

Risk factors in patients with strabismus undergoing refractive surgery

in of
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These studies are conducted without any commercial interests.

Types of treatments in refractive surgery

- PRK: Photorefractive Keratectomy
- LASIK: Laser-assisted in situ keratomileusis
- SMILE: Small Incision Lenticule Extraction
- PresbyLASIK-Presbyond
- Phakic Intraocular Lenses (ICLs)
- Pseudophakic Intraocular Lenses (IOL)



Objective:

- To show patients with myopia and strabismus who underwent refractive surgery and who showed complications after surgery.
- To share some complications that may arise and what solutions we propose.

Method:

The clinical history of 2 adult patients was studied to evaluate and discuss the examination process, surgical technique, postsurgical results after refractive surgery, and solutions to complications in each case.

Results:

Case 1 Age: 50 years

Reason for visit: Intermittent horizontal diplopia 2 weeks ago post-Lasik surgery, femtoLasik Aspheric monovision in another center.

Background: Strabismus and glasses in childhood.

Dominant eye: Left eye

Distance VA without correction: RE 1 / LE 0,3

Near VA without correction: RE 0,6 / LE 1

Subjective refraction: RE Neutral VA 1 / LE -1,50 VA 1

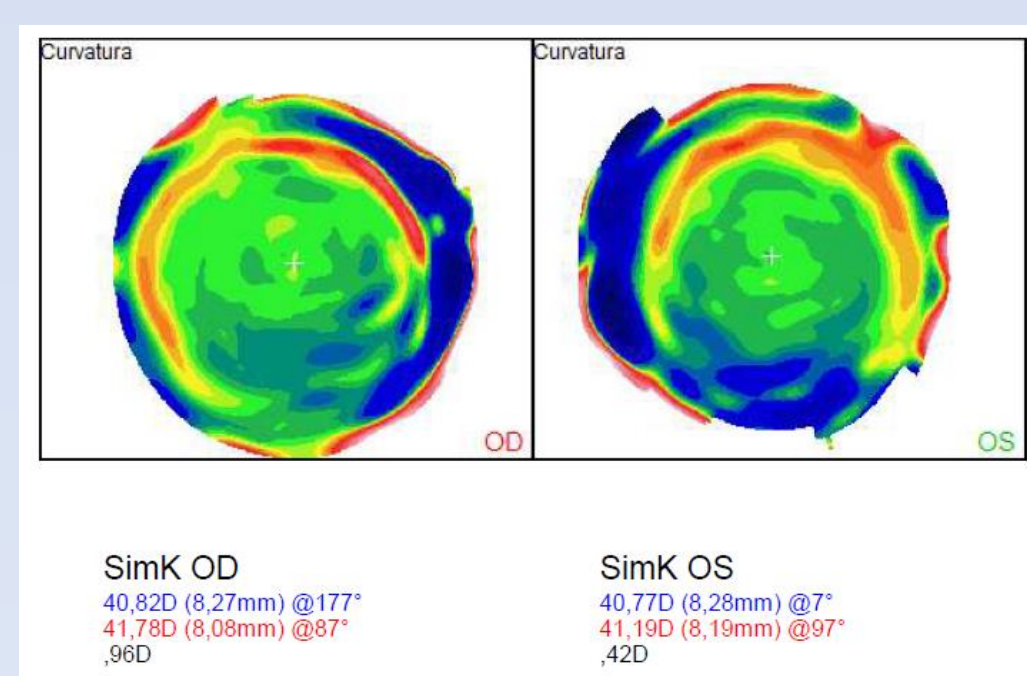
Cover test: 25Δ AET (+RE) / 12Δ RHT near and distance with and without correction

Stereopsis test: Negative



25ΔRET / 12Δ RHT post Lasik surgery

After Lasik myopia topography



Discussion

The choice of the presurgical motor dominant eye in monovision versus the dominant eye in distance (changes in his motor dominant eye in distance and in his sensoriality) was suspected to be erroneous. Anisometropia in monovision caused the dissociation and possible increase in previous strabismus.

Proposed solution

The proposed solution to reduce or eliminate diplopia was refractive surgery on the left eye to avoid anisometropia and to facilitate the return of his sensory condition again with dominant left eye in distance.

Case 2 Age: 27 years

Reason for visit: Vertical intermittent diplopia compensated with prisms 2 years ago.

Background: Strabismus surgery 5 years ago.

Subjective refraction:
RE -3,25-0,50x20° VA 1
LE -4,50 VA1

Pupil diameter:

RE 8,5 / 6mm

LE 8 / 4mm

Treatment: Refractive surgery with ICLs in both eyes

Discussion

The aim of the surgery was to stop depending on glasses and to minimize dissociative factors secondary to the use of glasses (to aid fusion and binocular vision). Although the stereopsis that previously did not exist, it started to show thickly (3000" arc), as her vision subjectively worsened due to the sensation of halos at night driving. It was attributed to a large pupil diameter presurgery in these conditions. This factor meant a complication that could limit her ability to merge under scotopic conditions.

Discussion proposed

The solution proposed was to help, during the post-surgical adjustment process, with myotic eye drops to avoid the pupil diameter factor (Alphagan 2 mg/ml). Subsequently, her vision improved and the sensation of halos and diplopia decreased.



	Presurgery	Post 4 months	Post 1 year + Myotic Treat. (Alphagan 2mg/ml)
Distance Cover test (dominant RE)	6Δ RET 6Δ RHoT	5Δ RET 6Δ RHoT	5Δ RET 5Δ RHoT
Near Cover test	10Δ RET 6Δ RHoT	5Δ RET 6Δ RHoT	5Δ RET 5Δ RHoT
Subjective diplopia	Intermittent	Persists, worse driving at night (halos)	Improving, greater control of diplopia (fewer halos)
Visual Acuity	RE 1 / LE 1	RE 1 / LE 1	RE 1 / LE 1
Stereopsis test	Negative	Intermittent 3000"arc	3000"arc

Conclusions:

- Risks of diplopia after refractive surgery can be avoided by performing a thorough exploration of the presurgical oculomotor and sensory condition.
- Examination of the dominant eye is essential. We never recommend monovision surgery, that is, leaving a myopic eye to see closely. We consider that it is a big dissociative factor at any age for sensory and motor binocular vision.
- It should be noted that although refractive surgery (ICLs) may aid binocular vision in patients with diplopia, factors such as pupil diameter should be considered, as it can limit the ability to merge and reduce the estimated enhancement options by avoiding the use of glasses.
- The use of myotics may aid in the adaptation process during the first months post-refractive surgery in cases of large pupil diameters.
- We believe that refractive surgery, under extensive sensory study, can be of great help in improving the symptoms of diplopia and strabismus angle.