

Clinical & Refractive Optometry is pleased to present this continuing education (CE) article by Dr. Langis Michaud entitled **A Case of Unilateral Hyperopia**. In order to obtain a 1-hour Council of Optometric Practitioner Education (COPE) approved CE credit, please refer to page 6 for complete instructions.

A Case of Unilateral Hyperopia

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INTRODUCTION

Hyperopia is relatively difficult to evaluate accurately and to compensate in young patients in whom accommodation is still strong. It is even more difficult when the patient shows unilateral hyperopia. In such cases, visual demand is unbalanced between the two eyes, and most patients will show chronic accommodative spasm leading to discomfort and complaints of transient blurred vision. The only way to address this issue is to use cycloplegic drugs to evaluate the true refractive error and to compensate it appropriately. When the anisometropia is more than 3.50 to 4.00 D, contact lenses offer the best option to compensate for ametropia. Compared to glasses, contact lenses produce a smaller difference in the image size perceived. This helps to establish true binocular vision. Moreover, hyperopic contact lens correction results in reduced accommodative and convergence demands, which helps eliminate visual symptoms. Finally, trial disposable contact lenses allow the patient to quickly adapt to the correction and to de-spasm more rapidly than with a pair of glasses. This Case Report is a perfect example of these benefits.

SUBJECTIVE

A.B. is a young 16-year-old female referred to the Clinique Universitaire de la Vision for anisometropia and esotropia, as well as a contact lens fitting. She was seen for the first time in February 2009. At that time, she reported having a weakened left eye for which a pair of glasses was prescribed in 2007; however, she admitted to not wearing them. In fact, her vision did not improve with the glasses on and esthetically, she was not very happy

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with them. The patient also reported that she had done patching of her right eye when she was young but had never had ocular surgery. She was a full-time student and complained about difficulty reading and doing computer work for long hours without asthenopia. Her general health was good and she was not taking any medication. Her background was negative for both ocular and systemic histories.

OBJECTIVE

A complete oculo-visual exam was completed prior to the contact lens fitting. Preliminary testing revealed marked esophoria well compensated at far and at near, without correction. Stereoscopy was full with glasses on. Ocular motilities were full in all gaze without restriction. Dynamic retinoscopy gave OD +0.75 -0.25 x 80 and OS +4.00 -1.00 x 90. Subjective refraction gave OD plano 6/4.5 (20/15) and OS +3.00 -0.50 x 90 6/7.5+1 (20/25+1).

Ocular health was found normal under slit lamp exam except for small congenital lenticular opacities OU. Non-dilated fundus exam revealed no abnormal findings. For the purpose of contact lens fitting, additional testing was done. Topographic maps were measured and showed normal symmetrical pattern with K readings of 45.25 x 44.36 OD and 44.25 x 43.25 OS.

ASSESSMENT

The patient showed anisometropia and marked esophoria that was well compensated at far and at near, without correction. However, the difference in visual demand has led to asthenopic symptoms.

PLAN

Contact lenses constitute the first option to consider in cases of moderate to severe anisometropia, especially in the presence of marked esotropia in a hyperopic patient. The reduced vertex distance of the contact lens correction, compared with glasses, causes a reduction in both accommodative and convergence demands, which helps the patient overcome the asthenopic symptoms related to their condition. It is also known that in hyperopes, contact

lenses reduce the size of the perceived images, which make them more manageable by the brain when a difference of near 4 D is present. Binocular vision is then optimal with the use of contact lenses. Finally, contact lenses offer an esthetic benefit that glasses can not match. Even for younger patients, by 8 years old, self-esteem is increased with the use of contact lenses and most young patients benefit, psychologically speaking, from the switch from glasses to contact lenses.

In this case, considering the hyperopic refraction, a high DK silicone hydrogel lens was considered the only option in maintaining ocular health. The presence of a small amount of astigmatism need to be considered and consequently, a toric contact lens was selected (Acuvue® Oasys™ for Astigmatism [Johnson & Johnson Vision Care, Jacksonville, Florida]) with the following parameters: 8.6/14.5 +3.50 -0.75 x 100 OS only.

After a few minutes for stabilization, visual acuity was 6/7.5+1 (20/25+1) with the lens on. The patient perceived the correction but noticed a blurred image that was quite disturbing. Since the left eye had not worn a visual correction for a while, it is not unusual that such a visual disturbance would occur, but tends to fade over a few days. As the lens position and centration were optimal, we let the patient go with this lens on, with a progressive schedule of wear of 4 hours/day with an increase of 2 hours/day, up to 14 hours/day. Extended wear was prohibited and the patient was educated on the handling of the lens and its related care. Considering the possible contamination with mascara and make-up, we strongly recommended a rubbing step with Opti-Free® RepleniSH® (Alcon, Fort Worth, Texas) followed by overnight soaking in hydrogen peroxide (Clear Care, CIBAVision, Duluth, Georgia).

The patient was seen two weeks later and immediately reported better vision at near with prolonged hours of comfort during work. However, distant vision remained fluctuant, especially in dim illumination or at night. Symptoms of ocular spasm were also reported. The lens was well tolerated for an average of 12 hours/day of wear. Over-refraction was not contributory and the vision remained at 6/7.5-1 (20/25-1) OS. The patient's expectations were undermet.

We then decided to cycloplege the patient in order to determine the optimal refractive error. One drop of

cyclopentolate 1% was instilled in both eyes and the refraction was measured after 30 minutes. The findings were OD +0.25 (6/6 [20/20]) OS +4.50 -1.50 x 95 (6/7.5+1 [20/25+1]).

In order to break the spasm, a new lens was tried on the left eye with the following parameter: +4.00 /-1.25 x 90. Due to the stability of the Acuvue Oasys for Astigmatism lens, as for other modern designed toric lenses, a full correction of the cylinder power is strongly recommended to not over-minus the patient. Vision was measured at 6/7.5-1 (20/25-1) on that side and the patient was obviously more comfortable considering the cycloplegia effect. The patient was educated about the fluctuation that was expected while the accommodative system relaxed its spasm. A follow-up exam was planned for one month hence. A sufficient number of lenses were given to the patient, taking into account that they were being used on a two-week disposable regimen.

One month later, the patient had a big smile on her face. She had finally gotten used to her optical correction and reported maintaining comfortable vision at all distances. Visual fluctuation was still present for the first 10 days following her last visit, but it had improved rapidly thereafter. At the time of this follow-up visit, the patient was happy with the results. Visual acuity remained the same and ocular health was as expected, without any adverse effects. Consequently, a year supply of lenses was ordered, bundled with solutions.

CONCLUSION

Cycloplegic refraction should be mandatory in optometry as it is in refractive surgery. Most of our patients are over-minused or under-plused because of the accommodative effect that occurs. This could affect the visual performance of older contact lens wearers, heavy computer workers, and patients with esodeviation at near. For these patients, compensating their refractive error more accurately, and correcting the small amount of astigmatism that is present with the use of toric lenses could make the difference between a successful contact lens wearer and a patient who can hardly tolerate their lenses, which can lead to future drop-out. It is the optometrist's responsibility to take the big picture into consideration and to cycloplege all patients that need to be, not only children, as refractive surgeons do. □