



Prospective refraction and contrast sensitivity after implantation of a new aspherical IOL: correlation between IOL positioning, haptics angulation and asphericity

F. Massari MD

-L. BONOMO* Hospital, Eye Dpt., Andria (Bari), Italy
Head of Dpt. D. Di Pilato MD.

Berlin, ESCRS 2008

The Visual Quality

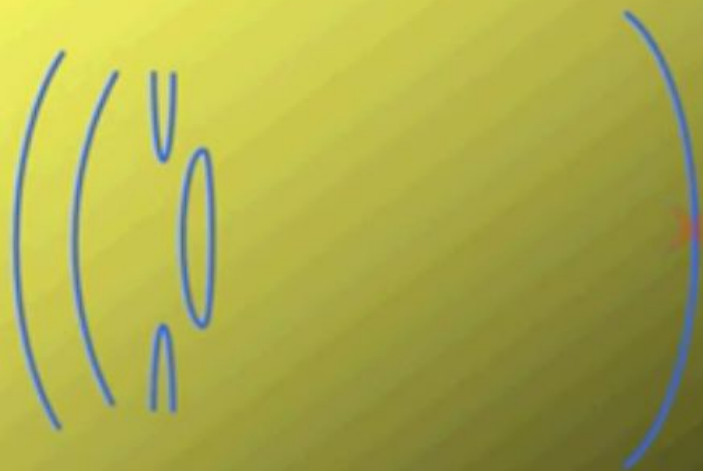
- The visual quality cannot be evaluated by Snellen visual acuity measurement, but a contrast sensitivity test is required.
- A reduction in spherical aberrations improves ocular optical quality.
- Low order aberrations (defocus, astigmatism) can be corrected with spectacles, contact lenses, or refractive surgery.
- High order aberrations, such as spherical aberration and coma, cannot be totally corrected by spectacles and have a more significant impact on contrast sensitivity and quality of vision.



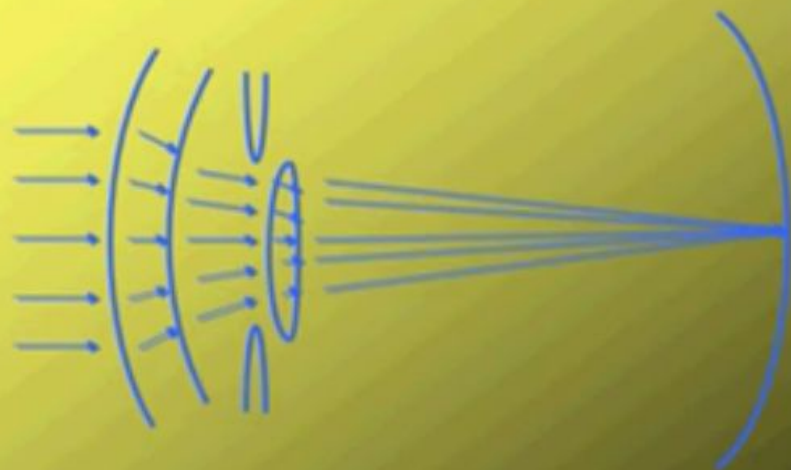
Which aberration into the “eye system”?

- Cornea normally induces positive spherical aberration;
- Lens normally induces negative spherical aberration;

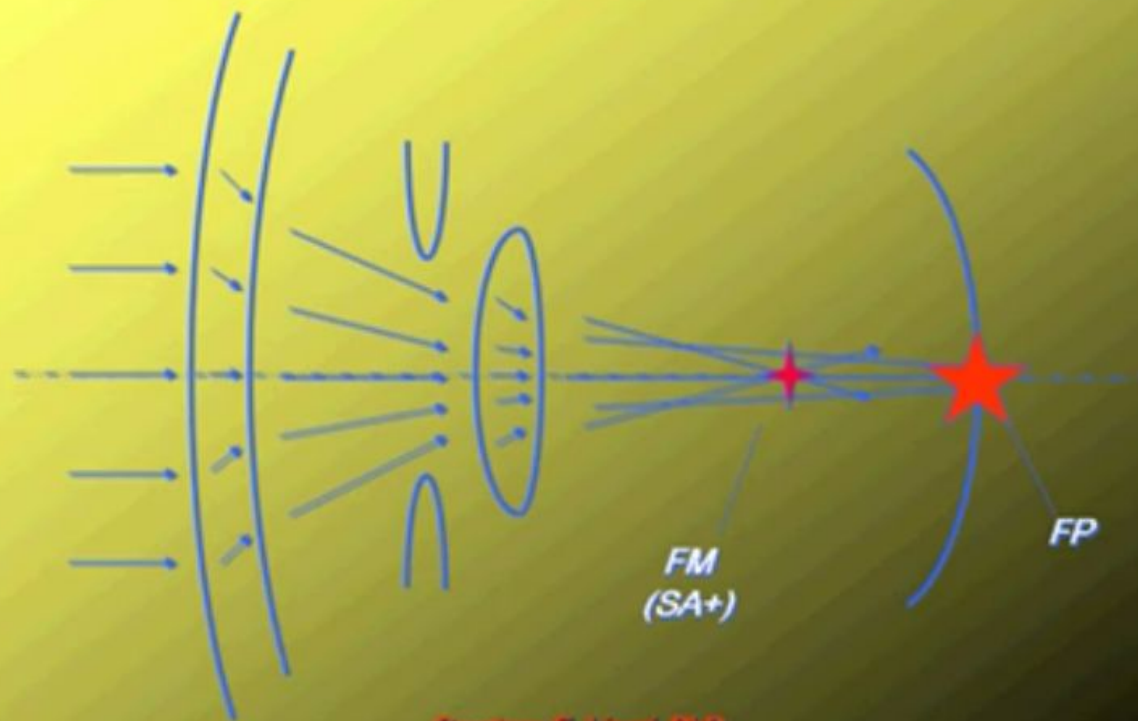
Ideal refractive process of the "system eye"



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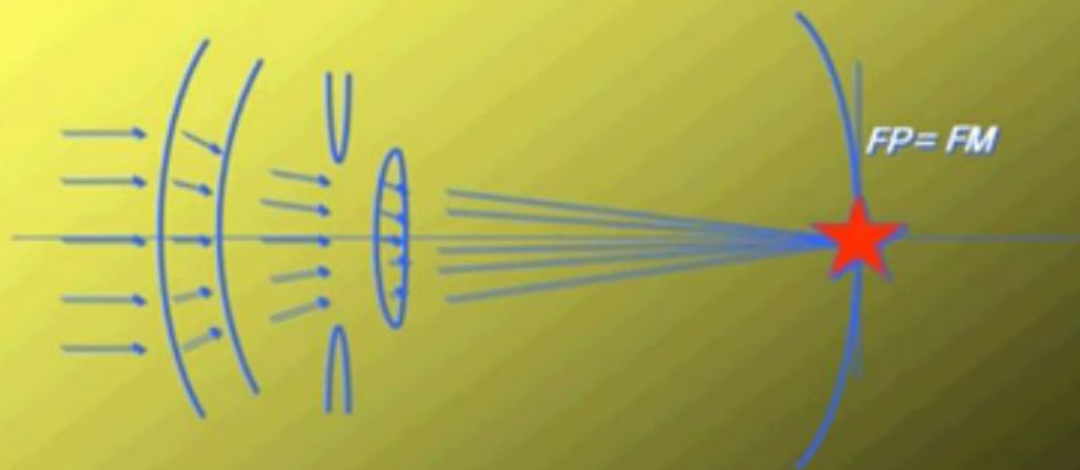


Ideal IOL = Best IOL?



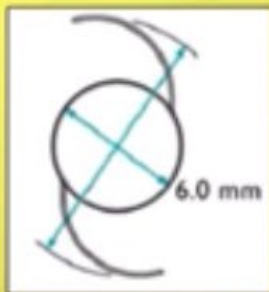
Courtesy E. Lipson, PhD

AS60/AM60: The optimized asphericity!!



The IOLs

AS60 LIGI
(Aspheric)



Over all \varnothing : 13,0 mm

Optic \varnothing : 6,0 mm

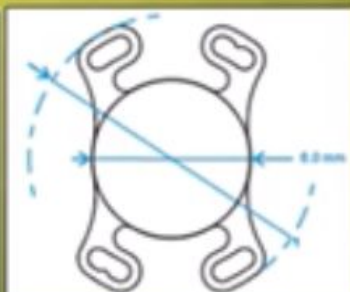
A Cost: 118,0

Loop: angle 5°, C modified

Material: Hydrophilic acrylic with UV
- absorber

Edge type: Round anterior -Square
posterior.

AM60 LIGI
(Aspheric)



Over all \varnothing : 11,0mm (10D..15D), 10,7mm
(15.5D..22D), 10,5mm (22.5D..30D)

Optic \varnothing : 6,0 mm

A Cost: 118,0

Loop: angle 0°

Material: Hydrophilic acrylic with UV -
absorber

Edge type: Round anterior -Square
posterior.

Purpose

Evaluation of quality of vision for a group of patients where two different aspheric IOLs were been implanted after cataract surgery.

The two model of IOLs (AM60 and AS60) are manufactured by the same company (Ligi Technologie Medicali SpA) , they are composed by the same material and their optics have the same profile, the difference “only consists” on the haptics, being a 3 three pieces lens the AS60 (5° angled) and a single piece lens the AM60 (0° angled).

Aim of the study is to verify the indipendence of the IOL performances by the positioning into the bag due to the different haptics angulation.

Population

- 50 patients with bilateral cataract: 26 ♂ and 24 ♀
- Mean Age: 67 y.o., range (62 – 78)
- IOLs (implanted) range: 18D ↔ 24D (powers calculated by IOL Master - Zeiss) for both IOLs.
- Follow up: 6 months

Patients have been implanted with the following criteria:

- One eye: AS60 – Ligi Technologie Medicali S.p.A.
- Fellow eye: AM60 – Ligi Technologie Medicali S.p.A.

Inclusion Criteria:

- No ocular disease
- Senile cataract
- Willingness to participate in a 6 month study

Exclusion Criteria

- Any ocular disease
- Pre-op corneal astigmatism $\geq 2.5D$
- Ocular Trauma
- Systemic Steroid or immunosuppressive therapy
- Diabetes even if without retinopathy

Procedure

- All procedures performed by the surgeons (D.D., F.M.)
- Uncomplicated phaco
 - incision 2.75mm onto the temporal meridian
 - no sutures
 - IOL in the bag
- If any intra-op complication occurred, the patient was excluded from this study
- Post-op therapy:
 - antibiotic/steroid QDS x 1 weeks
 - antibiotic/steroid TDS x 1 weeks
 - NSAID TDS x 2 weeks

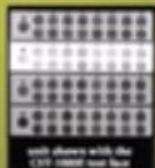
Materials & Methods

- Topical anesthesia: 2% lidocaine eyedrops every five minutes for twenty minutes
- No intravenous medication
- 2.75 mm three-steps temporal clear-corneal incision
- precalibrated diamond knife
- Vsthesia ,Zeiss – Biolon Prime, SIFI, Healon GV-Allergan
- Caspilorhexis c.c.c. of 5.5mm avg.
- Hydrodissection and hydrodelineation
- Phacoemulsification

Materials & Methods

Contrast Sensitivity was determined with:

CSV - 1000 by VECTOR VISION



A.C.D. and corneal topography were determined by:

PRECISIO by LiqI Tecnologie Medicali SpA



Precisio is a scheimpflug based tomographer which has the capability to measure the anterior and posterior surface of the cornea as well as the anterior chamber depth of the eye. An evaluation of the pre and post op topography has been performed to verify that no corneal astigmatism was induced. Post op topography with Scheimpflug technology was conducted to measure anterior chamber depth (iol positioning) and correlate its value with the lens performances in contrast sensitivity.

Results

Six Months follow up

Subjective refraction were similar in all groups with better improvement of VA where the AM60 was implanted.

	UCVA	BSCVA	SE (D)
AS60, LIGI	0.6 ± 0.35	0.8 ± 0.3	-0.2 ± 0.6
AM60, LIGI	0.6 ± 0.2	0.8 ± 0.2	-0.18 ± 0.54

Contrast Sensitivity

- Similar in 3.5% of patients for all frequencies
- Similar for low frequencies, but better for high frequencies in LIGI AM60-implanted eyes in 25%
- Better for all frequencies in As60 implanted eyes in 16%

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Conclusion

AS60 and AM60 aspheric IOLs can help to manage the defocus due to the decentration if their profile has been specifically optimized for that scope.

The optimized asphericity of AS60 and AM60 IOLs effectively enhances the quality of vision being independent by the exact positioning into the bag.



GRAZIE