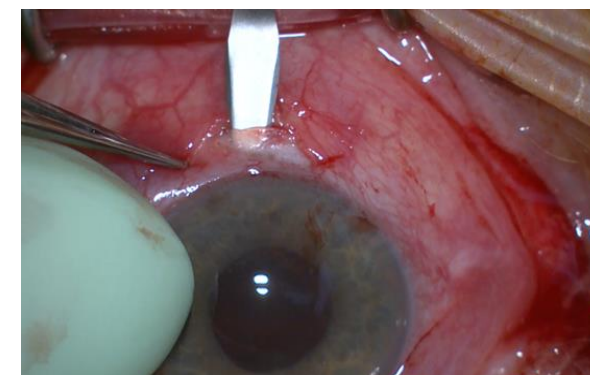
Methods

- Descriptive, retrospective single center study
- Four patients that had a 3 point scleral fixation surgery after subluxation of IOL-CTR complex between 2016 and 2021. Three of them had glaucoma procedures done in the same surgery
- Outcomes: after the surgery we evaluate stability of the complex after three years, intraocular pressure after the first month, best corrected visual acuity after 3 months and presence of corneal edema or cystic macular edema during the follow up.

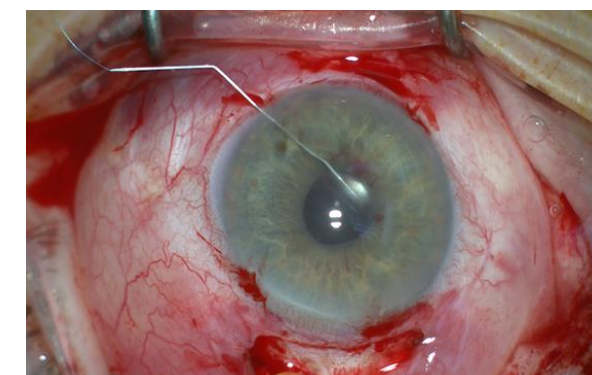
Surgical technique



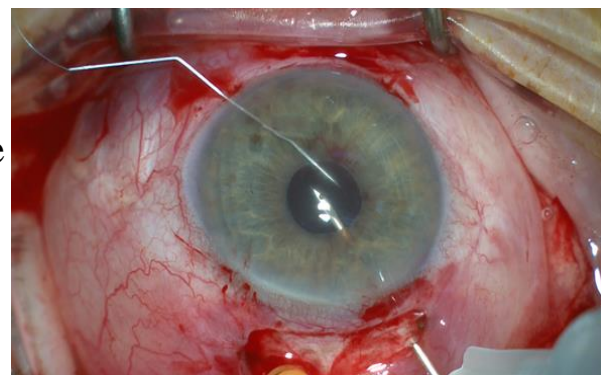
1-The conjunctiva was opened at 12 and 6 o'clock 1 mm posterior to the limbus.



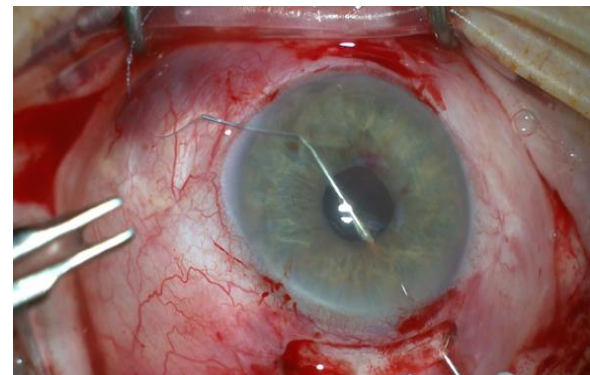
2 -Limbal incisions were placed at 10, 1 and 6 o'clock and cut downs of half thickness sclera were made 2 mm posterior to the limbus at the same positions



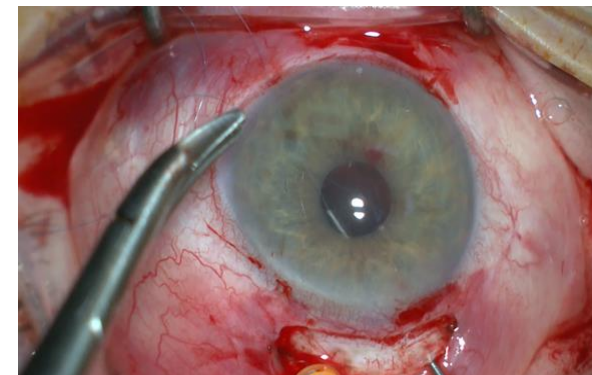
3- A double armed 10-0 Prolene suture with straight needles was introduced through the limbal incision.



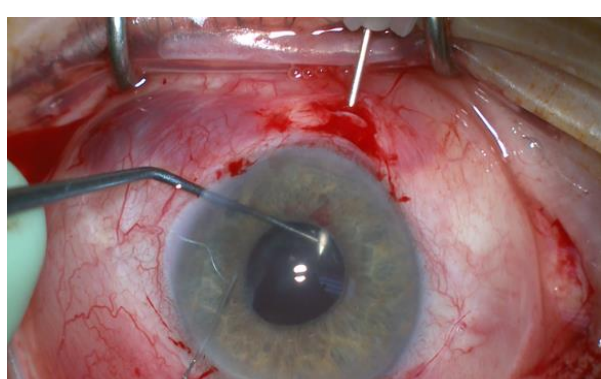
4- 27-gauge needle was introduced through the sclera and was placed posteriorly to the IOL-CTR complex through the peripheral capsule



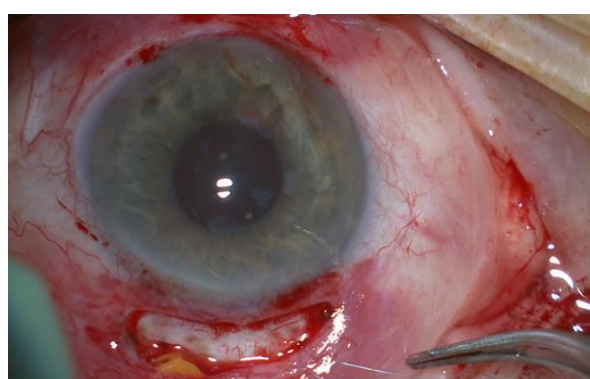
5- The straight needle was loaded in the 27-gauge needle



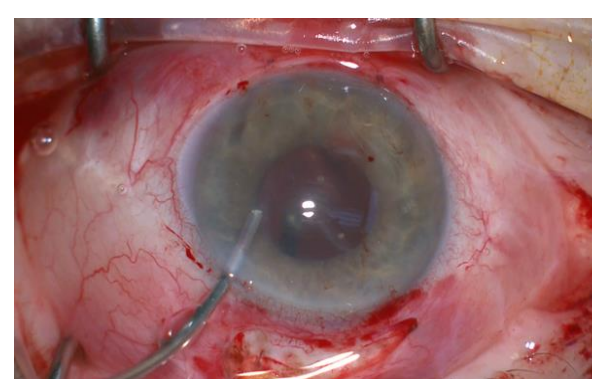
6- The same process was repeated with the 27-gauge needle going anteriorly to the complex and capturing the other half of the prolene



7-The same procedure is repeated at the three positions.



8-These sutures were then tied securely achieving excellent obliteration of the complex



9- An anterior vitrectomy was performed to avoid any vitreous attaching itself to the prolene sutures

Results

We evaluated all the patients every week for the first month and after the follow up was different depending on comorbidities.

All the patients achieved a good postoperative with a centered and stable intraocular lens. Three years later the the IOL-CTR complex is stable, there were no new subluxations and none of them lost any of the sutures.

The IOP was high in all the patients before the surgery. Three patients had glaucoma procedures done in the same surgery. The patient that only had the IOL-CTR fixation the IOP was 25 mmHG before and 18 mmHg after the surgery.

The BCVA was measured before the surgery and improved in all the patients but one due to advanced glaucoma in that eye.

Only one patient had corneal edema that persisted longer than the first 2 weeks and it resolved 3 months later.

Only one patient had CME, it last for two weeks and resolved after.

Conclusions

- Three point scleral fixation surgery is an effective option after subluxation of IOL-CTR complex, that can give you stability long-term.
- Patients with a subluxated lens have higher intraocular pressures. Although repositioning the lens might improve the pressure our sample is too small to confirm that.
- Visual acuity improves after lens repositioning. Also a three point lens fixation improves the tilt effect compared to other procedures were the lens can be more mobile.
- Three point scleral fixation is less traumatic for the eye than other procedures which makes the risk of corneal edema and cystic macular edema lower