

Specialty Contact Lens Treatment Modalities in the Management of Non-Comitant Diplopia

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INTRODUCTION

Diplopia is the simultaneous viewing of two separate images of a single object. It may occur when there is an inability for binocular fusion. There are a multitude of causes for binocular double vision including but not limited to muscular dysfunction, neuromuscular junction disorders, cranial nerve damage and the many forms of brain injury. Once the cause of diplopia is determined, many treatment modalities may be considered for the symptom of double vision. The purpose of this poster is to provide a safe and effective treatment plan to handle a complicated case of non-comitant double vision causing nausea, dizziness and ocular fatigue.

CASE HISTORY

A 41-year-old Caucasian female presented to the Cornea and Specialty Contact Lens Service (CASCLS) for a contact lens that would reduce nausea and vomiting exacerbated by constant double vision. The patient reported a traumatic brain injury (TBI) following a steel beam impact to the right temporal lobe in 2012. This TBI led to a temporal lobectomy about one and one-half years later due to complex seizures. The patient's ocular history following the lobectomy included constant diplopia secondary to a bilateral internuclear ophthalmoplegia (INO) and overlying skew deviation. She reported previous successful soft contact lens wear.

EXAMINATION FINDINGS

| | OD | OS |
|-----------------------|--|----------------------------|
| Visual Acuity (cs) | 20/20 | 20/20- |
| Pupils | 3.5/4.0 (-) APD | 3.0/3.5 (-) APD |
| Confrontational Field | Altitudinal Homonymous Hemianopia OU | |
| EOMs | Full with constant nystagmoid movements OU | |
| Spectacle Rx | -0.25 -0.25 x135 | -0.50 -0.25 x005 |
| Slit Lamp Evaluation | Clear | Clear |
| Keratometry | 44.00 x 173 44.25 x 083 | 44.50 x 178 44.75 x 083 |

Cover Test:

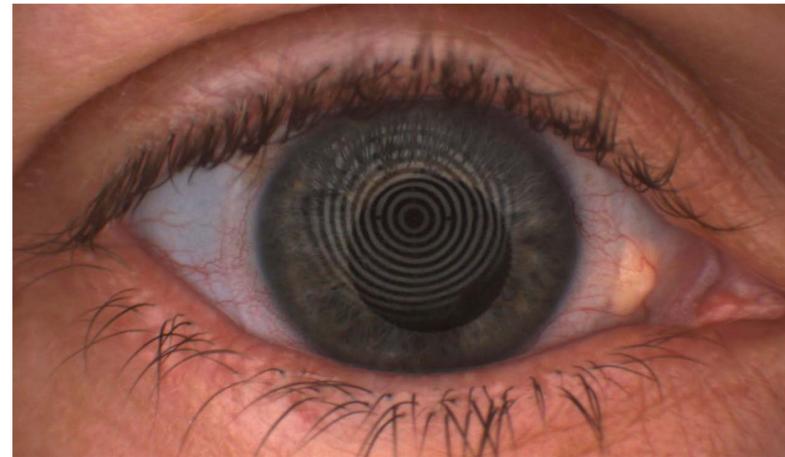
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|---------------|----------------|---------------|
| | 6 EP 6 LHP | |
| 4 EP 2 LHP | Ortho 2 LHP | 6 XP 2 LHP |
| | Ortho 3 LHP | |

Trial 1: PLUS LENS TO BLUR

| T1 | Lens Brand | Base Curve | Diameter | Sph | Cyl | Axis | Color |
|----|----------------------|------------|----------|-------|-----|------|-------|
| OD | Air Optix Hydraglyde | 8.6 | 14.2 | +8.00 | Sph | | |

Trial 2 and 3: PUPILLARY OCCLUSION

| T2 | Lens Brand | Base Curve | Diameter | Sph | Cyl | Axis | Color |
|----|--------------------------------|------------|----------|-------|-----|------|--------------|
| OD | Orion BioColors Occluded Pupil | 8.6 | 14.3 | Plano | Sph | | 4.0 mm Black |



| T3 | Lens Brand | Base Curve | Diameter | Sph | Cyl | Axis | Color |
|----|--------------------------------|------------|----------|-------|-----|------|---------------|
| OD | Orion BioColors Occluded Pupil | 8.6 | 14.3 | Plano | Sph | | 6.0 mm Double |



RESULTS

Due to the primary symptom of double vision, the initial treatment indicated was a high plus, clear soft contact lens to blur the patient's right eye only. Upon insertion of the lens, she reported good comfort and binocular, not diplopic vision with reduced environmental nausea and dizziness. An over-refraction revealed improved visual comfort with a +1.00D power. The patient was then released with a +8.00D lens following immediate improvement of double vision, nausea and dizziness as well as reading and ambulating. At the scheduled one-month follow-up appointment, the patient reported subjective discomfort and remaining diplopia worse in up gaze. With these results, the plus-lens-to-blur was considered unsuccessful. An Orion BioColors 4.0mm pupil occluded lens was then indicated and trialed for complete occlusion of the right eye. However, the patient complained of shadowing and mild diplopia in up gaze with the 4.0 occluded pupil. Lens assessment revealed inferior decentration and a pupil that was not fully occluded. A 6.0mm pupil occluded lens was then ordered and dispensed for use in daily activities. Upon returning for her follow up visit, the patient reported significant improvement in symptoms of nausea, dizziness and double vision. The patient reported reading up to 40 minutes with the occlusion lens, a reduction in environmentally-induced nausea, and now has the ability to watch football.

CONCLUSION

There are many treatment modalities for a non-comitant deviation causing diplopia. Two options presented in this article include a plus lens to blur and custom pupil-occluded lens. Both treatment options offer a simple initial fit with almost immediate symptom improvement. Only after follow up visits, however, could either treatment be determined successful. In these cases, it is most important to allow patients to trial the lens through daily activities before finalizing a treatment plan.

REFERENCES

1. Astin C L K. The Use of Occluding Tinted Contact Lenses. *Eye and Contact Lens*. (1998).