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# SCLERALS FOR NORMAL CORNEA POPULATION

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# DISCLOSURE

Honorarium received as a speaker (S) or a consultant (C), as a research fund (R) or travel grant (T) from the following organizations

Allergan (S,C)

Alcon (S,R)

Bausch & Lomb (S,C,T)

Cooper Vision (S)

Johnson & Johnson Vision Care (R,T)

Blanchard Labs (S,C,R,T)

Sandofi (S,R,T)

Synergeyes (S,T)

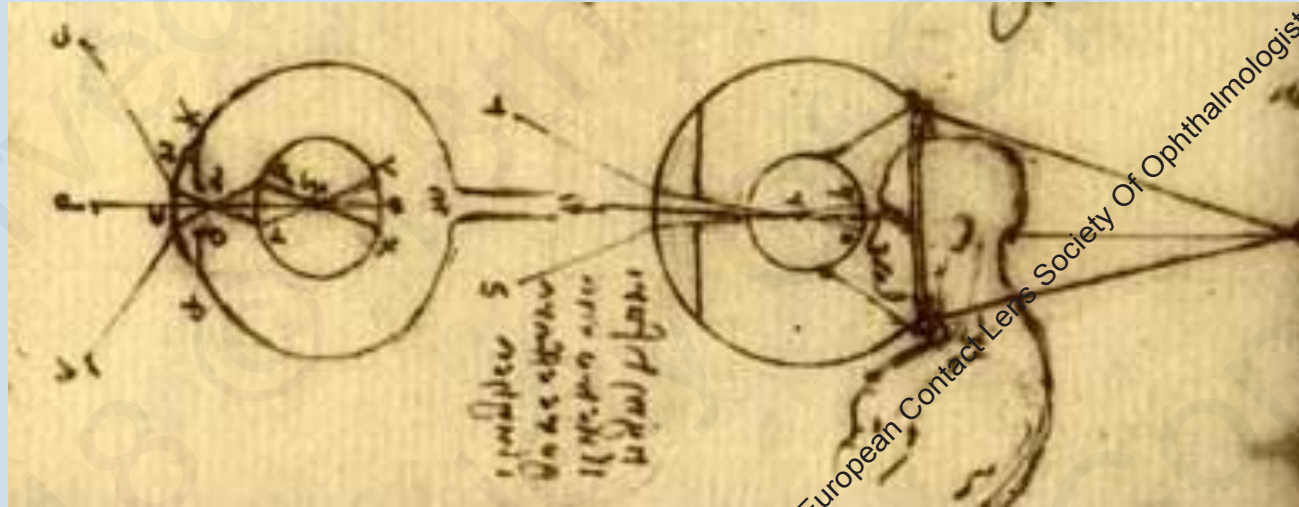
Scleral Lens Education Society (Board member, T)

Shire (C)

Santen (C)

# A LOOK IN THE PAST

The concept of optically neutralizing the cornea with an enclosed liquid reservoir over the eye's surface was first proposed by Leonardo da Vinci in 1508.



# A LOOK IN THE FUTURE OF CONTACT LENSES

To fit larger diameter gas permeable lenses

OR.....



# WE KNOW SCLERAL LENSES ARE AMAZING!

- Restoration of the corneal surface: helps vision
- Restoration of the ocular surface: helps to treat eye diseases
- Provides Excellent comfort
- Larger optic zone, sharper images
- Better centration, more stability vs smaller RGP lenses
- Provides vision for many patients who would be unable to see otherwise!



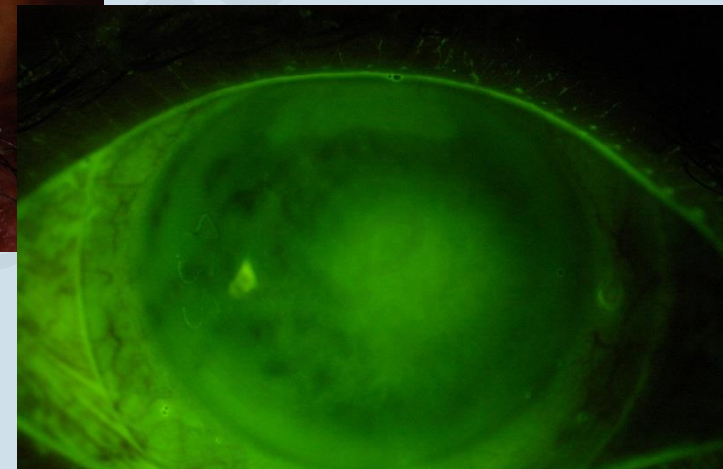
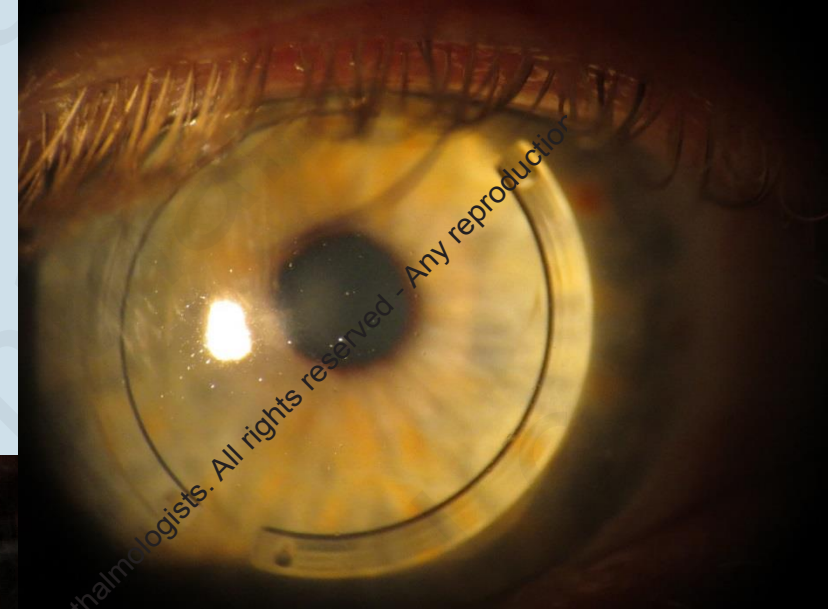
# CURRENT SCLERAL LENS APPLICATIONS

## Irregular corneas:

- Keratoconus
- Post Graft
- Pellucid Marginal Degeneration
- Corneal scarring
- Post refractive surgery
- Post-trauma /corneal scars
- Corneal dystrophies

## Eye diseases

- Dry Eye (K-sicca, Stevens-Johnson, OSD)
- Neurotrophic corneas
- Chemical burns



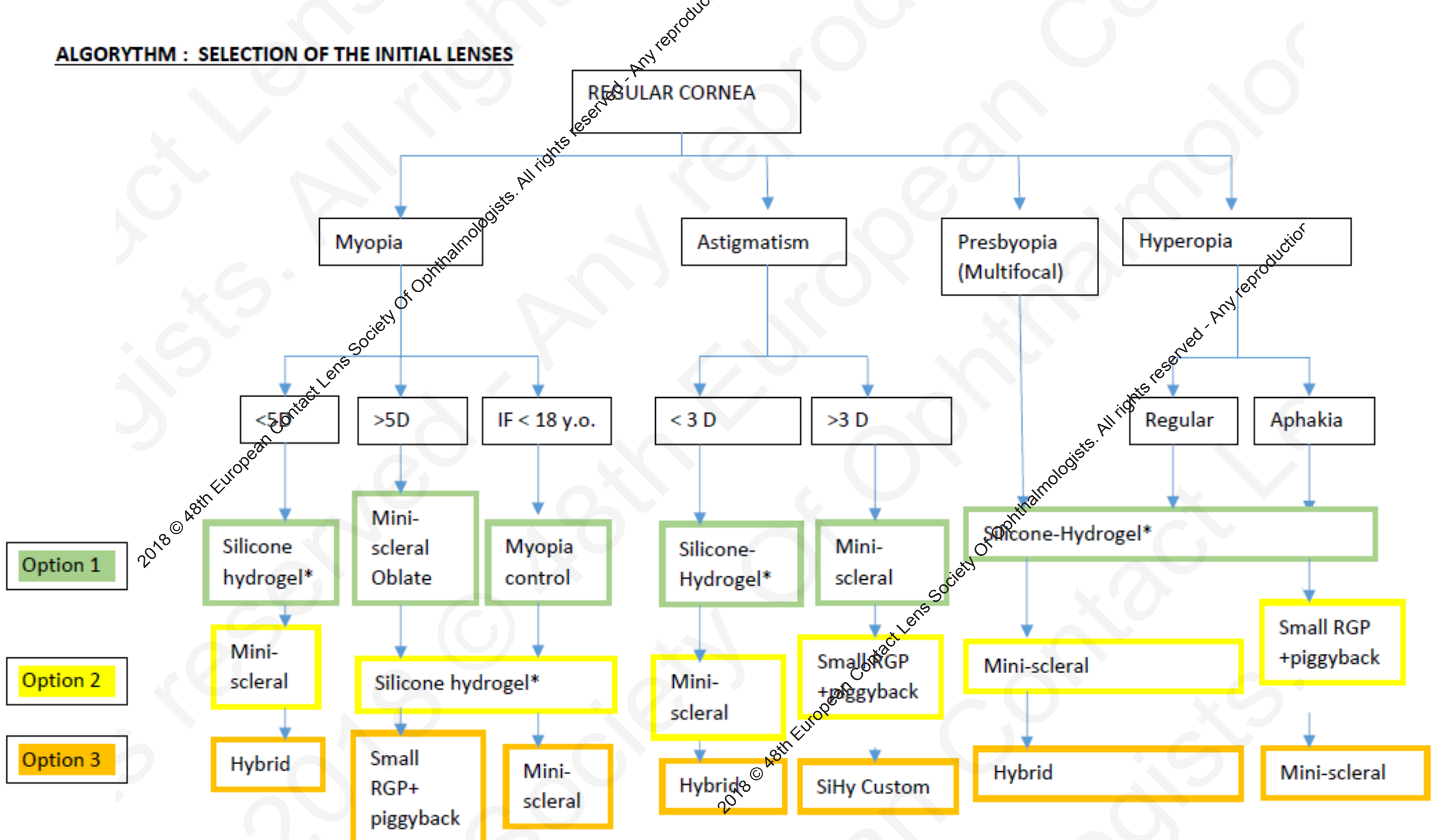
If scleral lenses are great for irregular corneas, can they be great for regular corneas?

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**ALGORITHM : SELECTION OF THE INITIAL LENSES**





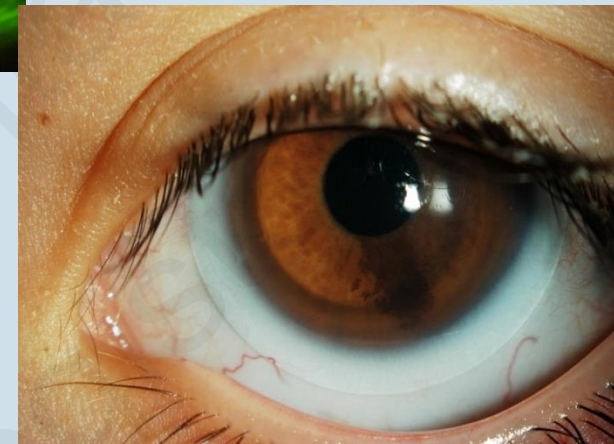
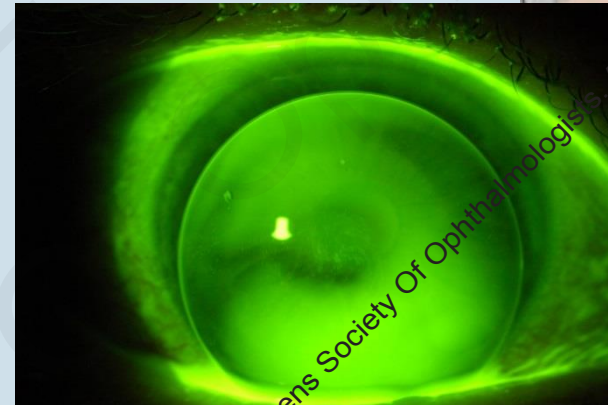
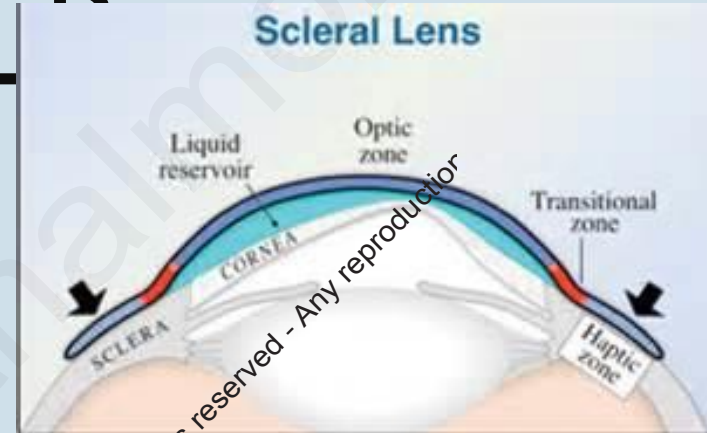
# SCLERAL LENSES CAN HELP

## ■ COMFORT

- Never touch the cornea
- No lens to lid interaction / no lens movement
- Constant hydration of the ocular surface
- Optimal landing on the conjunctiva
- No lens dehydration

## ■ VISION

- Larger optic zone (8-9 mm)
- Full compensation of corneal irregularity
- Better centration
- Reduced HOA
- Gas permeable material optics
- Optimal fluid layer thickness required
- No lens dehydration



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# WHAT DOES IT NEED TO SWITCH PATIENTS FROM SOFT TO SCLERAL LENSES

- Identifying a need
  - Vision
  - Comfort
- Educate the patient about the technology
  - Benefits
  - Limits
  - Handling
  - Cost
- Convenience
  - Handling
  - Care regimen

# POTENTIAL CLINICAL APPLICATIONS FOR NORMAL CORNEAS

## ■ High refractive errors

- Larger optic zone, less high order aberrations
- Centration
- Physiological issues associated with RGPs (3-9 o'clock, corneal warpage, etc.)
- Improved overall visual acuity

## ■ Astigmatism

- No rotation and no visual fluctuation
- Larger optic zone
- A spherical scleral can compensate up to 3.5 D of corneal astigmatism
- No dehydration with time

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# POTENTIAL CLINICAL APPLICATIONS

- Sports / outdoors activities
  - UV protection
  - No exposition to dust, particules, foreign body as for small RGPs
  - Corneal protection
  
- Allergy /Challenging environnement
  - Reduced exposition to allergen
  - RGP materials compatible with concurrent use of topical meds

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# POTENTIAL CLINICAL APPLICATIONS

- **Presbyopia**
  - Stable lens
  - Full compensation for astigmatism
  - Friendlier for the presbyopic eye environment (dryness, tear film stability, etc.)
  - Compensation for corneal irregularities
- **Symptomatic patients**
  - Contact lens induced Dry Eye
  - No preservative agent / solution toxicity



# ETHICAL CONSIDERATIONS

- **Ration Risks / Benefits**
  - Obvious for corneal ectasia or diseased eyes
  - Not so obvious for normal corneas vs limiting factors
- **Potential limiting factors**
  - Oxygen permeability
  - Corneal physiology
  - IOP
  - Conjunctival anatomy
  - Rate/ nature of complications
  - Ease of fit / troubleshooting
  - Learning curve
  - Handling

# CONCLUSION

Scleral lenses are there and will become more and more prescribed

- Improved visual acuity
- Improved comfort
- Proven record in the treatment of ocular surface disease

Fitting normal cornea patients is the next step

- Identify a need
- Evaluate other options : risk/benefit ratio
- Handling may be an issue
- Close follow-up to manage potential physiological issues

# THANKS !

Old Montreal... with some aberrations !

