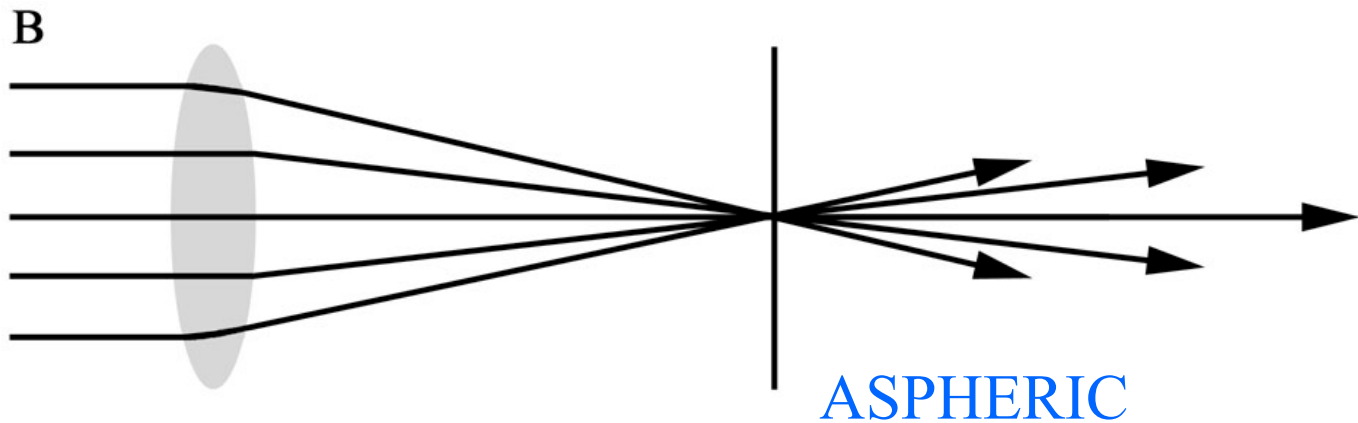
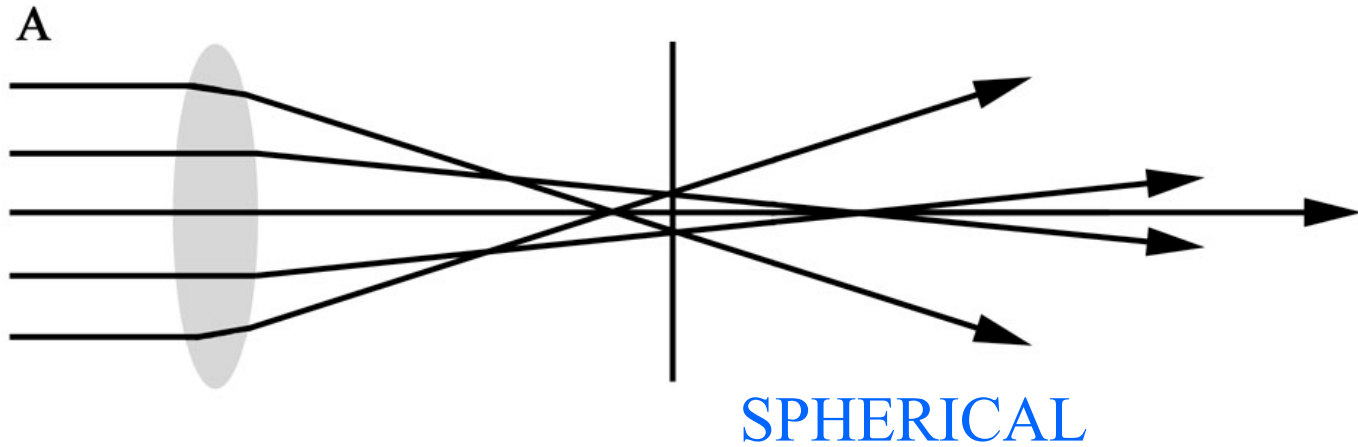


Issues to cover:

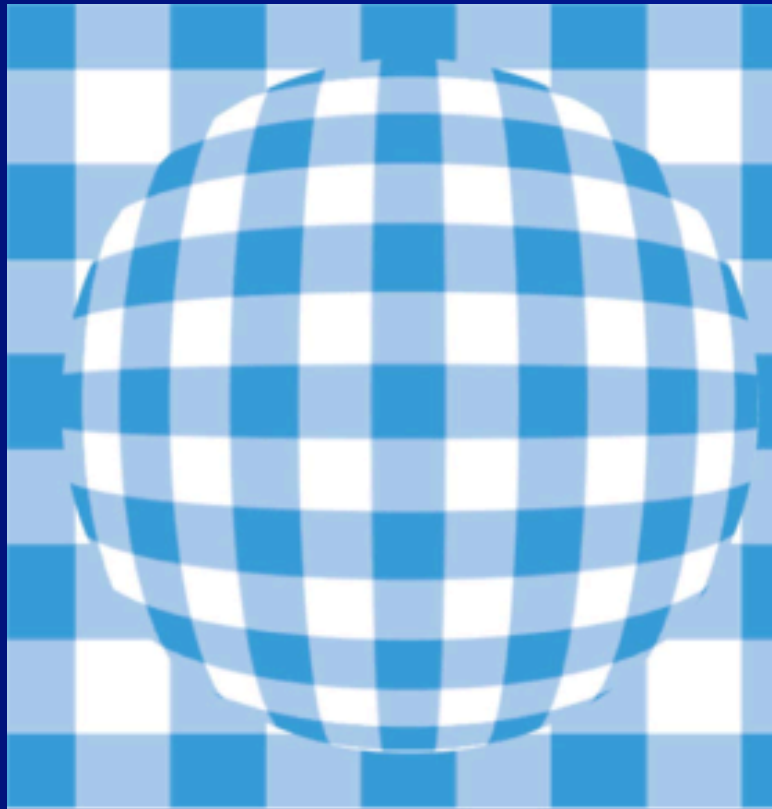
- Spherical vs. Aspherical
- Effect of Pupil Size
- Effect of IOL decentration
- Surgeon's perspective

***Spherical vs.
Aspherical***

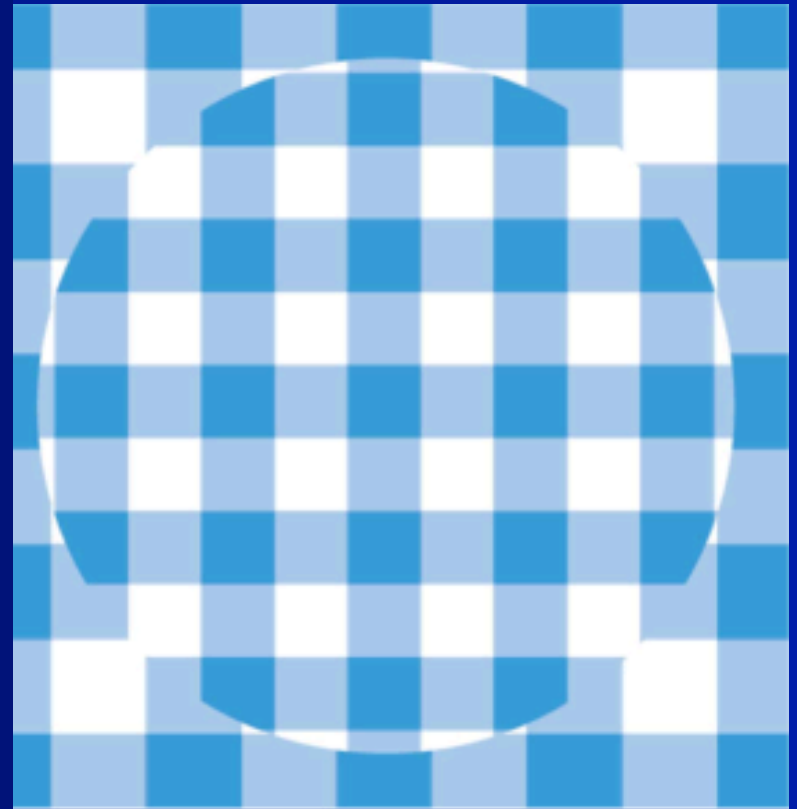
Peripheral light rays are defocused.



How does it affect the image?



SPHERICAL



ASPHERIC

High-end cameras
use aspheric lenses...

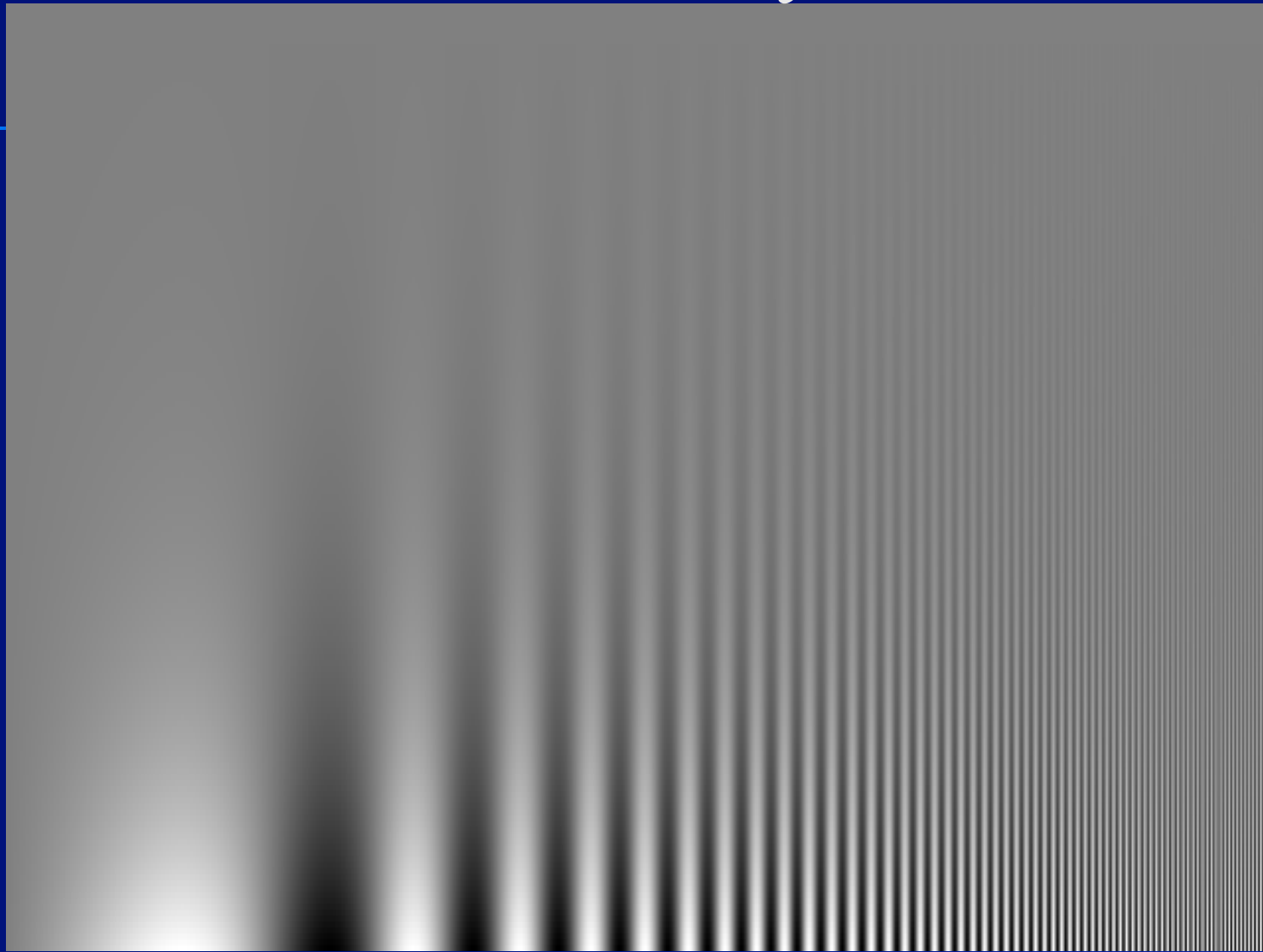


Ophthalmologists and
Optometrists currently
use aspheric lenses every day...



Volk 20D Double Aspheric Lens

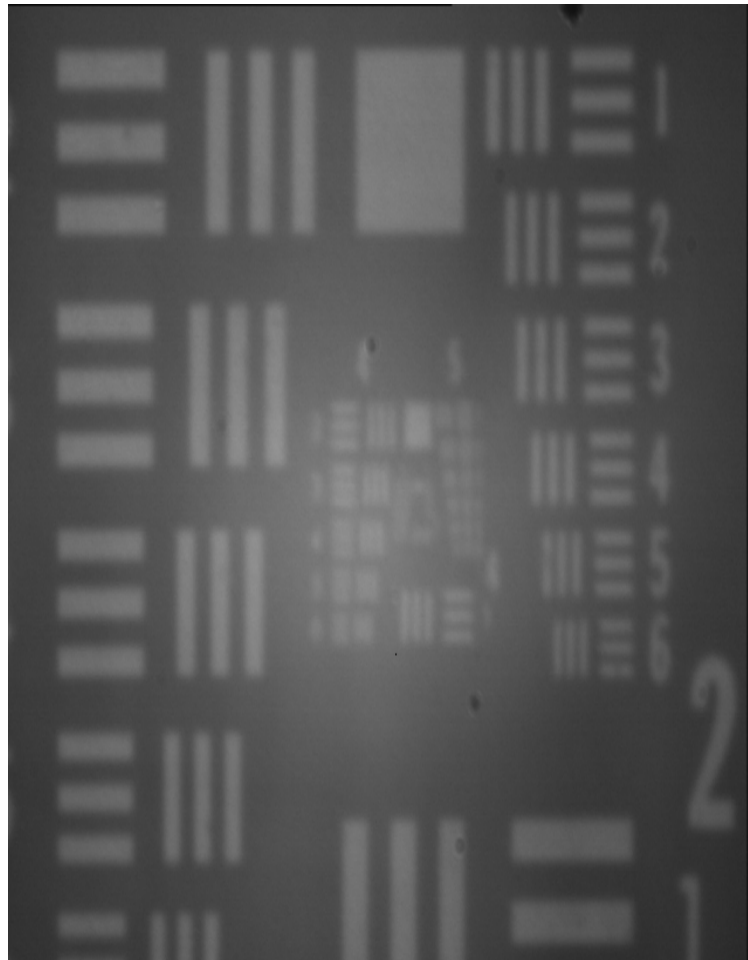
Contrast Sensitivity



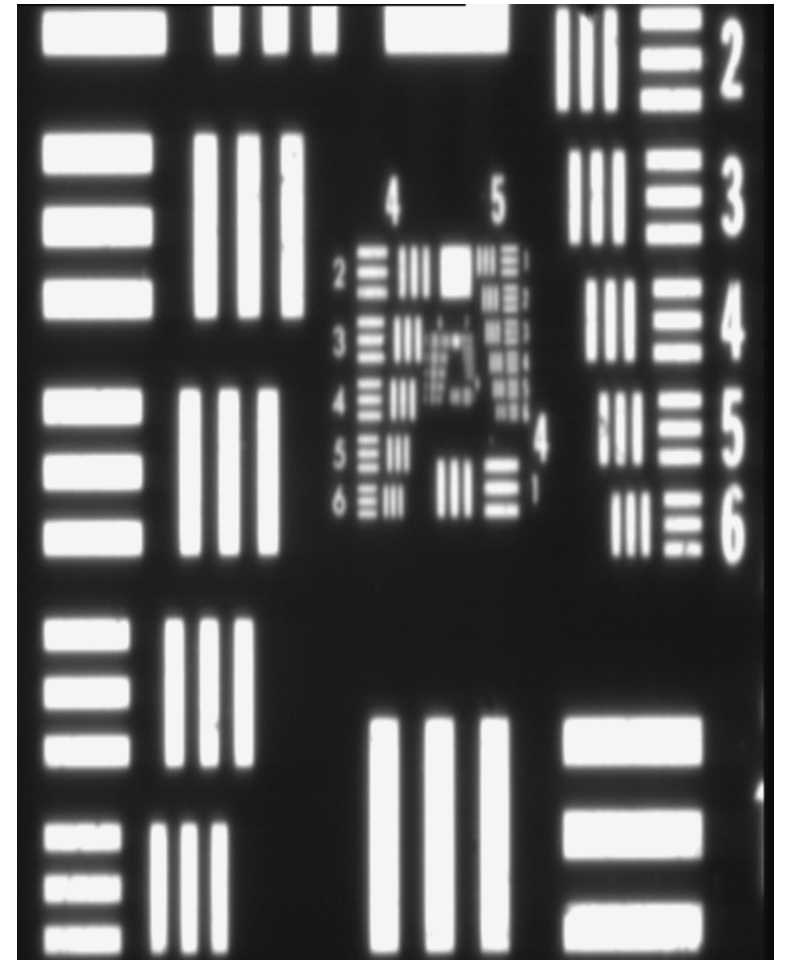
High-----Contrast-----Low

Low -----Spatial Frequency-----High

+22D IOL Air Force Target Images



ReSTOR 22D 5mm pupil focused at near



Aspheric 22D 5mm

Actual through -IOL photography at fixed image

Contrast Sensitivity: Normal



Contrast Sensitivity: minus 25%



Contrast Sensitivity: minus 50%



Contrast Sensitivity: minus 75%

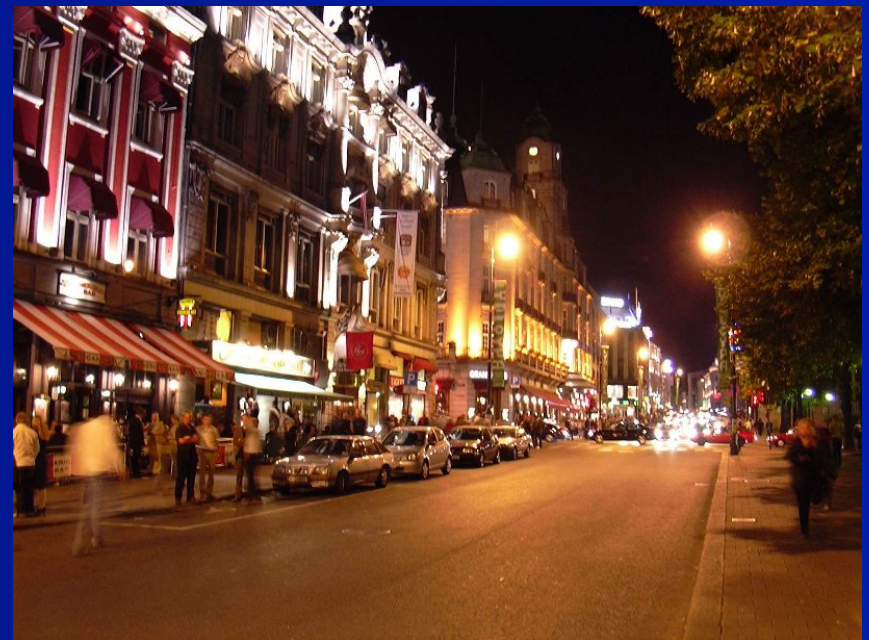


Real world IOL results

- 25% reduction in contrast sensitivity with a spheric IOL vs. aspheric IOL



Spheric IOL

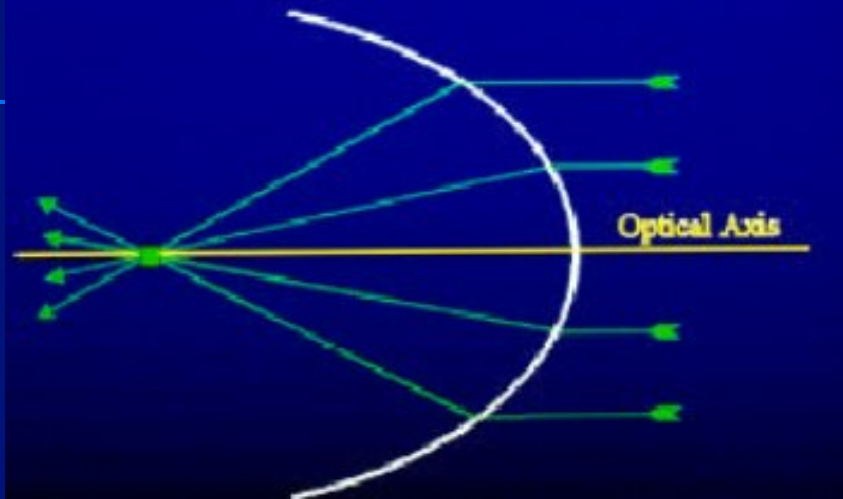


Aspheric IOL

Effect of Pupil Size

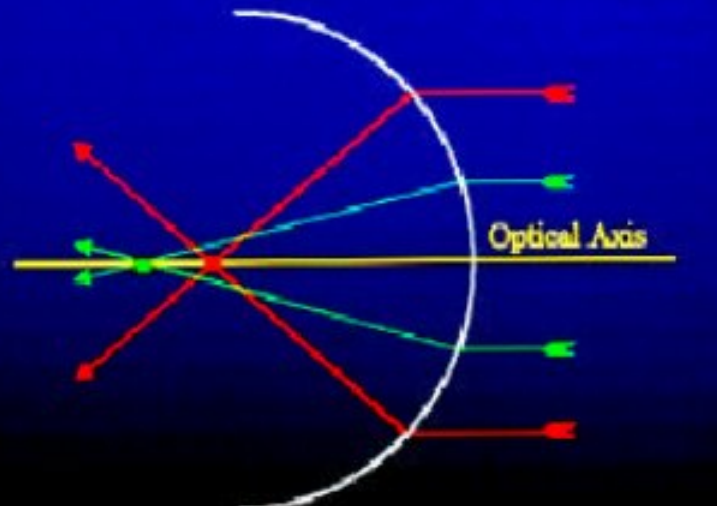
Pupil Size

Asphere



With small pupils and good lighting, the aspheric IOL and the spheric IOL perform similarly because...

Sphere

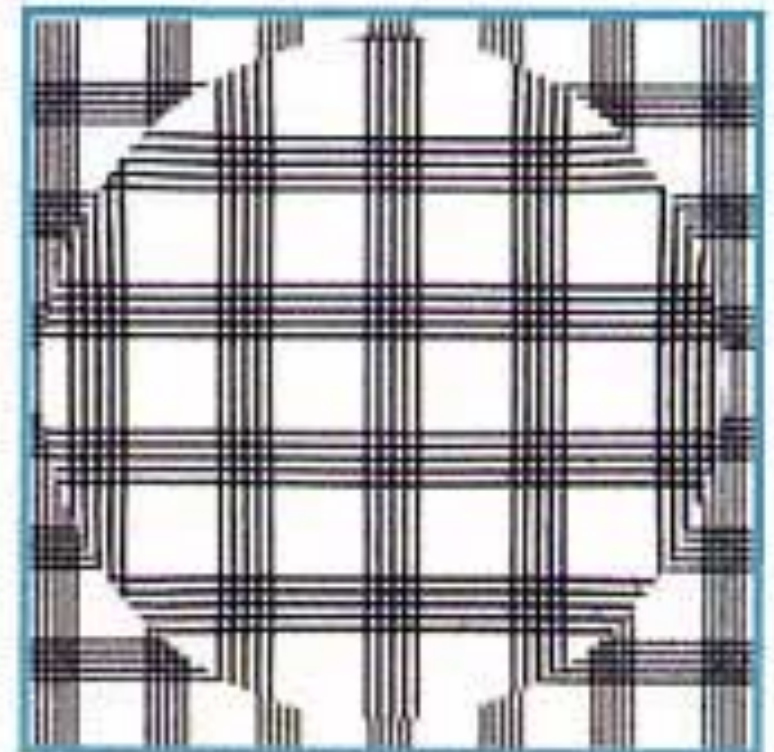


Small Pupils BLOCK the peripheral rays.

Effect of Pupil Size

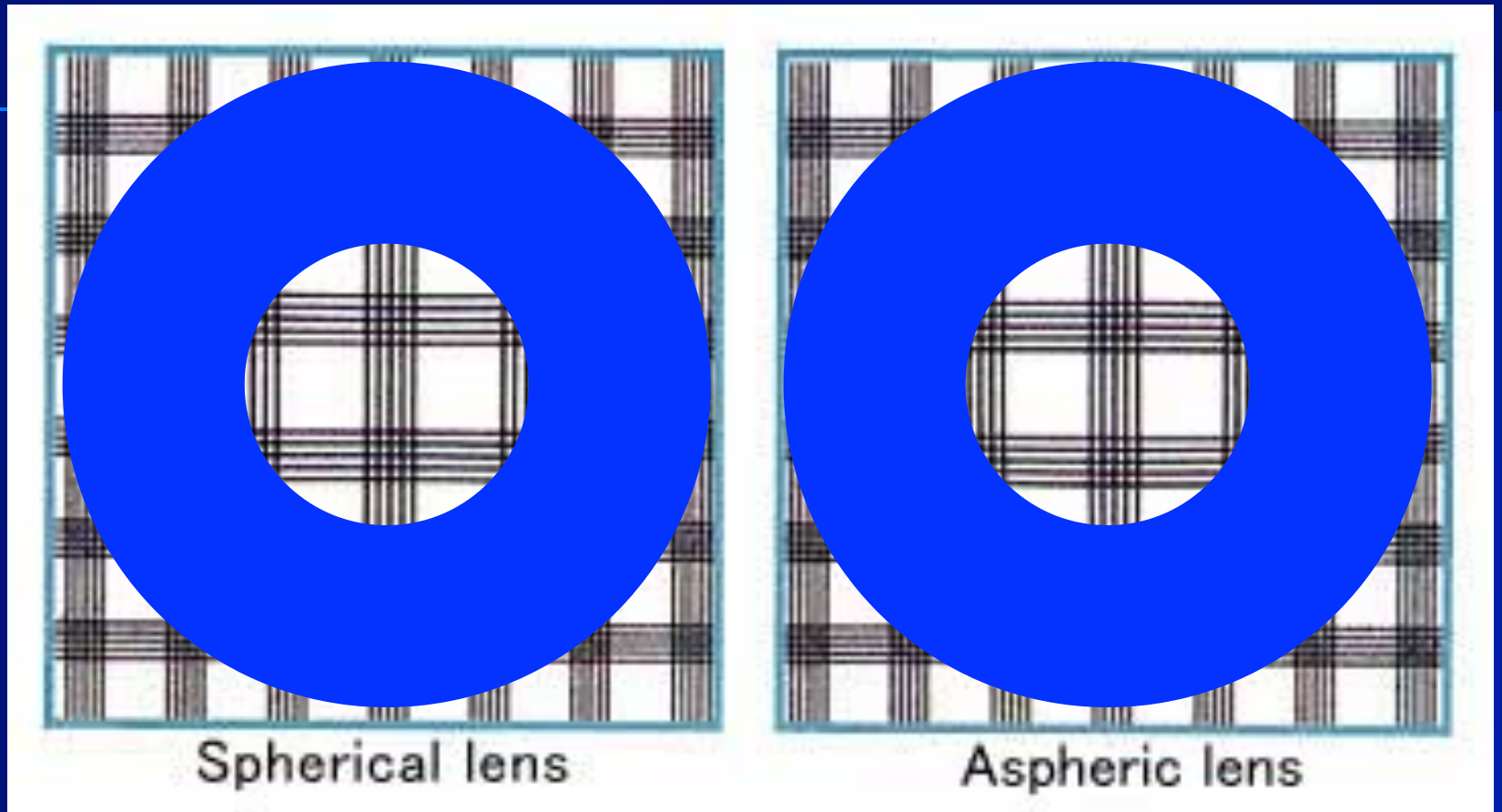


Spherical lens



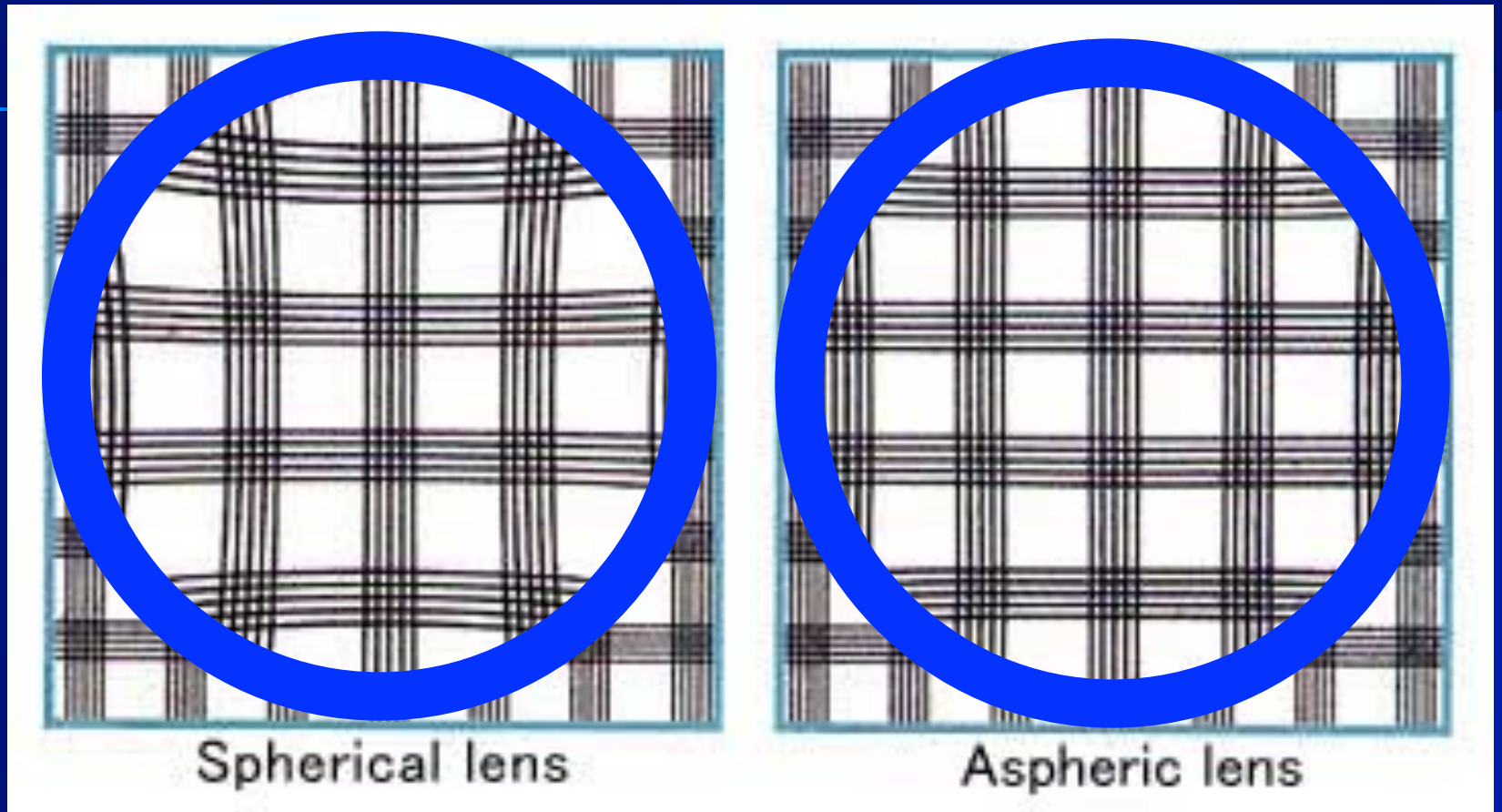
Aspheric lens

Effect of Pupil Size



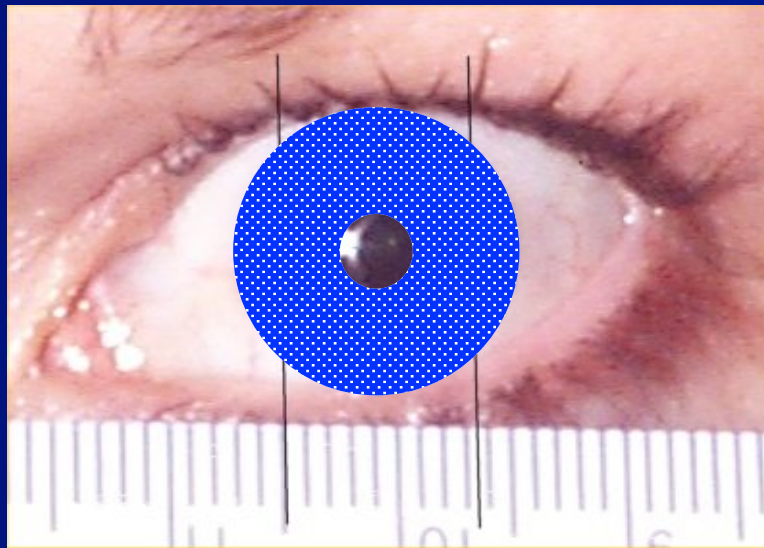
With **Small Pupils** the Images are the same

Effect of Pupil Size



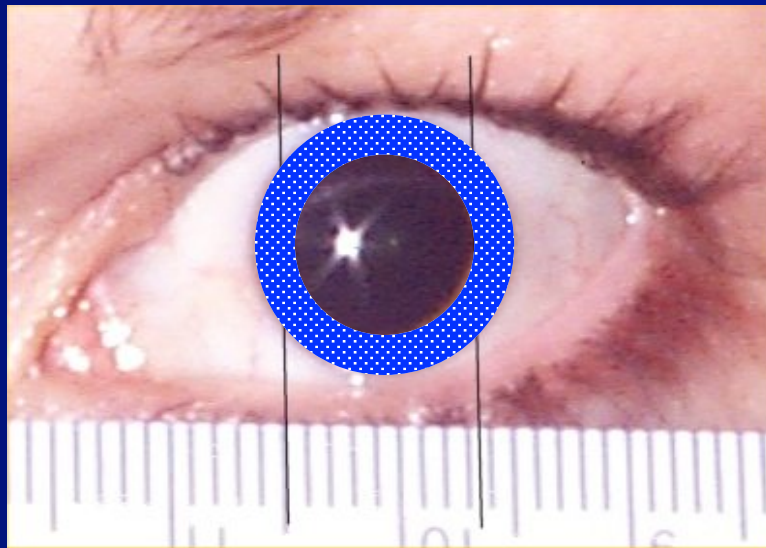
With **Large Pupils** the Images are different

The BEST image possible: Small Pupil / Bright Sunlight



Aspheric IOL is EQUAL to the regular IOL.

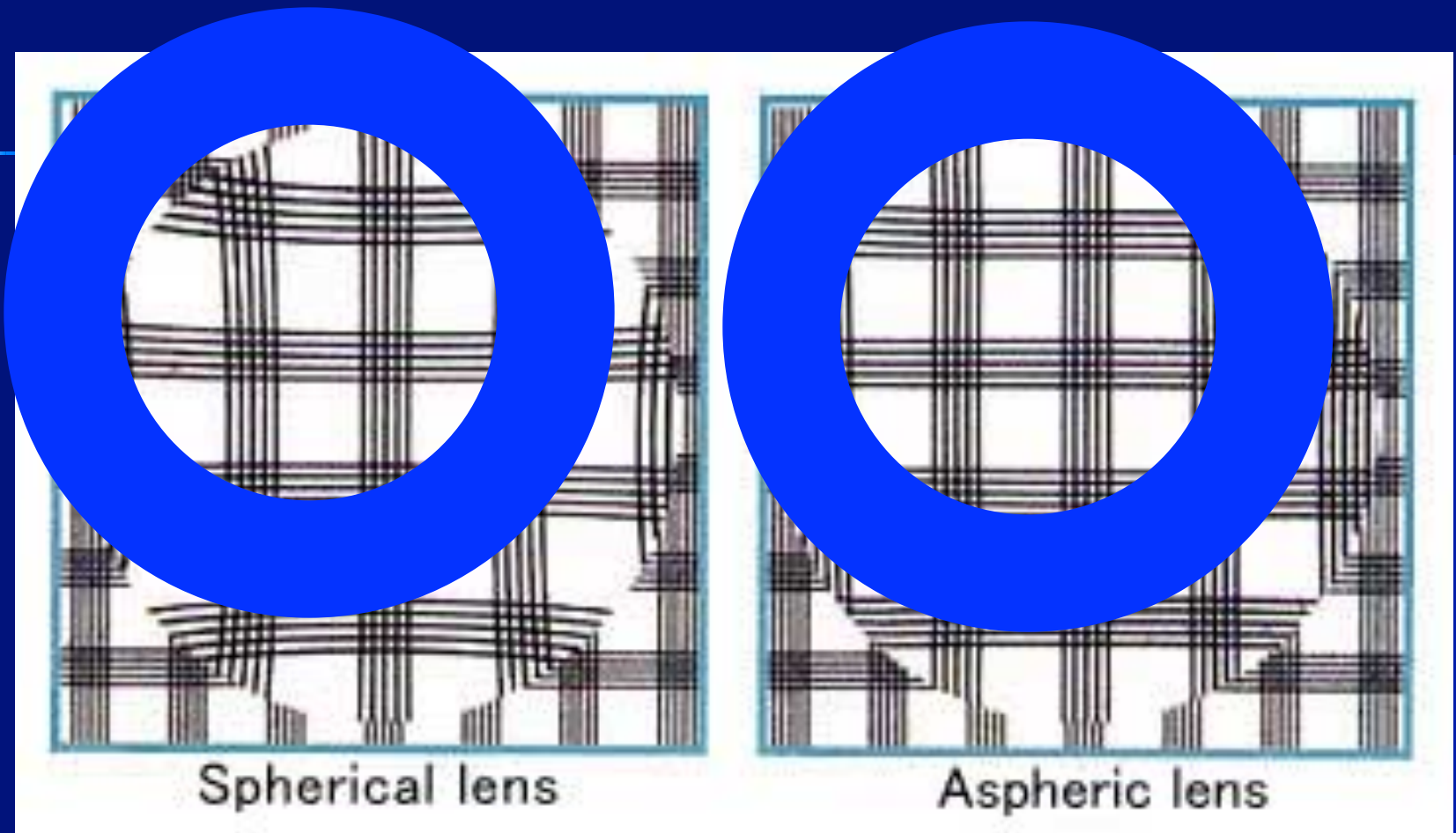
The WORST image possible: Large Pupil / Dim Lighting



Aspheric IOL is BETTER than the regular IOL.

Effect of IOL decentration

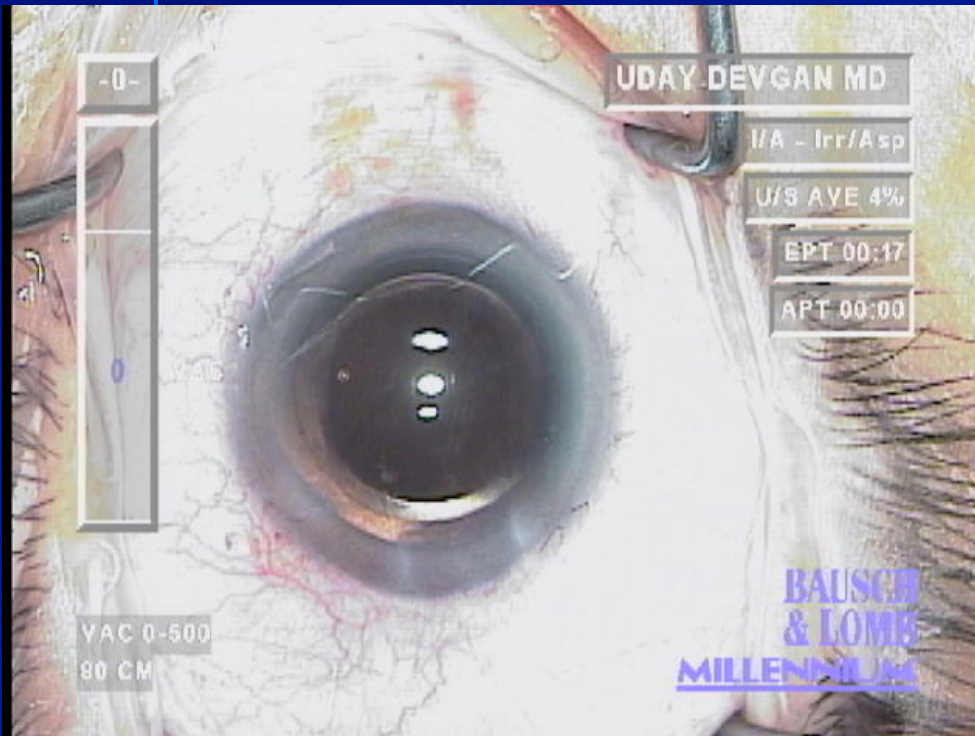
Effect of IOL decentration



With decentered IOLs, the Aspheric IOL will outperform all spherical IOLs

How common is IOL decentration?

- 33% of 3-pc IOLs decenter by ≥ 0.5 mm
- Average decentration of 1.12 mm



Hwang IP, Clinch TE, Moshifar M, Malmquist L, Cason M, Crandall AS
J Cataract Refract Surg. 1998 Nov;24(11):1505-8.

What causes IOL decentration?

- #1 The normal contraction of the capsule.
- #2 Irregular capsulorhexis.
- #3 One haptic in the bag, one outside.

Benefits of the AO IOL:

- ▶ Aspheric Optics

- ▶ Less aberrations
- ▶ Increased contrast sensitivity
- ▶ Not as affected by decentration
- ▶ Better image quality

Drawbacks of this IOL:

- ▶ **Increased Cost of IOL**
- ▶ **Our patients deserve the best**