Long term PCO preventive effect of capsular bending ring

Yutaro Nishi MD

Nishi Eye Hospital, Osaka, Japan

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Capsular Bending Ring

This ring was developed over 10 years ago to create a sharp bending and prevent anterior and posterior capsule from being in contact (= considered to be as common condition as recently proposed concept “Open Capsule” by Leishman L et al) for prevention of PCO.

Nishi O et al. The inhibition of lens epithelial cell migration by a discontinuous capsular bend created by a band-shaped circular loop or a capsule-bending ring. Ophthalmic Surg Lasers. 1998

Capsular Bending Ring (CBR)

- Capsular bend created by the sharp optic edge or CBR induces contact inhibition of migrating lens epithelial cells.


Nishi O et al. Inhibition of migrating lens epithelial cells at the capsular bend created by the rectangular optic edge of a posterior chamber intraocular lens. Ophthalmic Surg Lasers. 1998
To evaluate the **PCO** preventive effect of **capsular bending ring** in Japanese eyes during the long term postoperative period.
Method

- 60 patients with senile cataract underwent in one eye cataract surgery with implantation of a capsular bending ring over 10 years ago.

- In the other eye as a control, the ring was not implanted.

- Posterior capsule opacification in visual axis measured by the YAG capsulotomy was investigated.

(Adhered to Helsinki Declarement)
Results

Among the aged 60 patients, each patient was contacted to come for examination. Some could not come due to bad physical condition, sickness, etc. Others were not able to be in contact…..

• so far, 5 patients were able to come for examinations.

• 5 patients underwent YAG capsulotomy in one eye without a capsular bending ring within 3 years after surgery, while in the other eye with the capsular bending ring, even over 10 year-postoperatively, the optic center of IOL was completely free from PCO and no YAG treatment was necessary.
**Results**

**R)** without a CBR, YAG capsulotomy was performed within a few years.

**L)** with the CBR, the optic center was completely clear over 10 years.
Conclusion

• The ring performed well during the long term period in keeping the visual axis free from PCO.

• Combined with Femtosecond laser treatment for precisely centered CCC, this ring may prevent PCO effectively during the long term postoperative period.
*Preventive Effect of an IOL on PCO

- No space, no cells
- Capsular stretch by one piece biconvex IOL
- Compression inhibition
  - (Contact pressure)
- Barrier effect of the IOL
- Stickiness of the IOL
- Sandwich theory (Fibronectin)
- Capsular bend
- Open Capsule

It was indicated CBR prevented PCO by inducing contact inhibition through capsular bend and also probably with a help of recently proposed “Open Capsule” effect.

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