

The Evolution of the Square Edge

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Financial Disclosure

- Nulens
- Hanita Lenses Ltd
- Visioncare
- Ioptima
- Rayner

6 Factors to Reduce PCO

3 Surgery-Related Factors "Capsular" Surgery

1. In-the-bag fixation.
2. Hydrodissection-enhanced cortical clean-up
3. Small CCC with edge on IOL surface

David J. Apple, M.D.

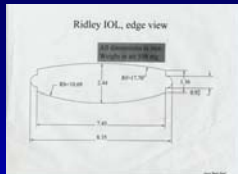
3 IOL-Related Factors "Ideal" IOL

1. Biocompatible IOL to reduce stimulation of cellular proliferation
2. Maximal IOL optic- posterior capsule contact; angulated haptic; "adhesive" biomaterial to create a "shrink wrap"
3. IOL optic geometry: square, truncated edge

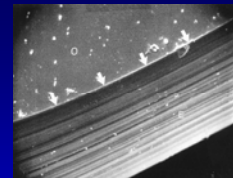
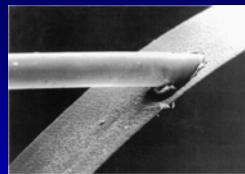
Evolution of the Truncated Optic Edge

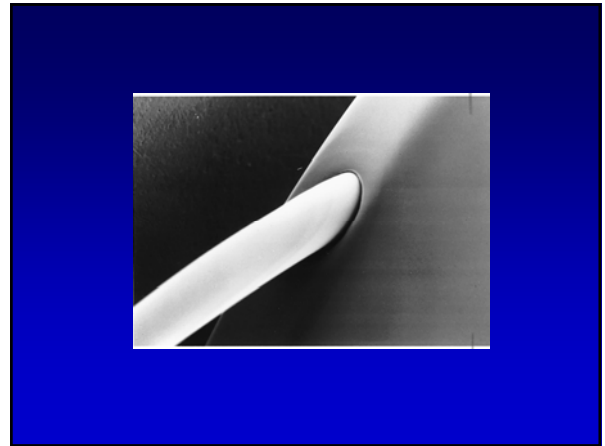
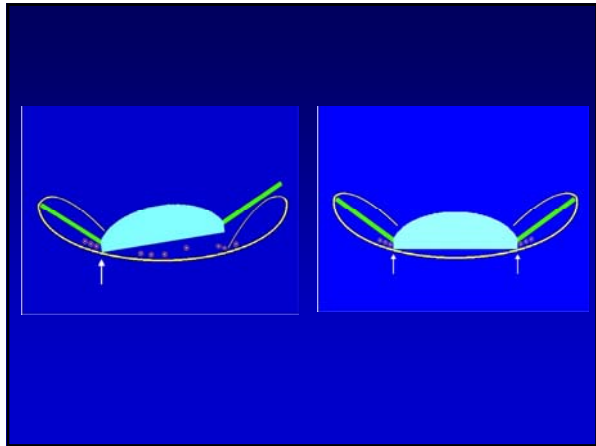
1. Original Ridley Lens (1949-50)
2. Early Unpolished Lenses
3. Rigid IOLs, Kenneth Hoffer, 1980s
4. Tsutomu Hara, 1991: Square Edge and Capsular Ring
 - a) Maintenance of the Contour of the Equatorial Capsular Bag (later version-Cionni Ring)
 - b) Prevent Invasion of LECs (PCO) onto Visual Axis
5. Okihiko Nishi, ECSR, Prague, Sep 1997: Square Edge Studies in Rabbits
6. David Apple, Oct 1997, Chicago Ophthalmology Society: Square Edge Studies After Human Implantation. Analysis of Human Eyes Obtained Post Mortem Containing Rigid and Folded PC-IOLs

Original Ridley Lens



Early Unpolished Lenses





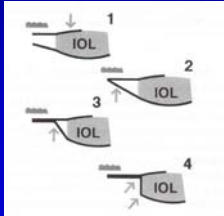
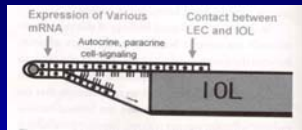
Rigid IOLs, Kenneth Hoffer, 1980s



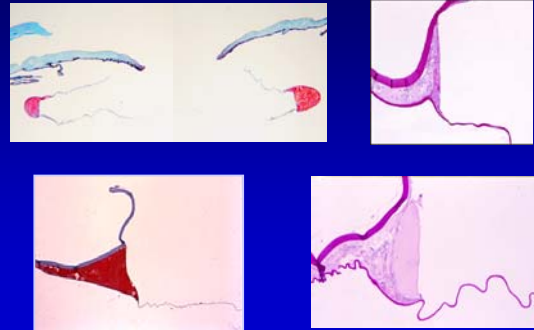
Tsutomu Hara, 1991
“Equator Ring”

AcrySof, Alcon

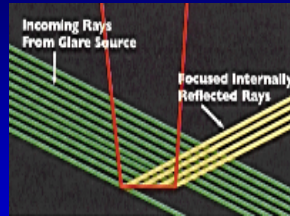
Okiihiro Nishi, ECSRS, Prague, Sep 1997
 "Capsular Bend"



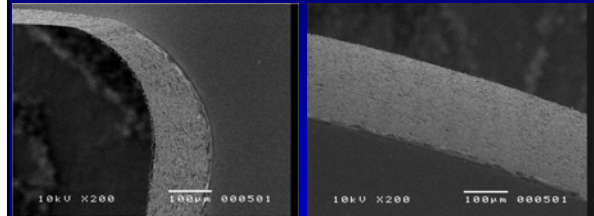
David Apple, Oct 1997, Chicago Ophthalmology Society



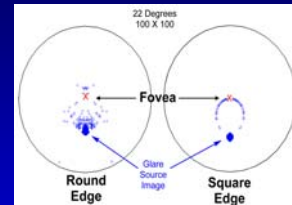
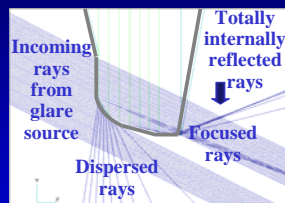
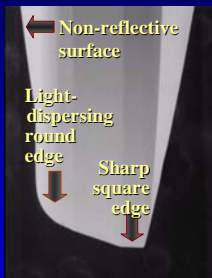
Major disadvantage: glare phenomena



Frosted Square Edge, Alcon

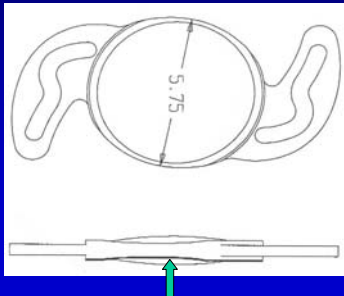


"OptiEdge", AMO

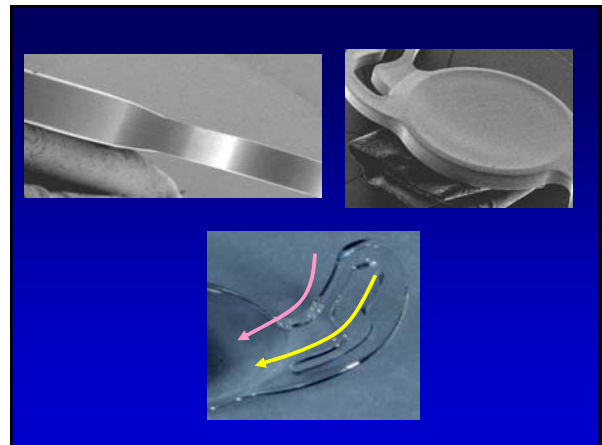
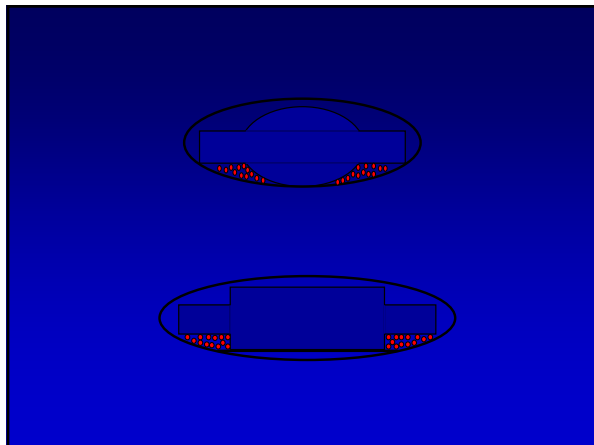
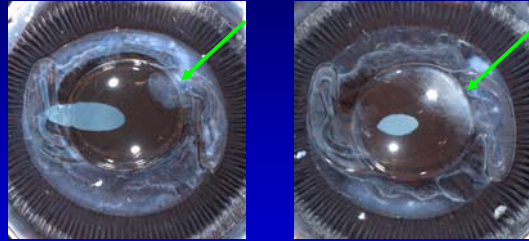


“Achilles’ heel” of single piece IOLs

Minus IOL - Rabbit study



Opposite results:



Apple and assoc.: New theory of possible mechanism of PCO formation with 1-piece IOLs, with or without large optic.

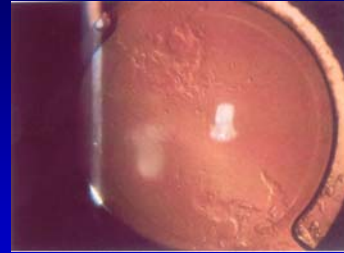
“Achilles heel” effect, growth of cells over the haptic-optic junction.

**Clinical observation by
Dr. Michael Amon - Austria**

**American Journal of Ophthalmology,
February 2004:**

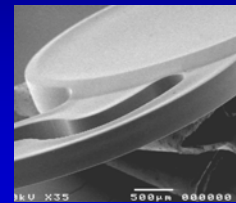
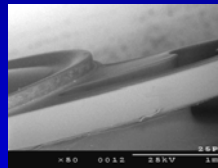
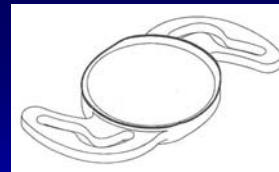
**Migration of Lens Epithelial Cells Through
Haptic Root of Single- piece Acrylic-foldable
Intraocular Lens.**

*Miho Sugita, MD, Satoshi Kato, MD,
Gentarō Sugita, MD, and Tetsuro Oshika, MD
Am J Ophthalmol 2004;137: 377-379*



Enhanced Edge

Fabricate a wall or square edge that extends
360 degrees around the optic and across
the haptic-optic junction



Addition of the
“Enhanced” Edge (360 degrees) to
the Hydrophilic IOL Completely
Changes its Behavior

PCO Occurrence Decreases by 30%

The change in design, the addition of the
360 degree edge fabricated onto the optic,
becomes an **equalizer**.

Experimental results:

