

Assisting Ocular Alignment with Soft Contact Lenses

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Introduction

This case study highlights a unique application of contact lenses on a constant large angle esotropia with compound myopic astigmatism to help decrease the size of the deviation. There are many instances where a patient who wishes to wear contact lenses may have other confounding ocular challenges. These patients should not be automatically excluded from contact lens wear. In this case, combining our knowledge of binocular vision and contact lens modalities helped create a comfortable and aesthetically acceptable option for our young patient.

Case History

Chief Complaint: Patient is a 14 year old Hispanic female with high compound myopic astigmatism and a constant large angle esotropia who presented to our contact lens clinic for a soft contact lens fitting for everyday wear. She is able to selectively choose which eye she wishes to fixate but prefers using her right, dominant eye.

Review of Systems: Unremarkable

Preliminary Testing: Unremarkable

- BCVA: 20/20- OD, 20/25- OS
- Pupils: PERRLA, (-)RAPD OD, OS
- CVF: FTFC OD, OS
- EOMs: FULL OD, OS
- Stereo Testing with Randot: None

Manifest Refraction:

- OD: -5.25 -3.50 x170
- OS: -3.25 -3.25 x009

Cover Test in Spectacles:

- 25 CAET (Distance), Preferred Right Eye Fixation
- 30 CAET (Near), Preferred Right Eye Fixation



Fig 1. Patient exhibiting alternating esotropia.¹

Anterior Segment Evaluation: Unremarkable
Posterior Segment Evaluation: Unremarkable

Initial SCL Fitting

Trial Lens #1	Brand	Base Curve	Diameter	Contact Lens Rx	Visual Acuity
Right Eye	Coopervision Biofinity Toric	8.5	14.5	-5.00 -2.25 x180	20/20-
Left Eye	Coopervision Biofinity Toric	8.5	14.5	-3.00 -2.25 x020	20/30+

Patient reported good in-office comfort, vision, and fit with minimal rotation in both eyes. After successful insertion and removal training, the lenses and Biotrue multi-purpose solution were dispensed to the patient with a one week follow-up.

One Week Follow-Up

At follow-up, the patient reported good vision and comfort in her contact lenses, but her “eyeturn” appeared to become larger. To solve this problem, we proposed a monovision fit where the dominant eye would receive +1.00 Sph over the distance contact lens prescription.² This method was used as the patient’s prescription did not present any ideal multifocal options and to prevent constant suppression of the non-dominant eye.

Trial Lens #2	Brand	Base Curve	Diameter	Contact Lens Rx	Visual Acuity
Right Eye	Coopervision Biofinity Toric	8.5	14.5	-4.00 -2.25 x180	20/40-
Left Eye	Coopervision Biofinity Toric	8.5	14.5	-3.00 -2.25 x020	20/30+

Patient was happy with the comfort, vision, and aesthetics of this new options.

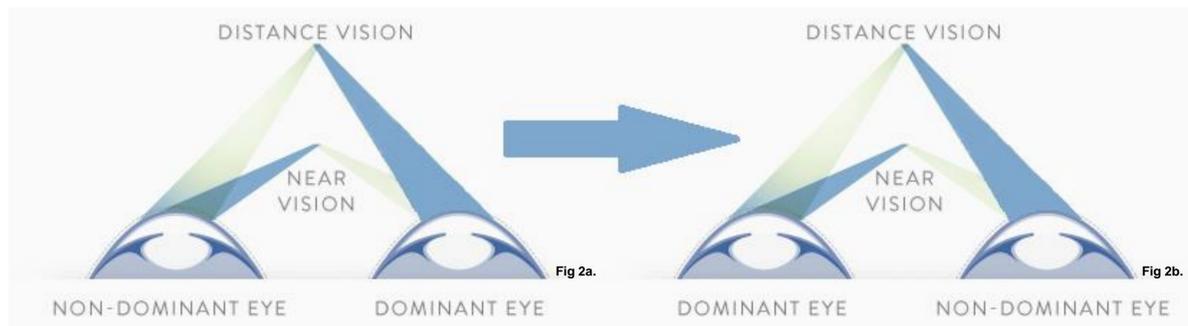


Fig 2a. Conventional method of monovision where the dominant eye is corrected for distance vision while the non-dominant eye receives the (+) add for near.
 Fig 2b. Alternative method of monovision where the dominant eye is given the (+) add for near and the non-dominant eye is corrected for distance.

References

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Discussion

Even after compensating the manifest refraction for vertex distance, a myopic patient will need to accommodate more in a contact lens.³ As the vertex distance of the lens decreases, so does the distance between the cornea and the image created by the lens. This increased accommodative demand drives accommodative convergence, increasing the size of the patient’s strabismus. The greater the myopic prescription, the greater the increased accommodative demand.

Overplusing the dominant eye contact lens decreased the accommodative demand and thus, the amount of the esodeviation. The patient can use her preferred eye for fixation at near but is forced to use her non-dominant eye at distance for clearer vision. Blurring of the non-dominant eye increases the risk of permanent suppression due to preferred fixation with both the dominant and clearer eye.

Lastly, a major concern over monovision in a patient is its impairment of stereoscopic depth perception.⁴ However, as the patient is a constant esotrope, she has no binocularity and is thus stereoblind.⁵

	DCT	NCT
Trial Lens #1	25-30pd	40pd
Trial Lens #2	25pd	30-35pd

Conclusion

- ❖ Contact lenses increase the accommodative demand of a myope.
- ❖ The greater the myopia, the greater the increase in accommodative demand.
- ❖ Increased accommodative demand leads to an increase in accommodative convergence and esodeviations
- ❖ Monovision is a viable option for patients with constant accommodative esotropia in decreasing the size of the deviation and improving cosmesis if no suitable multifocal design is available
- ❖ The add should be given to the dominant eye in myopes to prevent constant suppression of the non-dominant eye