

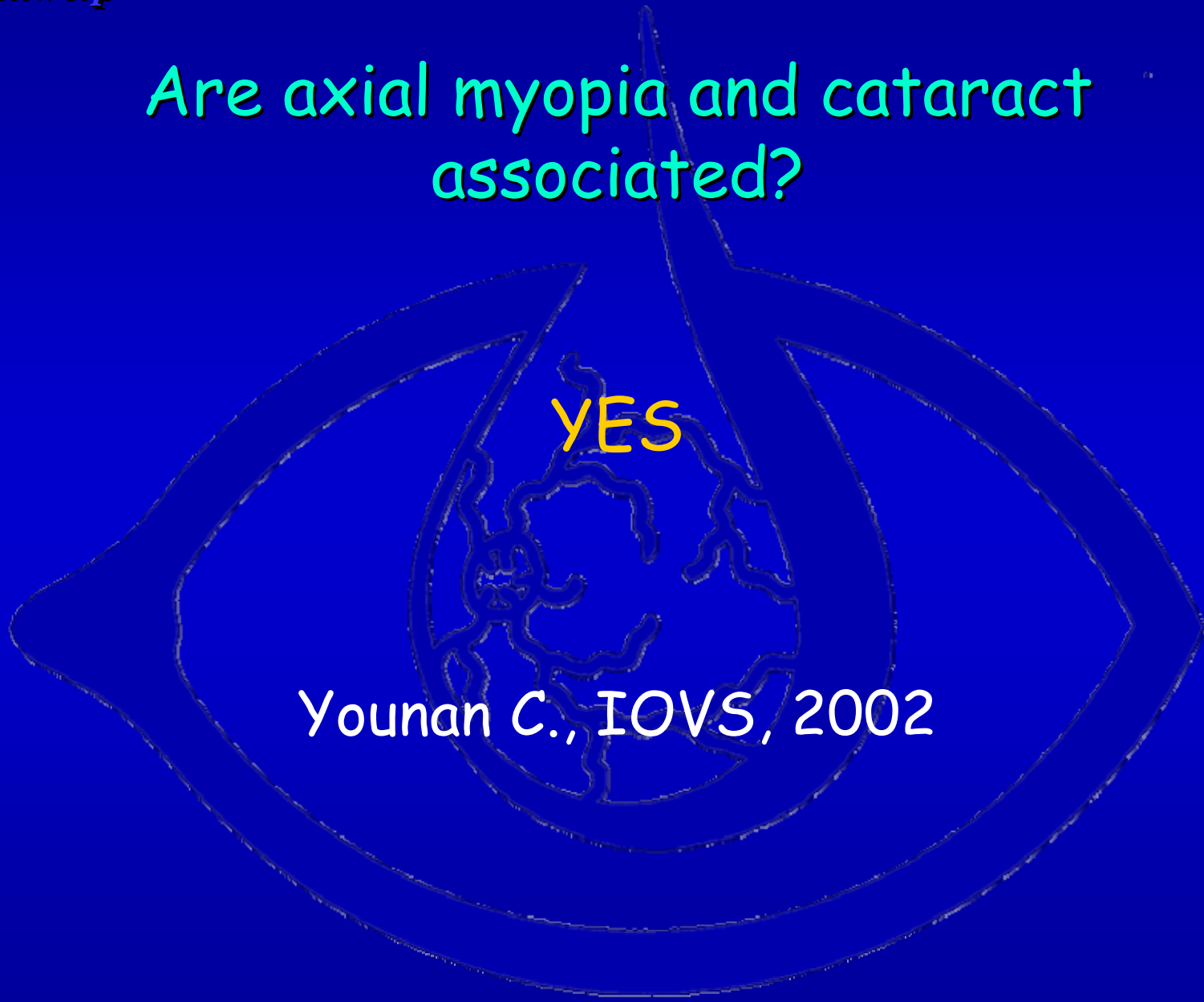
Clear lens extraction:
merge between anterior and
posterior segment

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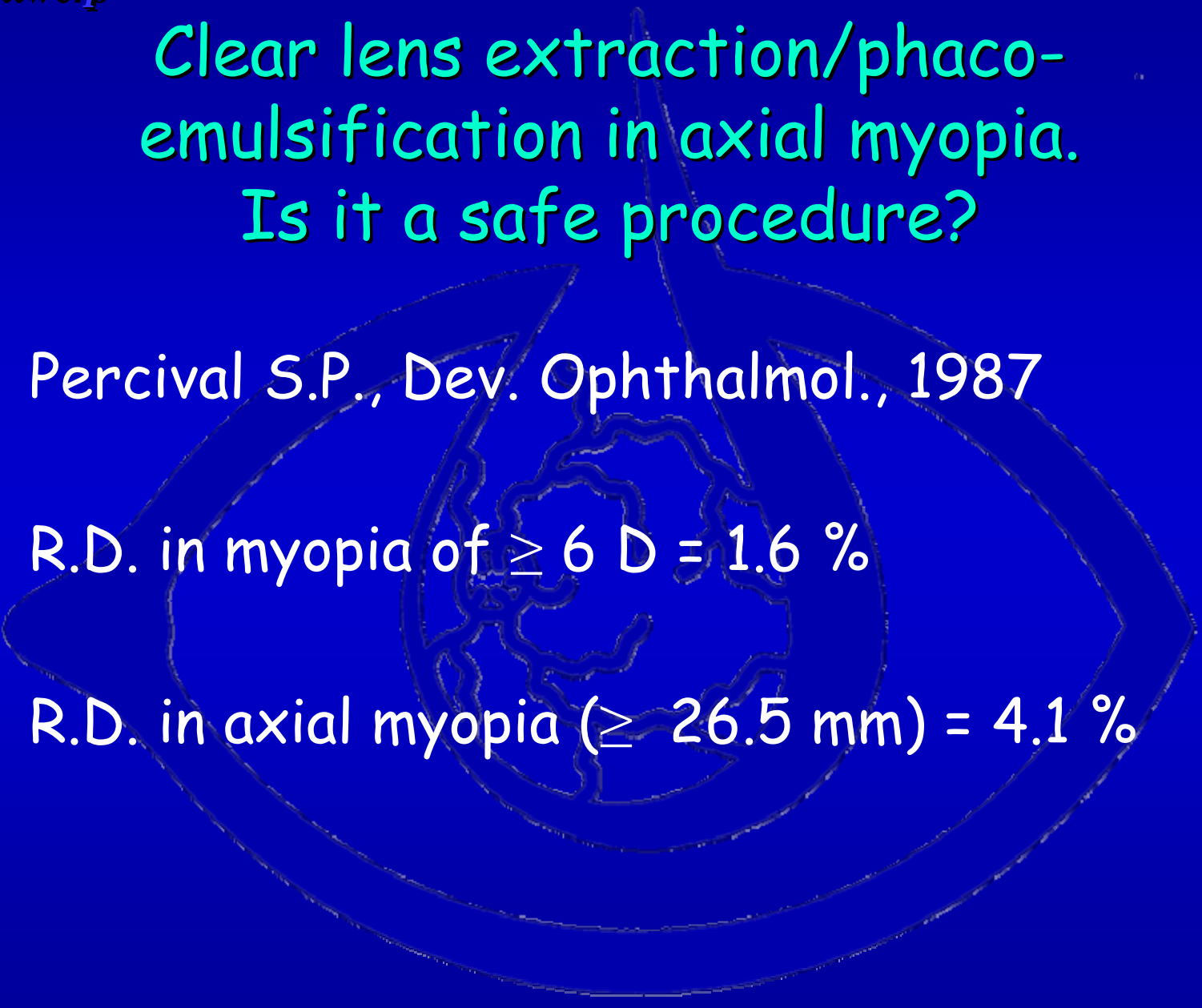
Are axial myopia and cataract associated?

YES

Younan C., IOVS, 2002



Clear lens extraction/phaco-emulsification in axial myopia. Is it a safe procedure?

- Percival S.P., Dev. Ophthalmol., 1987
 - R.D. in myopia of ≥ 6 D = 1.6 %
 - R.D. in axial myopia (≥ 26.5 mm) = 4.1 %
- 

Clear lens extraction/phacoemulsification in axial myopia

High myopia	Hyams S.W.	1975	Br. J. Ophthalmol.	6.60 %
Axial myopia	Kohnen S.	1996	J. Cataract Refract. Surg.	0.00 %
High myopia	Colin J.	1997	Ophthalmology	1.90 %
High myopia	Allredge C.D.	1998	J. Cataract Refract. Surg.	0.00 %
High myopia	Chastang P.	1998	J. Fr. Ophtalmol.	6.00 %
High myopia	Fritch C.D.	1998	J. Cataract Refract. Surg.	0.30 %
Axial myopia	Fam D.S.	1999	Ophthalmology	1.69 %
High myopia	Pucci V.	2001	J. Cataract Refract. Surg.	4.00 %
Axial myopia	Tosi C.M.	2003	J. Cataract Refract. Surg.	0.30 %

Incidence of YAG laser capsulotomy in pseudophakic axial myopia

AUTHOR	JOURNAL	YEAR	%	FOLLOW-UP
Colin J.	Ophthalmology	1997	36.7 %	1 year
Chastang P.	J. Fr. Ophtalmol.	1998	30.0 %	2 years
Tosi C.M.	J. Cataract Refract. Surg.	2003	16.4 %	1 year

Incidence of YAG laser capsulotomy in axial myopia: pseudophakia versus aphakia

- Percival S.P., Trans. Ophthalmol. Soc. UK, 1985
 - Pseudophakia: 27 % after 5 years
 - Aphakia: 45 % after 5 years
- Badr I.A., Ophthalmology, 1995
 - Pseudophakia: 6.5 %
 - Aphakia: 17.9 %

Is YAG capsulotomy a risk factor for RD in pseudophakic axial myopia?

- Jacoli F.K., J. Cataract Refract. Surg., 1997

YES

- Allredge C.D., J. Cataract Refract. Surg., 1998

NO

- Badr I.A., Ophthalmology, 1995

YES

- Percival S.P., Trans. Ophthalmol., 1985

YES

Intraocular lens power calculation in axial myopia.

Which formula is the best?

- Best predictive results

Hoffer Or

- Comparable outcomes

Holladay 1 and SRK/T

- Least accuracy

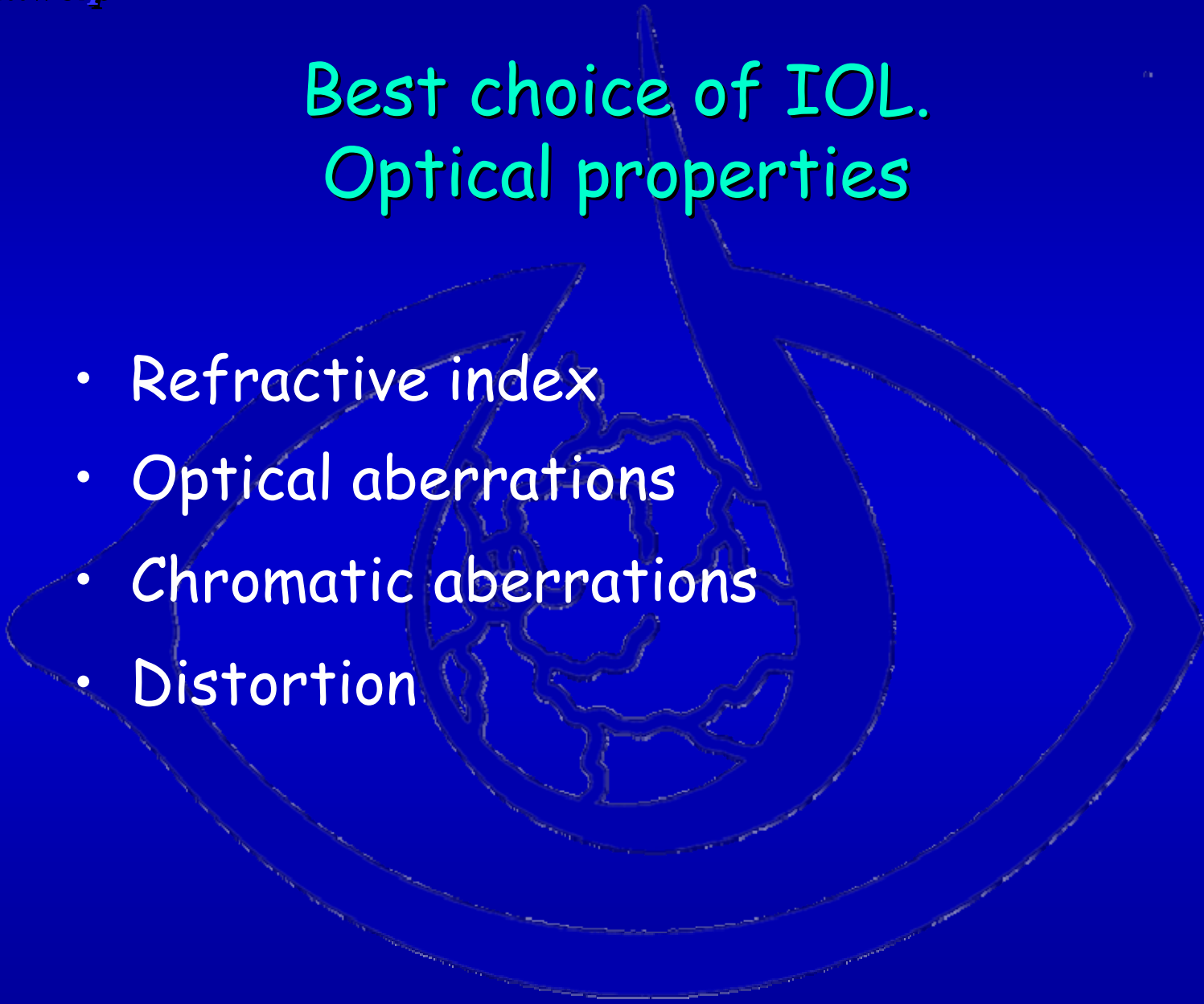
SRK II

- Axial length >30 mm

Zaldivar: $AL = AL - 0.67$

Best choice of IOL. Optical properties

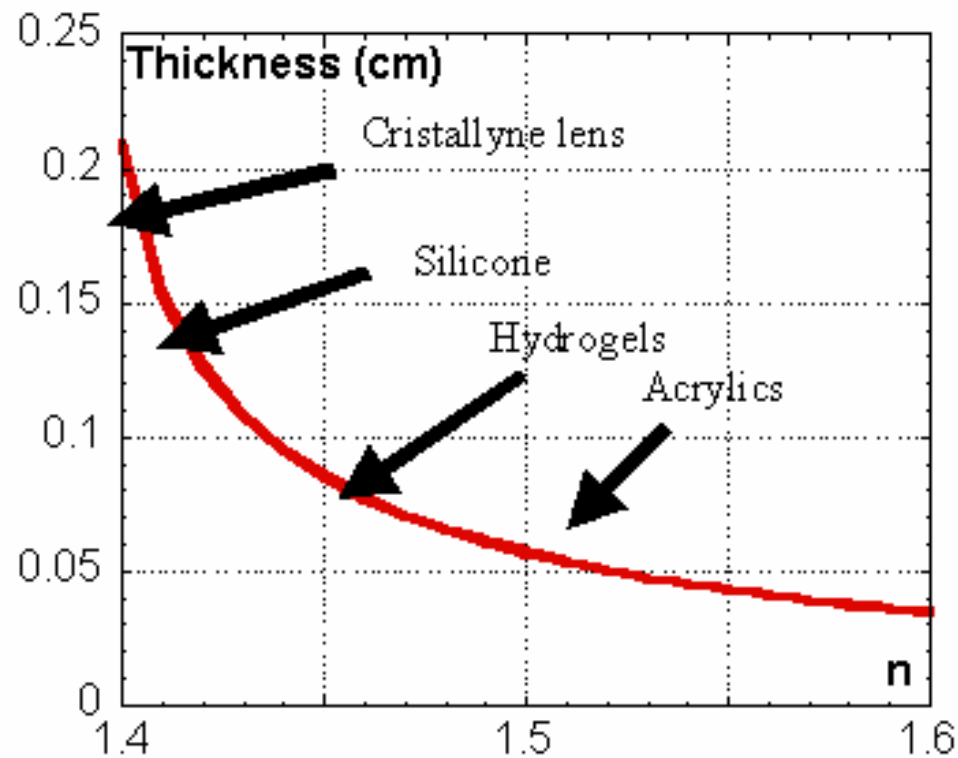
- Refractive index
- Optical aberrations
- Chromatic aberrations
- Distortion



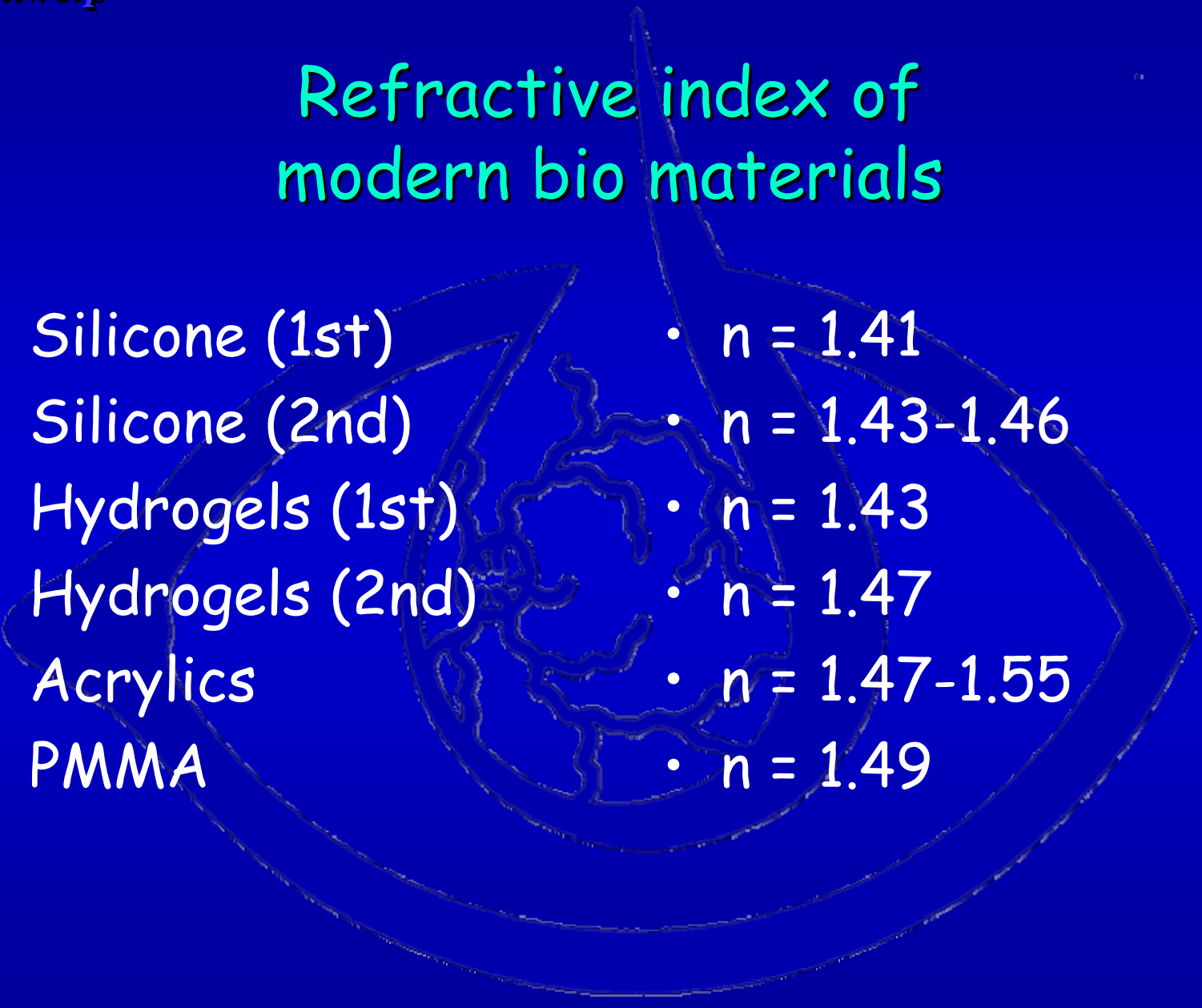
The higher the refractive index
the thinner the intra ocular lens

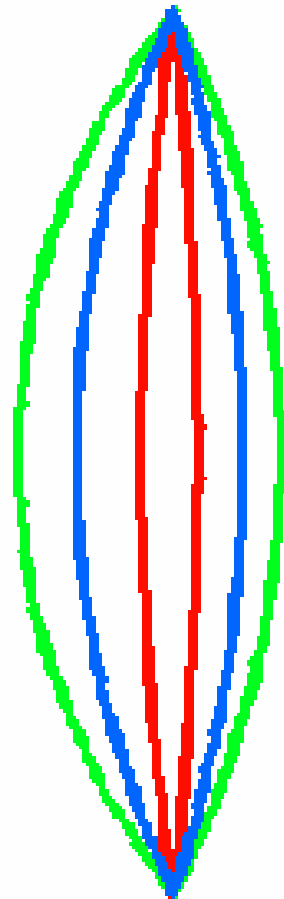
References: IOL of 20 D

refractive index of natural lens : 1.386

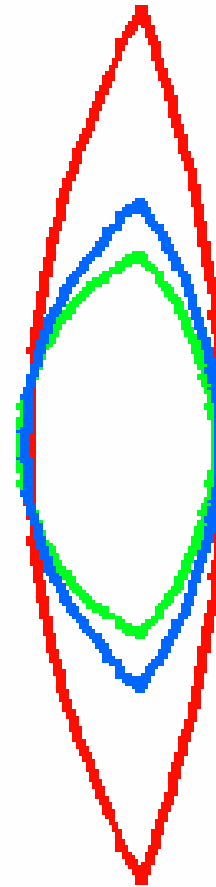


Refractive index of modern bio materials

- Silicone (1st) • $n = 1.41$
 - Silicone (2nd) • $n = 1.43-1.46$
 - Hydrogels (1st) • $n = 1.43$
 - Hydrogels (2nd) • $n = 1.47$
 - Acrylics • $n = 1.47-1.55$
 - PMMA • $n = 1.49$
- 

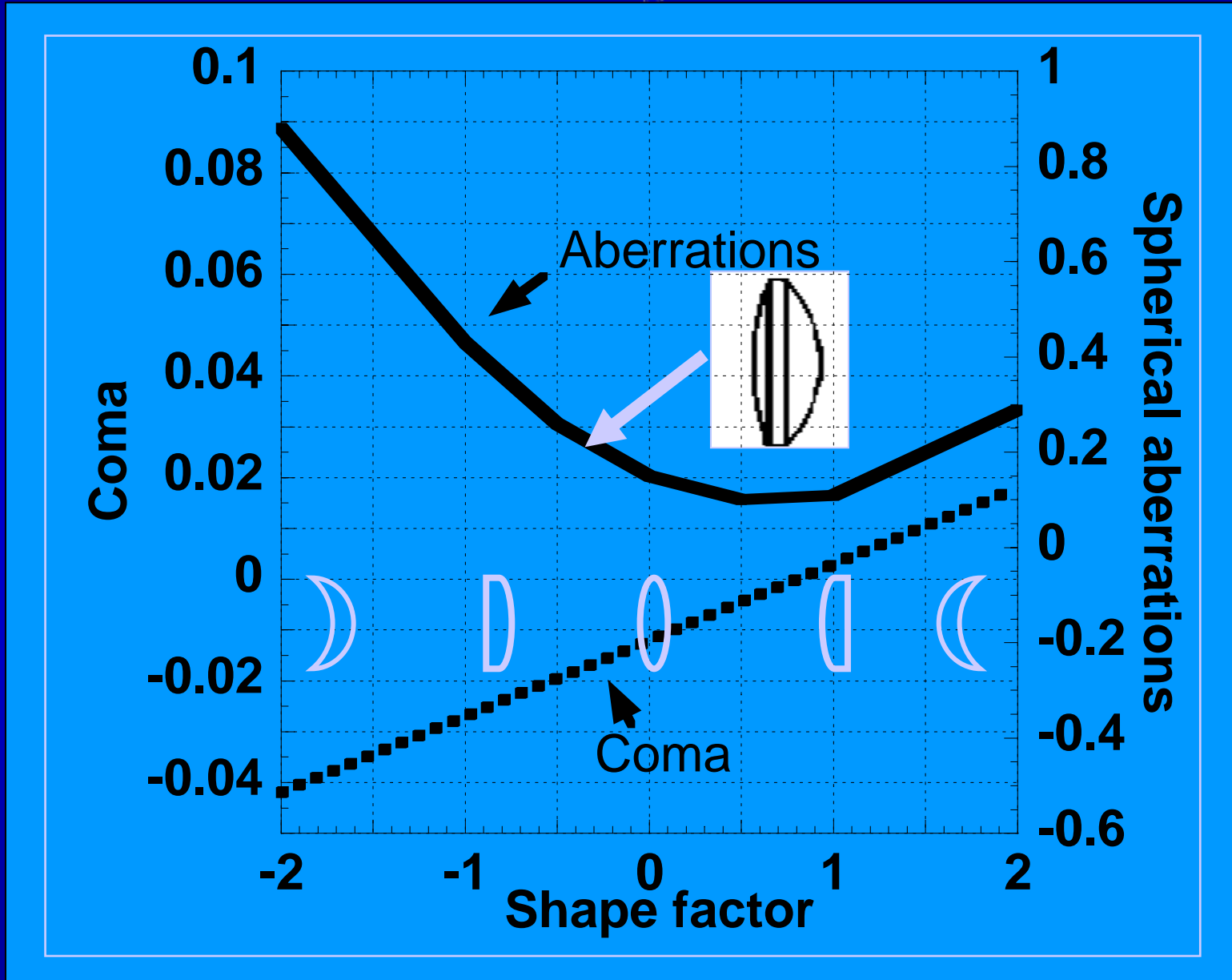


(a)

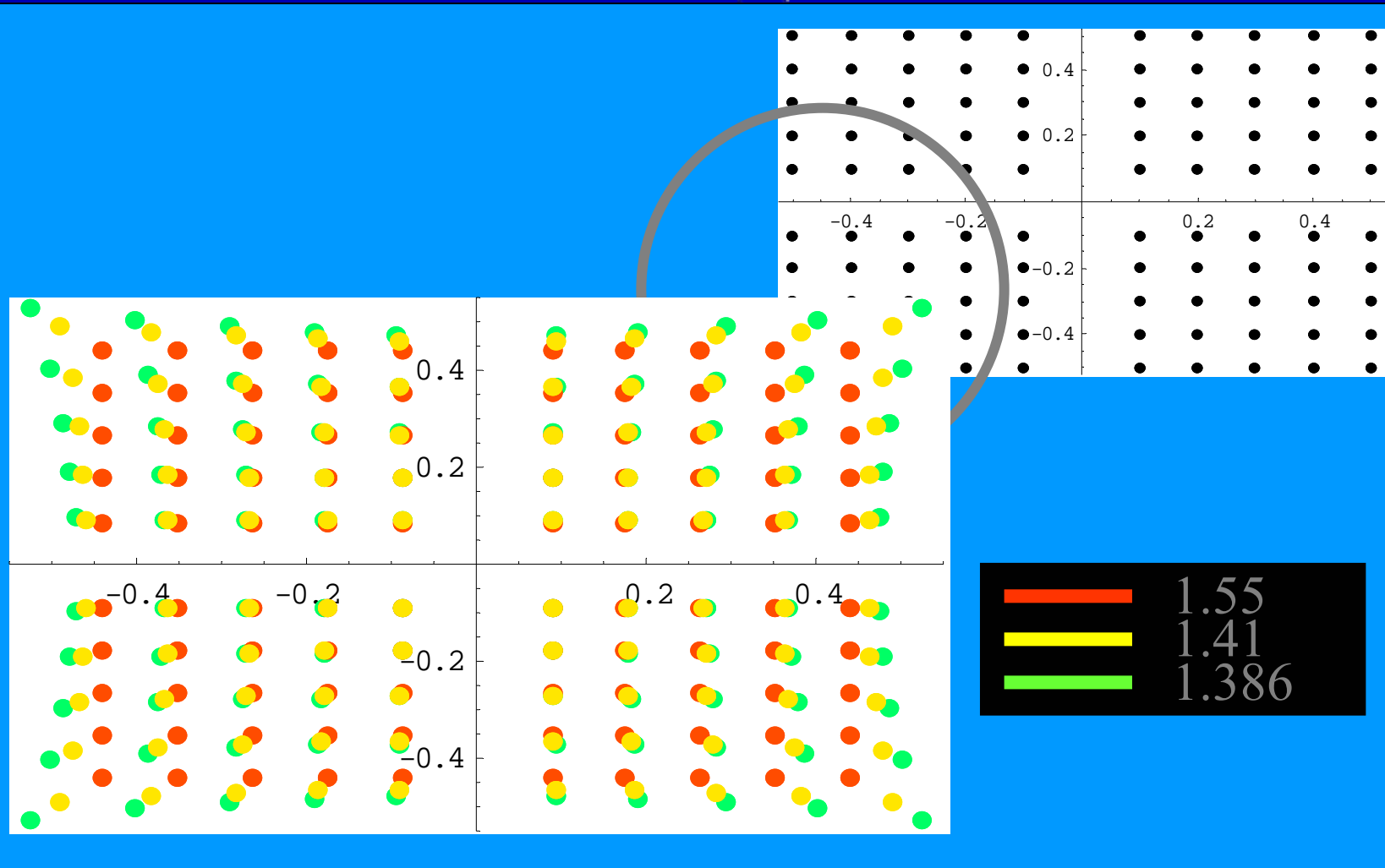


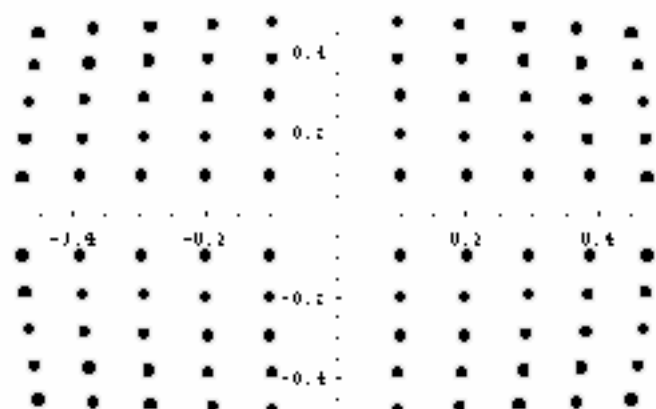
(b)

How to keep the IOL thin while increasing the dioptric power?

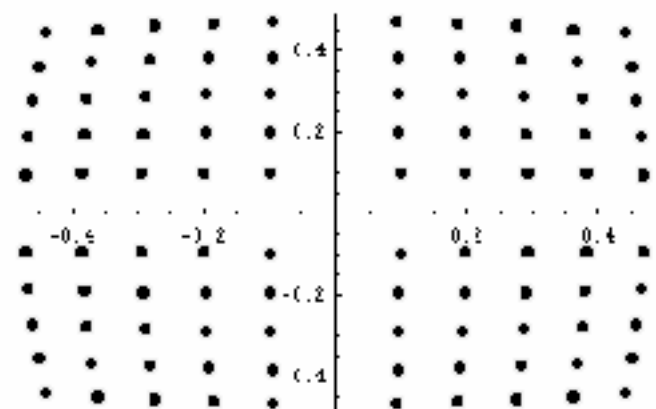


Distortion of the images in function of the refractive index for a 20D lens

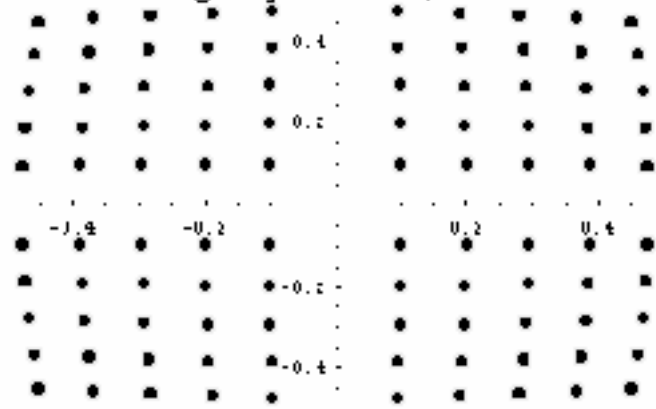




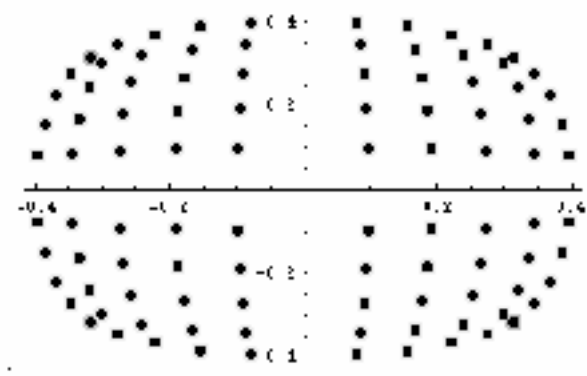
Right Eye : $n=1.41$, 10D



Left Eye : $n=1.47$, 20D



Right Eye : $n=1.41$, 10D



Left Eye : $n=1.41$, 20D

Surgical technique in pseudophakic axial myopia

