
Long term PCO preventive effect of capsular bending ring

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The author(s) have no financial interest

Introduction

Capsular Bending Ring

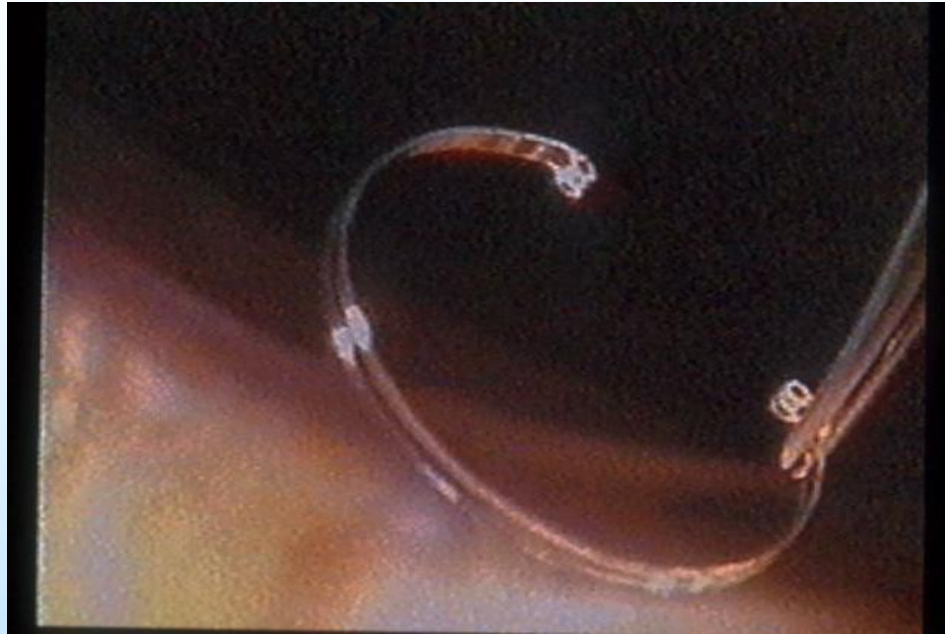
This ring was developed over 10 years ago to **create a sharp bending** and **prevent anterior and posterior capsule from being in contact** (= considered to be as **common condition** as recently proposed concept “**Open Capsule**” by *Leishman L et al*) for prevention of PCO.

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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

Menapace R, et al. Efficacy and safety of capsular bending ring implantation to prevent posterior capsule opacification: three-year results of a randomized clinical trial. J Cataract Refract Surg. 2008

Capsular Bending Ring(CBR)



CBR

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

Nishi O et al. Contact inhibition of migrating lens epithelial cells at the capsular bend created by a sharp-edged intraocular lens after cataract surgery. J Cataract R e f r a c t S u r g . 2 0 0 7

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. O p h t h a l m i c S u r g L a s e r s . 1 9 9 8

Study Purpose

*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.

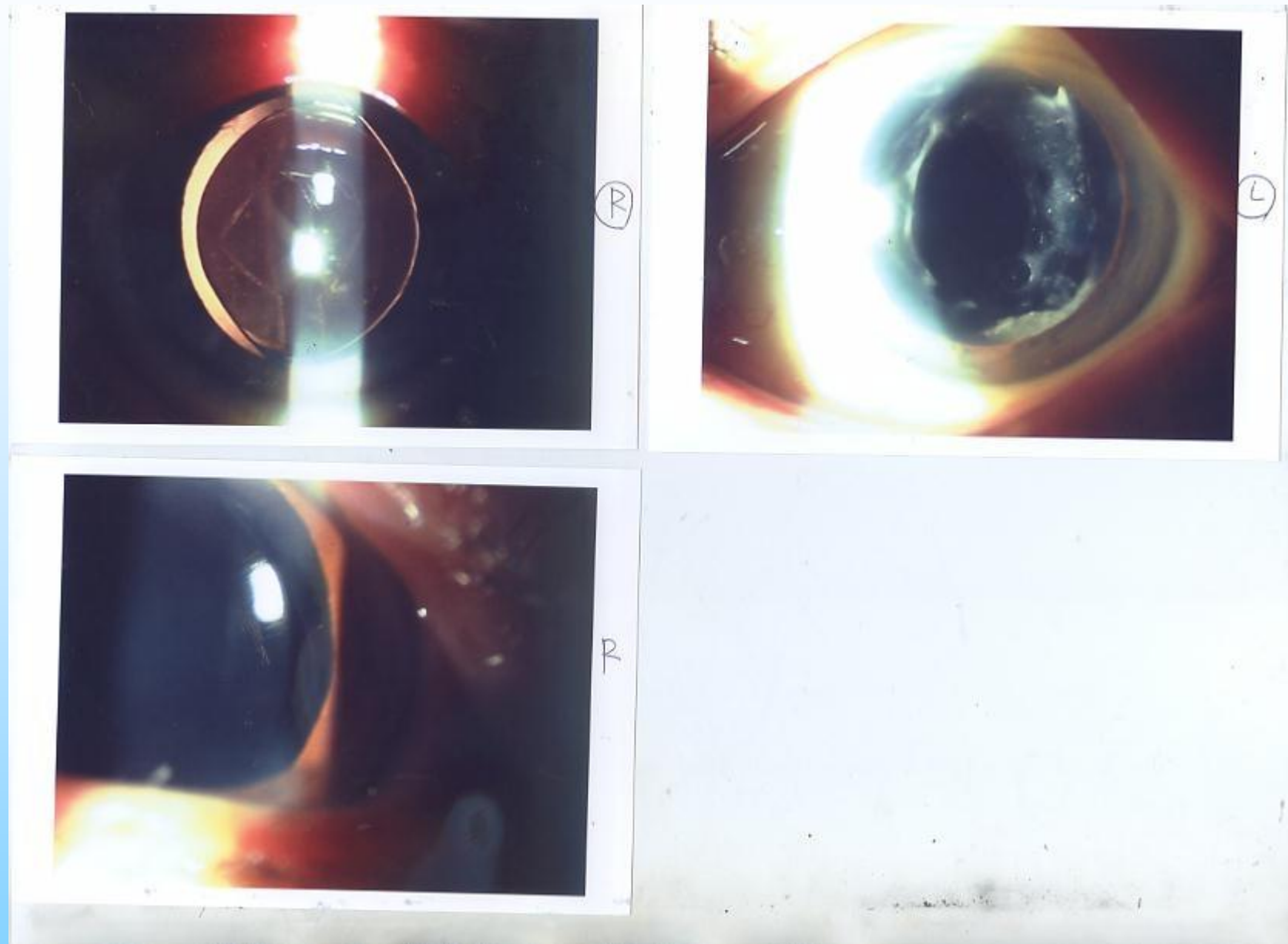
(Adhered to Helsinki Declarement)

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.

Discussions

*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)

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.

- **Capsular bend**
- **Open Capsule**

*Open Capsule

Leishman L, Werner L, Bodnar Z, Ollerton A, Michelson J, Schmutz M, Mamalis N. Prevention of capsular bag opacification with a modified hydrophilic acrylic disk-shaped intraocular lens. J Cataract Refract Surg. 2012

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