

Sulcus Supported Supplementary Lenses to Correct Refractive Errors: Additive IOLs

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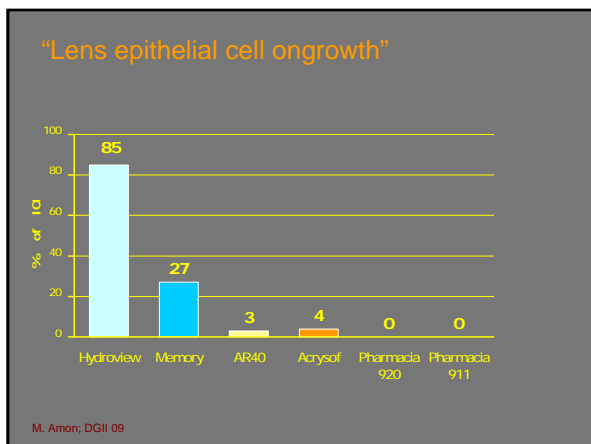
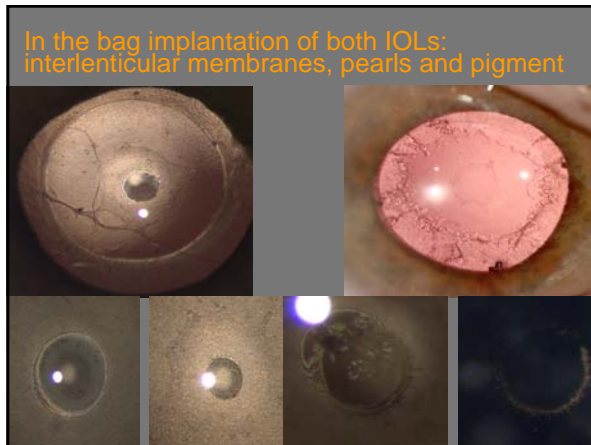
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Background: polypseudophakia

first cases (1993): both IOLs in the bag

- primary implantation: to correct high hyperopia or myopia
- secondary implantation: in case of pseudophakic ametropia (avoid IOL-exchange)

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Background: the new concept

- demand for exact refractive result after cataract surgery or refractive lens exchange
- establish a reversible alternative to „laser enhancement“, avoid IOL-exchange
- provide additional benefit to the patient in case of a second surgical intervention
- avoid contact and distortion of the two optical zones as after conventional polypseudophakia

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Conventional biconvex IOLs:
hyperopic defocus and change of contact area

Rayner **Sulcoflex Add-On IOL**

Various „Fine-Tuning“ Options for your Patients

HumanOptics
Focused on solutions

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Rationale for IOL

Material:
hydrophilic acrylic: uveal biocomp.

Optic:
diameter (6.5): quality of vision, no optic-capture
round edge: reduction of dysphotopsia
concave posterior surface: no distortion of IOL-optics
IOL-neutral aspheric, multifocal (refractive), toric, toric/multifocal

Haptic:
„undulated“, diameter (13.5): centration, rotational stability
angulation (10°): uveal clearance, pigment dispersion/o. capt.
soft haptic with round edge: less tissue-reaction

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Study

- n: 18 eyes
- 4 eyes: multifocal version (refractive IOL)
- 3 eyes: toric version
- 4 eyes: on multifocal IOL (after RLE)
- 4 eyes: YAG capsulotomy prior to Sulcoflex
- 1 eye: uveitis prior to Sulcoflex
- mean age: 55a
- ametropia (range): +5dpt/-2dpt
- follow-up: 24 months
- LFCM; UBM; Pentacam; OCT; photo; AT; VA; refraction

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Surgery

- 2.75mm CCI
- OVD
- injector
- positioning of IOL
- I/A
- antibiotic
- no iridotomy

no intraoperative complication

[Video](#)

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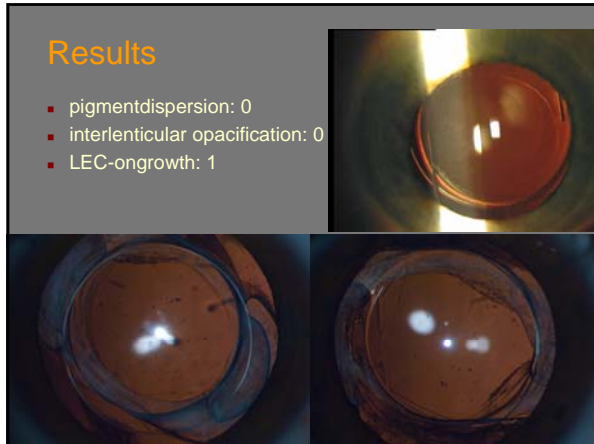
Results

- IOP (range): 11 – 22mmHg; 1 eye elevation on day one
- LFCM: 5 - 30 photon counts/ms < than after phaco
- fibrin: 0
- iristruama: 0

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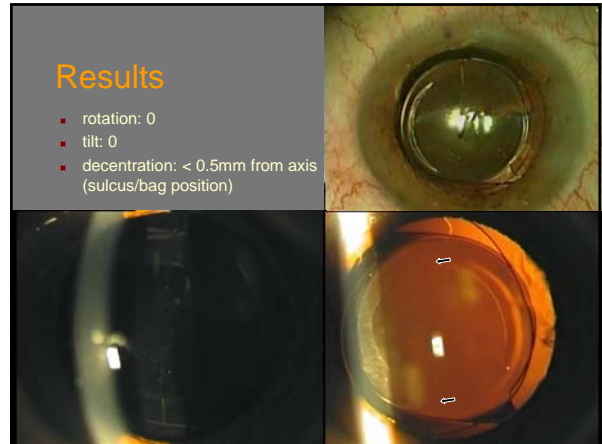
Results

- pigmentdispersion: 0
- interlenticular opacification: 0
- LEC-ongrowth: 1



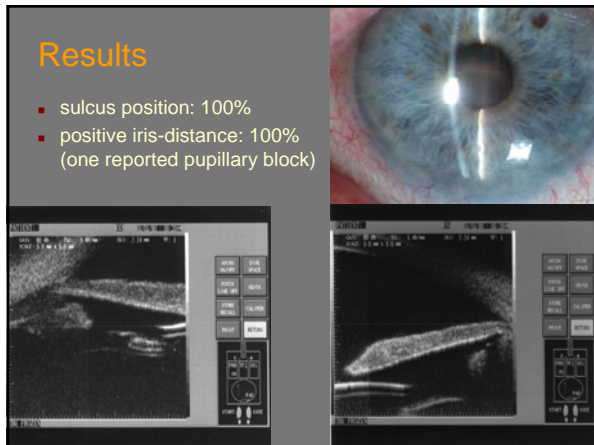
Results

- rotation: 0
- tilt: 0
- decentration: < 0.5mm from axis (sulcus/bag position)



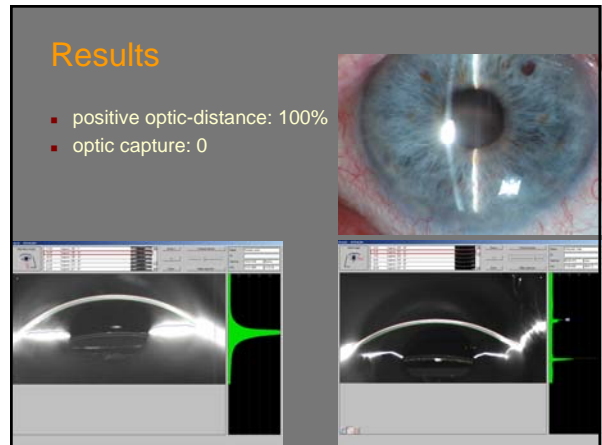
Results

- sulcus position: 100%
- positive iris-distance: 100% (one reported pupillary block)



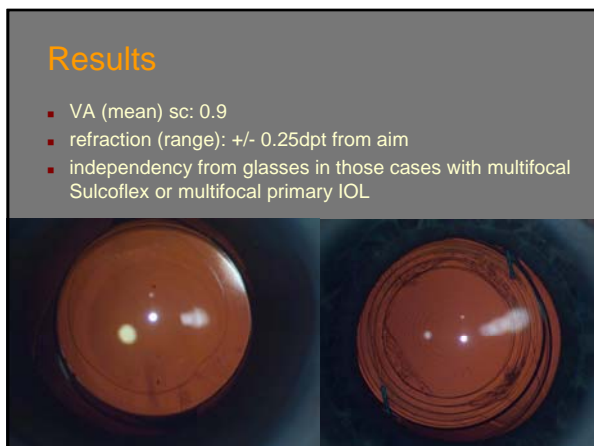
Results

- positive optic-distance: 100%
- optic capture: 0




Results

- VA (mean) sc: 0.9
- refraction (range): +/- 0.25dpt from aim
- independency from glasses in those cases with multifocal Sulcoflex or multifocal primary IOL



Indications for the Sulcoflex IOL:

early/late secondary implantation:
ametropia, aniseikonia
primary:
high myopia
high hyperopia



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Indications for the Sulcoflex IOL:

near and far vision (multifocal, monovision)



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Indications

astigmatism (toric, toric/multif.)




Additional indications:

primary, early/late secondary implantation

"dynamic refraction":

- pediatric cataract (correct refractive change)
- silicone oil (correct refractive change)
- keratoconus (correct refractive change)
- dysphotopsia
- higher order aberrations (customised)
- "test-implant" (emmetropia/myopia or monovision; easy to remove)
- reduction of IOL stock (toric IOL stock)
- light filter
- drug delivery
- prismatic IOL
- phakic IOL
- aphakia

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Conclusion

- surgery: safe and easy; less trauma than IOL-exchange; iridotomy?
- postop. refraction: stable with good predictability
- rotational stability: high (toric IOL)
- follow-up: without any severe complication (2 years); no block
- reversible procedure

Supplementary IOLs represent a promising, new concept for the various indications

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