The Visiogen Synchrony Dual Optic Accommodating Intraocular Lens

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Accommodating IOLs

- Current accommodating IOL designs achieve focal point shift by forward displacement of the lens optic
- The power effect of forward movement is dependent on the power of the lens
- For most lens powers implanted, the observed degree of movement (1mm) produces minimal accommodative change
Single Optic Accommodating IOL Efficiency

- \( \Delta D_c \sim \left( \frac{D_m}{12} \right) \Delta s \)
  - \( \Delta D_c \) = Change in optical power
  - \( D_m \) = IOL power (moving optic)
  - \( \Delta s \) = Change in lens position (mm)
Visiogen Synchrony
Accommodating IOL

- Design a lens with a standardized high power moving convex optic
- Bring image to focus with fixed, appropriately powered concave lens
- i.e.: a dual optic IOL system
Dual Optic versus Single Optic Accommodating IOL Efficiency

Dual Optic Accommodating IOL vs. 19.0 D IOL

Accommodation (diopters)

Forward lens movement (mm)
Visiogen Accommodating IOL

Far

Near

Spring haptic

2.2 mm

1.5 mm

3.7 mm
Synchrony Accommodating IOL

- One piece silicone lens
- 5.5 mm anterior optic
- 6.0 mm posterior optic
- 9.5 mm length
- 9.8 mm wide
Synchrony Accommodating IOL

- 2.2 mm thick when compressed
- 3.7 mm wide in accommodation
- Anterior lens 32 D
- Posterior lens -4 to -16D
Synchrony Accommodating IOL

Aqueous Channels

- Support the anterior bag while providing fluid channels
- Facilitate fluid exchange
- Tent anterior capsule preventing capsule/IOL sealing and rubbing
Synchrony Accommodating IOL

Posterior Wings
- Insure proper posterior position
- Compensate for capsular bag size variations
- Prevent decentration
Synchrony Accommodating IOL

Spring Haptics
- Bias the system open
- Provide consistent separation force
Synchrony Preloaded Injector

- Requires only BSS for lubrication
- Incision size 3.6 – 3.8 mm
Clinical Summary

- US FDA trial underway – enrollment completed, gathering information
- Extensive international experience with design prior to initiation of FDA trials
Uncorrected Acuities

6 months: n=97 pts
12 months: n=71 pts
24 months: n=63 pts
36 months: n=39 pts

Distance
Intermediate
Near

Synchrony Dual Optic Accommodating IOL. AAO 2007

Ossma IL. AAO 2007
QOL Survey - Spectacle Independence

Perform Activities without glasses at near

When asked about activities that they could do without glasses at near, over 90% of patients could read menus and newspapers without glasses, and about 74% could read fine print (label on eye drop bottle).

N=27 patients

Alarcon R. ASCRS 2007
Synchrony patients had SIMILAR OR LESS visual disturbances to standard monofocal IOLs.

Only 1 patient had moderate glare, and only 2 had moderate to severe halos. More than 90% of patients had none or mild glare and halo.
Capsular Fibrosis

2 years after surgery minimal capsular opacification observed

Bohorquez. ASCRS 2007
Patient in US Trial – 2 years out

Mark Packer, MD (Eugene, OR) patient, Visiogen in-house data
Lens movement

Cycloplegic Distance

Near Stimulation of the fellow eye
Conclusions

- Dual Optic accommodating IOL’s have the potential to provide greater accommodation than single optic IOL’s
- Safety data available for over 700+ implantations
- Provides functional near, intermediate and far vision
- No evidence of clinically significant halo or glare
- International data: almost 80% of patients completely spectacle independent, and more than 90% can read newspapers and menus
- Long term results demonstrate stability out 3 years