

47th Annual Meeting Poster Preview

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Residency Program in Vision Therapy and Rehabilitation at The Optometry Center for Vision Therapy (OCVT) in Austin, Texas

Briana Larson, OD, FCOVD, FAAO, FNORA
Erica O'Brien, OD, FCOVD
Aubrey Breithaupt, OD

UNIVERSITY OF THE INCARNATE WORD
SCHOOL OF OPTOMETRY

Residency Program in Vision Therapy and Rehabilitation at The Optometry Center for Vision Therapy (OCVT) in Austin, Texas

Briana Larson, OD, FCOVD, FAAO, FNORA, Erica O'Brien, OD, FCOVD, Aubrey Breithaupt, OD
The residency center for vision therapy
University of the Incarnate Word

BACKGROUND

This residency program is based at two locations of the Optometry Center for Vision Therapy (OCVT), a private practice, in Austin, Texas. OCVT is a specialty practice exclusively dedicated to vision therapy, neuro-optometric rehabilitation, and pediatric optometry. The residency is a full-time, formal, supervised program consisting of direct patient care, didactic education, practice management development, and scholarly activities.

MISSION

The mission of the Residency Program in Vision Therapy and Rehabilitation at OCVT is to build expert clinicians and leaders in the field of vision therapy and diagnosis and treatment of visual efficiency and processing deficits, neuroanatomical, and pediatric visual and ocular conditions. Upon successful completion, the resident will have the competence to serve as an expert and a leader in the field of vision therapy and rehabilitation. The resident will also acquire the skill set to efficiently operate a private vision therapy, pediatric optometry, and neuro-optometry specialty practice.

CLINICAL ACTIVITIES

Clinical experience may include, but are not limited to, the diagnosis and/or treatment of the following conditions (estimated patient encounters per residency year):

- Total patient encounters (2000)
- Pediatric primary care examinations, including infants
- Binocular disorders, strabismus and amblyopia
- Visual perceptual dysfunction
- Autism spectrum disorder or other developmental disabilities
- Acquired brain injury
- Low Vision

GOALS

- Enhance the resident's clinical skills in pediatric optometry, vision therapy and neuro-optometric rehabilitation.
- Enhance the resident's assessment and treatment of individuals with learning-related vision disorders.
- Expand the resident's experience and clinical confidence with assessment and optometric management of children with special needs, including children with Autism Spectrum Disorder.
- Expand the resident's knowledge in managing patients with neurological issues.
- Develop the resident's professional acumen and practice management skills in a vision therapy and rehabilitation specialty practice.
- Enhance the resident's scholarly and didactic activity.

ACCREDITATION

This residency program is fully accredited by the Accreditation Council on Optometric Education (ACOE).

LOCATIONS

OCVT Pecan Park: 10604 Pecan Park Blvd., Suite 201, Austin, Texas 78750
OCVT Westlake: 6836 Bee Caves Road, Suite 100, Austin, Texas 78746

DIDACTIC AND SCHOLARLY ACTIVITIES

- Required publishable quality manuscript submission
- Participation in OCVT annual Residency Forum
- Weekly article review
- Quarterly Journal Club
- Resident-led presentations and workshops to OCVT Vision Therapy Team
- Required to attend annual meeting of The College of Optometrists in Vision Development
- Encouraged to attend the annual Neuro-Optometric Rehabilitation (NORA) and American Academy of Optometry (AAO) Meetings.

PROGRAM LENGTH/HOURS

- **Program length:** 53 weeks from July 6th to July 18th the following year.
- **Hours:** 45.00 hours per week.

CONTACT

Clinical Supervising Faculty
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Vertical and torsional diplopia post-strabismus surgery for traumatic superior oblique palsy: How vision therapy can help decrease diplopia by fine tuning ocular motor control

Kelsey Sieg, OD
Curtis Baxstrom, OD, FCOVD, FAAO, FNORA

Vertical and torsional diplopia post-strabismus surgery for traumatic superior oblique palsy: How vision therapy can help decrease diplopia by fine tuning ocular motor control

Kelsey Sieg, OD
Curtis Baxstrom, OD, FCOVD, FAAO, FNORA

BACKGROUND:

Superior oblique (SO) palsy

- Cause:
 - Congenital (7%)
 - Acquired
 - secondary to trauma (4% of all cases)
 - trauma lateral, oblique or a decompensated strabismus
- Symptoms:
 - Intense vertical and/or torsional diplopia, constant or intermittent
 - Clinical signs include:
 - affected eye having higher deviation in primary gaze
 - worse when looking head to ipsilateral side
 - bilateral abduction the affected eye looks inward
 - compensating with the non-affected eye
 - hyperextension of the double Maddox and if bilateral the normal torsional component of superior, large right eye component
 - Measurement:
 - measured by cardinal gaze (90° (headless wall)), a double Maddox test
 - double Maddox test includes the SO muscle
 - double Maddox test can be done with fixation
 - double Maddox test can be done with fixation
 - double Maddox test can be done with fixation
 - double Maddox test can be done with fixation
- Diagnosis of non-constant acute vertical deviations can be isolated using a Park 3 eye test
 - Headless wall test: horizontal
 - Horizontal gaze in right or left gaze?
 - Hyperdeviation worse in right or left gaze?
 - Right eye component
 - Left eye component

CASE SUMMARY:

HISTORY:

- 39 year old Caucasian male presents with horizontal and vertical diplopia at distance and near gaze right occluded faced 2.5 years prior with a history of pushing to relieve diplopia.
- Two history negative right orbital fracture repair, two orbital nerve resections, orbital decompression (OD), double Maddox test, left strabismus (LS), non-constant hyperdeviation, non-constant exotropia, inducible OD
- Medical history: Hypertension

EXAM:

Visual acuity: 20/20
Visual fields: normal
Extraocular muscles: normal
Ocular alignment: normal
Ocular torsion: normal
Ocular motility: normal
Ocular motility: normal
Ocular motility: normal

TREATMENT:

Visual-motor integration: Visual-motor-oculomotor activity (VMO) test
Clear stabilization
Motoric Fixation in a Binocular Field (MFB)

Motoric Tracking: Eye Control
Vignette Control
Compassionate Pencil points
Binocular Occlusion

RESULTS & DISCUSSION:

Identify to allow vision stabilization assist with home therapy activities one year and a half with consistent compliance resulted in:

- Reduced expression in right, left, up and down gaze
- Decreased torsion in right eye
- No longer subjectively experiencing horizontal diplopia
- Single vision in primary gaze, 20 degrees in left gaze, 40 degrees in left gaze, 30 degrees in right gaze, and angle in down gaze
- 30 minutes in one session Visual-motor-oculomotor (VMO) to decrease diplopia in the peripheral gaze and to allow to return to work.

Following an initial fracture with a SO palsy may should consider using visual-motor-oculomotor therapy to stabilize motor motor function and improve quality of living.

References:

Contact Author: ✉

Binocular Gameplay using the Nintendo 3DS Hand-held Console for the Treatment of Amblyopia

Alicia Feis, OD
Christina Esposito FAAO, FCOVD
Caitlin Miller OD, FAAO
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Contact Author: ✉

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Improvement in Visual Skills in V-pattern Exotropia Secondary to Duane's Retraction Syndrome

Leigh Purvis, OD
Katherine Green, OD
Gregory Fecho, OD
Jacqueline Rodena, OD

Improvement in Visual Skills in V-pattern Exotropia Secondary to Duane's Retraction Syndrome

Leigh Purvis, OD, Katherine Green, OD, Gregory Fecho, OD, Jacqueline Rodena, OD

College of Optometry

Background: Duane's retraction syndrome is a rare Congenital Cranial Dysinnervation Disorder, which occurs in 1.5% of all strabismic cases.¹ It consists of failure of the abducens nerve to develop normally, resulting in limitation of adduction and/or abduction, globe retraction/palpebral fissure on adduction and upshoots or downshoots of the affected eye on abduction.^{1,2} The resultant misalignment of the eyes can lead to diplopia.

Case Presentation: A 12-year-old female KS was referred to the Pediatric and Binocular Vision clinic with complaints of diplopia at the end of the day, headaches, severe strain while reading, regression in all things and diplopia when completing binocular adduction up/downshoots. KS was a 2nd year optometry student who previously completed 12 sessions of vision therapy for diplopia secondary to Duane's retraction syndrome. KS has a previous diagnosis of Type 3 Duane Syndrome. She has a history of headaches that are associated with inflammation of the sinuses, which is currently under care of a neurologist. KS also has a previous history of two concussions, the most recent being 1 year prior when concussions were lost for 30 minutes. Neurological imaging came back clear but a study she never reconstructed her visual symptoms.

Treatment: The patient was diagnosed with V-pattern exotropia secondary to Duane's Retraction Syndrome and accommodation dysfunction and was re-evaluated in Vision Therapy. Traditional accommodative, vergence and anti-suppression activities were completed including, break work, monocular/binocular accommodation work, lateral card, vergence, full field and eccentric circles. After completing 10 sessions of vergence activities in primary gaze, therapy was continued in all gaze with a stronger emphasis in superior gaze. (Figure 1-3).

Outcomes: After 24 sessions of vision therapy the patient reported alleviation of diplopia and less headaches associated with near work. She is able to read faster than when diplopia occurs in superior gaze. Re-evaluation of her binocular skills (Table 1) shows improvement in all four parts of convergence (NV), and positive binocular vergence (PV), less associated with PV in superior gaze when the demonstrated ability to maintain fusion (F) and B.B. She is currently completing home maintenance therapy of eccentric circles and break work by eye on a vergence in superior gaze as well as binocular accommodation work.

Discussion: Duane's Retraction Syndrome presents an uncommon etiology due to misalignment, varying in different directions of gaze, which can subsequently result in diplopia. Strabismic surgery, although an option, does not correct the underlying neuromuscular abnormality nor does it ensure full eye movements.³ Further, more complications of surgery may jeopardize the binocular function of a patient with all binocular present. Implementing vision therapy should be considered in such patients.

Conclusion: The case highlights traditional vergence and accommodative therapy activities in multiple gaze to allow near patients to alleviate symptoms, reduce headaches and improve and control diplopia in primary and superior gaze voluntarily. This allows near patients to enjoy their comfortably and improve ability to complete binocular adduction up/downshoots in all gaze, thereby improving her overall academic performance.

References:

1. Wang, Shun, Qingping Chen, and David A. Shields. "Visual Disturbance of Duane's Syndrome." *Journal of Clinical Ophthalmology* 107 (2013): 401-10. Web.
2. Wang, Shun, Qingping Chen, and David A. Shields. "Duane's Retraction Syndrome and Clinical Features." *Journal of Clinical Ophthalmology* 107 (2013): 401-10. Web.
3. Gersony, Harold. "Duane's Retraction Syndrome." *Journal of Clinical Ophthalmology* 107 (2013): 401-10. Web.
4. Kalkman, Harold, Nandini Prasad, and Michael D. Fisher. "Duane's Retraction Syndrome and Binocular Vision." *Journal of Clinical Ophthalmology* 107 (2013): 401-10. Web.

Table 1: Comparison of Visual Skills Pre- and Post-Vision Therapy.

Visual Skill	Initial Evaluation	Current Evaluation
Distance 3 XP	Distance 3 XP	Distance 3 XP
Near 2 XP	Near 2 XP	Near 2 XP
Convergence	Large high CRT	Distance 20 IAKT
Near 2 XP	Near 2 XP	Near 2 XP
NVC	40 IAKT	PTN
Accommodation Target	Accommodation Target	Accommodation Target
NVP	Dist: X/12/14	Dist: X/1/6
Near: X/24/12	Near: X/2/16	Near: X/2/16
PPV	Dist: X/14/6	Dist: X/2/20
Near: X/12/2	Near: X/2/16	Near: X/2/16
Suppression Score	Nil	NVP: X/45/16
Near: NVP/PPV	Nil	Near: X/16/16
Accommodation	Nil	Nil
Binocular	OD: 15.5 IPR/18.38 IPR/20	OD: 15.5 IPR/18.38 IPR/20
BLP: 13 IPR	BLP: 13 IPR	BLP: 13 IPR
N2V/PRA	-2.50/1.25	-2.75/1.15

Figure 1: Patient unable to maintain fusion with eyes in primary gaze.

Figure 2: Patient unable to maintain fusion with eyes in superior gaze.

Figure 3: Patient unable to maintain fusion with eyes in superior gaze.

Contact Author:

Late-Onset Exotropia: A Manifestation Secondary to Parkinson's Disease or Chronic Inflammatory Demyelinating Polyneuropathy?

Rachel Fitzgerald, OD
Katie Connolly, OD, FAO

Late-Onset Exotropia: A Manifestation Secondary to Parkinson's Disease or Chronic Inflammatory Demyelinating Polyneuropathy?

Rachel Fitzgerald, O.D., Katie Connolly, O.D., F.A.O.

INDIANA UNIVERSITY
SCHOOL OF OPTOMETRY

Background

Lifetime risk of being diagnosed with strabismus is ~1%¹
Adult-onset strabismus most commonly develops due to trauma, post-surgical complications, cranial nerve palsies, or neurological conditions²
Occurs most frequently in the 8th decade³
Paralytic is the most common origin (44.2%) followed by convergence insufficiency (15.7%)⁴
Treatment includes prism (ground-in or Fresnel), vision therapy, surgery, or monitoring

Parkinson's Disease (PD) – neurological movement disease resulting from a deficiency of dopamine in areas of the midbrain⁵
Prevalence: 1.75% adults (increased risk with age)⁶
Most commonly characterized by akinesia, rigidity, and tremor⁷
Ocular Abnormalities: impaired convergence, abnormal saccades and smooth pursuit, impaired vertical gaze, ocular tremor, poor pupillary reactivity, impaired color vision, decreased contrast sensitivity, reduced blink rate, decreased corneal sensitivity, and visual hallucinations⁸
Convergence insufficiency is the most common cause of diplopia in patients with Parkinson's Disease and is largely due to decreased convergence fusional amplitudes as the disease's duration increases. Diplopia often increases with disease progression.⁹

Chronic Inflammatory Demyelinating Polyneuropathy (CIDP) – an acquired disease involving the peripheral nerves and nerve roots¹⁰
Most commonly presenting between 40-60 years of age with a slightly higher incidence in males¹¹
Often presenting with weakness and hyporeflexia or areflexia most commonly in the distal upper and/or lower extremities¹²
Ocular findings are not well documented. Reports of facial nerve palsy, ptosis, and lid retraction were documented and believed to be secondary to CN III and V hypofunction¹³
Optic neuropathy is uncommon and only occurs in 3% of patients. Optic neuropathy may present as optic atrophy, optic neuritis, or optic atrophy.¹⁴

Case

Visit #1: Pertinent Examination Findings

Patient Demographics: 61 yo Caucasian male
Chief Complaint: new-onset diplopia
HPI: OU, 1 several months, worse at the end of the day, horizontal only, worse at distance, almost constant, no new neurological symptoms (i.e. dizziness, headaches, loss of sensation)

Medical History
Parkinson's Disease (3 years), Chronic Inflammatory Demyelinating Polyneuropathy (4.5 years), Diabetes Type 2 (18 years), Hypertosis (14 years), Depression (10 years)

Medications
Levetiracetam, Calcium Acetate, Carvedilol, Humira, R. Carbido-Levodopa, Pramipexole, Rivastigmine

Allergies
Albuterol

Visit #2: Pertinent Examination Findings

Visual Acuity: OD: 20/20
OS: 20/40

Cover Test (with Fresnel): OD: 20/20
OD: 20/20
E upshoot at distance, 4 IAKT at near

ICOMs: Full OU, No latent nystagmus noted, no diplopia in 9 directions of gaze

Visit #3: Pertinent Examination Findings

Visual Acuity: OD: 20/20
OS: 20/20

Cover Test (with Fresnel): E upshoot at distance, 20 IAKT at near (20/20 treatment)

ICOMs: Full OU, No latent nystagmus noted

Refraction/Prism: OD: +1.00 -0.25 x 180
OS: -1.50 -0.75 x 180
18 with adduction: 20/20 OS, OS

Visit #1 - Assessment and Plan
Intermittent Alternating Exotropia. Release 3 BI Fresnel prism over OS to alleviate diplopia. Letter sent to neurologist with findings. ITC x 1 month for diplopia follow-up.
Letter Neurologist: Monitor at follow-up.

Visit #2 - Assessment and Plan
Intermittent Alternating Exotropia. Continue with 3 BI Fresnel prism to alleviate diplopia. Patient not interested in ground-in prism at this time. Letter sent to neurologist with findings. ITC x 3 months for diplopia follow-up.
Letter Neurologist: Monitor at follow-up.

Visit #3 - Assessment and Plan
Intermittent Alternating Exotropia. Release new Spectax with 3 BI prism to alleviate diplopia. Letter sent to neurologist with findings. Return to Ocular Disease Clinic for routine care. Continue care with ophthalmology for diabetic retinopathy management.
Letter Neurologist: Monitor at routine exam.

Discussion

- Both Parkinson's Disease and Chronic Inflammatory Demyelinating Polyneuropathy impact muscle movements and thus could impact one's control of eye movements and convergence.
- The ocular presentation of PD and CIDP may be highly variable.
- While difficulties in convergence with PD have been previously studied and documented, ocular findings with CIDP have not been well investigated.
- Treatment options for adult-onset diplopia may include prism, vision therapy, single vision glasses, surgery, and monitor.
- With adult-onset strabismus, Fresnel prisms may be a good option to further assess strabismus before prescribing ground-in prism.
- Adult patients with new-onset diplopia and/or strabismus should be routinely followed to rule out the presence of a neurological or systemic origin.
- Findings should be communicated with the patient's PCP and/or neurologist to better address the condition.
- With inconclusive findings and/or an increasing duration, neurological imaging may be necessary.

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1. Hirschberg, R. A. (2005). Visual signs and symptoms of Parkinson's disease. *Clinical and Experimental Ophthalmology*, 33(1), 129-138. doi:10.1111/j.1542-2041.2007.01511.x
2. Sliney, M. S., Jensen, J., Sepp, K., Pomeroy, W., Vires, M., Thelen, T., ... Sliney, R. A. (2015). Ocular and visual disorders in Parkinson's disease: Current best practices. *Parkinsonism & Related Disorders*, doi:10.1016/j.parkdis.2015.02.019
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Alternative Treatment Modality in the Management of Post-Surgical Esotropia with Anomalous Correspondence

Alexandria Tilley, OD
 Tharanie Amarawardana, OD
 Kimberly Hamian OD
 M.H. Esther Han, OD, FCOVD, FFAO

Alternative Treatment Modality in the Management of Post-Surgical Esotropia with Anomalous Correspondence
 Alexandria Tilley, O.D., Tharanie Amarawardana, O.D., Kimberly Hamian O.D., M.H. Esther Han, O.D., F.C.O.V.D, F.F.A.O.

Introduction: The vestibulo-ocular reflex (VOR) is a reflex that stabilizes images on the retina by equalizing eye movements in opposite directions to equalize head movements. The VOR is a reflex that stabilizes images on the retina by equalizing eye movements in opposite directions to equalize head movements. The VOR is a reflex that stabilizes images on the retina by equalizing eye movements in opposite directions to equalize head movements.

Case Presentation: A 4-year-old male presented to the University Eye Center with a history of intermittent esotropia. He had a history of intermittent esotropia. He had a history of intermittent esotropia. He had a history of intermittent esotropia.

Table 1: Examination Findings

Table 1: Examination Findings	Table 2: Therapy Protocol
<p>Visual Acuity:</p> <ul style="list-style-type: none"> OD: 20/300 OD, 20/300 OS Distance vision: 20/300 OD, 20/300 OS Near vision: 20/300 OD, 20/300 OS 	<p>Therapy Protocol:</p> <ul style="list-style-type: none"> Visual evoked myogenic potentials (VEMP) Accommodative esotropia Accommodative esotropia Accommodative esotropia

Figure 1: Pathway of the Horizontal VOR

Figure 2: Relationship Between Semi-Circular Canals and Extra-Ocular Muscles

Canal	Primary Muscle	Secondary Muscle
Horizontal	Right lateral rectus	Left medial rectus
Vertical	Right superior rectus	Left inferior rectus
Vertical	Right inferior rectus	Left superior rectus

Figure 3: Vestibulo-Ocular Reflex

Figure 4: Vestibulo-Ocular Reflex

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"E" is for "Exotropia": A successful course of vision therapy in a preschool age child

Brandi Stewart, OD
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Designing optometric vision therapy for basic exotropia: Quantification of techniques emphasized in the final phases of training

Elaine C. Ramos OD
 Nathalia Broderick OD
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Designing optometric vision therapy for basic exotropia: Quantification of techniques emphasized in the final phases of training
 Elaine C. Ramos OD, Nathalia Broderick OD, M.H. Esther Han OD FCOVD FFAO

BACKGROUND: Basic exotropia occurs in 50% of intermittent exotropia and is defined as a deviation of the eyes where the visual axis crosses further away from the fixation point. It is a form of strabismic exotropia. It is a form of strabismic exotropia. It is a form of strabismic exotropia.

Table 1: Diagnostic Testing

Diagnostic Testing	Results
Visual Acuity	20/300 OD, 20/300 OS
Distance Vision	20/300 OD, 20/300 OS
Near Vision	20/300 OD, 20/300 OS

Table 2: Other patient sensory motor findings pre- and 6 months post-therapy

Diagnostic Testing	Results
Visual Acuity	20/300 OD, 20/300 OS
Distance Vision	20/300 OD, 20/300 OS
Near Vision	20/300 OD, 20/300 OS

Table 3: Relationship Between Semi-Circular Canals and Extra-Ocular Muscles

Canal	Primary Muscle	Secondary Muscle
Horizontal	Right lateral rectus	Left medial rectus
Vertical	Right superior rectus	Left inferior rectus
Vertical	Right inferior rectus	Left superior rectus

Table 4: Top five therapy techniques for the younger and older pediatric patient

Technique	Younger Patient (%)	Older Patient (%)
1. Vestibulo-ocular reflex	25%	25%
2. Vestibulo-ocular reflex	25%	25%
3. Vestibulo-ocular reflex	25%	25%
4. Vestibulo-ocular reflex	25%	25%
5. Vestibulo-ocular reflex	25%	25%

Figure 1: Frequency of therapy techniques used in the final phases of vision therapy for younger and older pediatric patients

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Is Eye Dominance a Determining Factor of the Direction of Visual Midline Shift Syndrome in TBI patients?

Derek Tong, OD, FAAO, FCOVD, FNORA
Amanda Beaudry OD, MS
Emily Lin BS
Alyson Lin OD

Is Eye Dominance a Determining Factor of the Direction of Visual Midline Shift Syndrome in TBI patients?
Derek Tong, OD, FAAO, FCOVD, FNORA, Amanda Beaudry OD, MS, Emily Lin BS, Alyson Lin OD
Center for Vision Development Optometry Inc. Pasadena, CA

BACKGROUND
A prior retrospective study by Tong et al (2016) found that 80% of TBI patients with VMS had a dominant eye. The purpose of this study is to determine if eye dominance is a determining factor in the direction of VMS in TBI patients.

METHODS
Single center retrospective study. 100 TBI patients were included in the study. All patients had a documented VMS. The direction of VMS was determined by the direction of the VMS shift. The direction of VMS was determined by the direction of the VMS shift.

RESULTS
The majority of TBI patients with VMS had a dominant eye. The majority of TBI patients with VMS had a dominant eye.

CONCLUSIONS
Eye dominance is a determining factor of the direction of VMS in TBI patients.

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Private Practice Residency Program: Pediatric Optometry & Vision Therapy/Neuro-Optometry

Derek Tong, OD, FAAO, FCOVD, FNORA

PRIVATE PRACTICE RESIDENCY PROGRAM
Pediatric Optometry & Vision Therapy/Neuro-Optometry
Center for Vision Development Optometry Inc. Pasadena, CA

RESIDENCY PROGRAM GOALS
The resident is to become a skilled, confident, and independent practitioner in the field of pediatric optometry and vision therapy/neuro-optometry.

PATIENT CARE
The program provides excellent patient care, with a focus on the individual needs of each patient.

PRACTICE MANAGEMENT
The resident will be responsible for the day-to-day management of the practice, including scheduling, billing, and inventory.

SCHOLARSHIP OPPORTUNITIES
The resident is encouraged to pursue research and publish in the field of pediatric optometry and vision therapy/neuro-optometry.

PROGRAM DETAILS
Residency Length: 12 months
Work Schedule: Full-time (40 hours/week)
Supervision: Supervision of a board-certified optometrist.

FOR MORE INFORMATION
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Treatment of Consecutive Exotropia in a Toddler Initially Treated for Accommodative Esotropia

Nathalie Findlater, OD

Treatment of Consecutive Exotropia in a Toddler Initially Treated for Accommodative Esotropia
Nathalie Findlater, OD
Nova Southeastern University, College of Optometry

Introduction
Most cases of accommodative esotropia are managed with spectacle correction alone. In patients with partially accommodative esotropia, residual deviations are treated with surgery, prism or vision therapy. However, in 3-4% of cases, surgery results in consecutive exotropia.¹ Higher prevalence of amblyopia and reduced stereopsis in patients with fragile sensory systems may contribute to this occurrence. Patients treated with spectacle correction only have also been reported to develop consecutive exotropia (10-18.4%). This case report presents a case of a toddler with accommodative esotropia who went on to develop consecutive exotropia after optical correction alone.

Case Summary
Initial presentation
A 2-year-old male presented for evaluation when parents noticed that his eyes were starting to turn inward. Cover test revealed 20/25 CRIST distance and near uncorrected. With his habitual spectacle Rx, visual acuity was 20/60 OD and 20/30 OS. Alignment was orthophoria at distance and near corrected. Pertinent clinical visits of his binocular vision evaluation are listed in Table 1. All anterior and posterior segment findings were WNL.

Diagnosis
1. Refractive Accommodative Esotropia OD
2. Refractive Amblyopia OU

Discussion
Children with accommodative esotropia that appear aligned with optical correction alone need to be monitored closely to prevent possible deterioration. The literature does not explain the cause of why patients with successfully treated accommodative esotropia go on to develop consecutive exotropia. However, clinical characteristics associated with these cases are presented.

* Early onset of exotropia, particularly before the age of 2 years old.²
* High degree of hypermetropia exceeding 4.50 D.^{1,2}
* Lack of binocular vision.¹
* Amblyopia at the age of 3 or 4 years old.³

Patients with fragile binocularity may be predisposed to developing consecutive exotropia.⁴ Cases have also been reported of consecutive exotropia developing following cessation of amblyopia treatment. 25% of successfully treated amblyopic children experience a recurrence of amblyopia over 1 year of follow-up as seen here. Most will occur within the first 3 months post treatment.⁴

This case not only highlights the clinical characteristics and risk factors associated with patients who develop consecutive exotropia following optical correction, but also describes the clinical findings in a child who was successfully managed for both conditions. The rapid deterioration of the child's binocular status and acuity after only brief loss to follow-up emphasizes the importance of careful monitoring and follow-up in children who appear successfully aligned after optical correction for accommodative esotropia.

Contact Author: ✉

Neuro-Optometric Management of Post-Concussion Visual Sequela Resulting from Non-Head Sports Injuries in Adolescents

Matthew Roe, OD
Rebecca Charlop, OD
Esther Han, OD, FAAO, FCOVD

Neuro-Optometric Management of Post-Concussion Visual Sequela Resulting from Non-Head Sports Injuries in Adolescents
Matthew Roe, OD, Rebecca Charlop, OD, Esther Han, OD, FAAO, FCOVD

Introduction
Concussion athletes who suffer a concussion frequently present with visual symptoms categorized under post-concussion visual disorders. The management of these symptoms is a multidisciplinary effort involving ophthalmology, optometry, and vision therapy.

Case One
A 17-year-old male presented for an evaluation of visual symptoms following three concussions. He reported that he had "the world knocked out" of his head. The first two concussions occurred within the first month, with the third occurring the following month. All three of the falls occurred one year prior to the initial evaluation.

Case Two
A 23-year-old female presented with visual complaints following a non-injurious injury when she tripped on her stairs. She reported that she had "the world knocked out" of her head. The following ocular exam revealed the following findings:

Diagnosis
1. Post-concussion visual disorder
2. Post-concussion visual disorder

Management
The management of these symptoms is a multidisciplinary effort involving ophthalmology, optometry, and vision therapy.

Contact Author: ✉

(Full-size Poster can be accessed by clicking on the poster image.)

Chronicles of Vertical Yoked Prism for Patients with Esophoric Postures

Janette D. Dumas, OD, FCOVD, FAAO

BACKGROUND: Esophoric postures are a common finding in patients with esophoria. The use of vertical yoked prism to reduce the esophoric posture has been reported in all patients with esophoric postures. However, there are no studies that have evaluated the use of vertical yoked prism in patients with esophoric postures. This poster will discuss the use of vertical yoked prism in patients with esophoric postures, including a case report.

DISCUSSION: The use of vertical yoked prism to reduce the esophoric posture has been reported in all patients with esophoric postures. However, there are no studies that have evaluated the use of vertical yoked prism in patients with esophoric postures. This poster will discuss the use of vertical yoked prism in patients with esophoric postures, including a case report.

Contact Author:

Hope for Little Eyes: A Case of Microphthalmia and Use of Vision Therapy

Marie Bolin, OD

BACKGROUND: Microphthalmia is a congenital anomaly of the eye characterized by a small eye. It is a rare condition that can affect one or both eyes. The use of vision therapy to improve visual function in patients with microphthalmia has been reported in the literature.

DISCUSSION: The use of vision therapy to improve visual function in patients with microphthalmia has been reported in the literature. This poster will discuss the use of vision therapy in a patient with microphthalmia, including a case report.

Contact Author:

Management of Consecutive Exotropia and Refractive Amblyopia Confounded by Homonymous Hemianopsia

Morgan Ollinger, OD

BACKGROUND: Refractive amblyopia and strabismic amblyopia are conditions that are often treated with vision therapy in order to restore visual function. This case describes the management of a patient with consecutive exotropia and refractive amblyopia confounded by homonymous hemianopsia.

Case Data: A 22 year old female with cerebral palsy presented for a sensorimotor evaluation with complaints of eyestrain and blur, present for years. She reported that she had strabismic surgery as a young age. Examination findings are summarized in Table 1. The patient denied headaches, dizziness, and other neurological symptoms.

Management Options: At the patient was new to our clinic, imaging was ordered before any other management was pursued, in order to rule out serious causes of homonymous hemianopsia, as it had not been noted previously. Imaging showed discordant findings with cerebral palsy.

Discussion: When a homonymous hemianopsia is present in binocular vision dysfunction, it complicates prognosis. The field loss worsens the likelihood of achieving binocular vision, as peripheral function is significantly impacted. Visual pathway can be useful in improving visual function for hemianopsia patients, and may allow for more effective therapy. In this case, the patient reported subjective improvements in orientation, gait, and accuracy with yoked prism.

Contact Author:

Development of a New Visual Perceptual Test for Preschool Children Using a Tablet PC: A Pilot Study

Tomohito Okumura, MSOptom, MEd, FCOVD-I, FAAO

Tomoko Miura
Akihiro Kawasaki
Makoto Nakanishi
Eiji Wakamiya
Hiroshi Tamai

BACKGROUND: Computer based testing (CBT) refers broadly to the use of computers in test administration, scoring, and interpretation of results. With CBT, administration, scoring, and interpretation are done with computer software and a examinee's efforts than with paper-and-pencil testing (PPT). Assessments are computer-administered, with the test items stored on the computer. The examinee views the computer screen and interacts with the test through touch panel, keyboard and mouse. CBT is becoming more and more common in a variety of fields such as certification and entrance examinations, and could be useful for assessments of cognitive skills such as visual perception.

RESULTS: All subjects completed the two subsets without any technical error. Accuracy of the number of correct responses and accumulated response time (seconds) for all subjects are shown on the graph below. Age differences were found to be significant in accuracy and response time with the subsets. Histograms of scores on the two subsets are shown on graph 1 and 2.

CONCLUSIONS: The CBT with touch panel and status pen tasks with tablet PC could measure visual perceptual skills, identification and copying. The trial version will be developed based on the pilot study data. Accuracy and response time could be combined into a single, overall measure of performance by adding a time limitation to be tested for each item based on the results of response time. Since the effect between accuracy and response time was significant, it is necessary to consider the time needed. In the current version, 3 seconds was used for the response time. A minor adjustment might be needed for good validity of testing. With accumulating normative data, visual discrimination abilities might be able to upgrade to computer adaptive testing (CAT) which varies the difficulty of items according to the examinee's ability level as identified through his or her response to previous questions. A CAT can be considered to be used in time and still maintain a higher level of precision than a fixed version (Weiss, 1984).

Contact Author:

47th Annual Meeting Poster Preview

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When It Is More than Myopia: The Management of Stockler Syndrome in the Pediatric Patient

Flicia J. Timmermann, OD, FFAO

When It Is More than Myopia: The Management of Stockler Syndrome in the Pediatric Patient
Flicia J. Timmermann, O.D., F.A.A.O.
Midwestern University—Chicago College of Optometry

Introduction: Myopia or progression after optically by a hereditary condition defined by a refractive error of -3.00 to -6.00 diopters, and the eyes are axial and/or corneal curvature. Stockler Syndrome is a form of myopia that is associated with high degree of myopia and astigmatism. It is a form of myopia that is associated with high degree of myopia and astigmatism. It is a form of myopia that is associated with high degree of myopia and astigmatism.

Case History: A 10-year-old female with a history of myopia and astigmatism. She was referred for contact lens fitting. Her refractive error was -6.00 DS and -2.00 DC. She had a history of myopia and astigmatism. She was referred for contact lens fitting. Her refractive error was -6.00 DS and -2.00 DC.

Differential Diagnosis: Myopia, Astigmatism, Stockler Syndrome, Myopia, Astigmatism, Stockler Syndrome, Myopia, Astigmatism, Stockler Syndrome.

Management: Contact lens fitting, Myopia, Astigmatism, Stockler Syndrome, Myopia, Astigmatism, Stockler Syndrome, Myopia, Astigmatism, Stockler Syndrome.

Contact Author: ✉

11-year-old Patient with Retinitis Pigmentosa Mistaken for a Maligner: Lessons Learned

Rebecca Charlop OD
Alexandria Tilley OD
Sherry Bass OD, FFAO, FCOVD
M.H. Esther Han OD, FCOVD, FFAO

11-year-old Patient with Retinitis Pigmentosa Mistaken for a Maligner: Lessons Learned
Rebecca Charlop OD, Alexandria Tilley OD, Sherry Bass OD, FFAO, FCOVD, M.H. Esther Han OD, FCOVD, FFAO

Introduction: Retinitis pigmentosa (RP) is a group of inherited retinal dystrophies characterized by progressive rod-cone photoreceptor degeneration. It is a group of inherited retinal dystrophies characterized by progressive rod-cone photoreceptor degeneration.

Case Summary: An 11-year-old patient with a history of myopia and astigmatism. She was referred for contact lens fitting. Her refractive error was -6.00 DS and -2.00 DC. She had a history of myopia and astigmatism. She was referred for contact lens fitting. Her refractive error was -6.00 DS and -2.00 DC.

Differential Diagnosis: Myopia, Astigmatism, Retinitis Pigmentosa, Myopia, Astigmatism, Retinitis Pigmentosa, Myopia, Astigmatism, Retinitis Pigmentosa.

Management: Contact lens fitting, Myopia, Astigmatism, Retinitis Pigmentosa, Myopia, Astigmatism, Retinitis Pigmentosa, Myopia, Astigmatism, Retinitis Pigmentosa.

Contact Author: ✉

Neuro-Optometric Rehabilitation in a Patient with Acquired 4th Nerve Palsy

Kalyn Good, OD
Barry Tannen, OD, FCOVD

Neuro-Optometric Rehabilitation in a Patient with Acquired 4th Nerve Palsy
Kalyn Good, OD, Barry Tannen, OD, FCOVD | EyeCare Professionals, P.C., Hamilton Square, NJ

Introduction: Acquired 4th nerve palsy is a rare condition that results in a vertical diplopia. It is a rare condition that results in a vertical diplopia. It is a rare condition that results in a vertical diplopia.

Case History: A patient with a history of myopia and astigmatism. She was referred for contact lens fitting. Her refractive error was -6.00 DS and -2.00 DC. She had a history of myopia and astigmatism. She was referred for contact lens fitting. Her refractive error was -6.00 DS and -2.00 DC.

Differential Diagnosis: Myopia, Astigmatism, 4th Nerve Palsy, Myopia, Astigmatism, 4th Nerve Palsy, Myopia, Astigmatism, 4th Nerve Palsy.

Management: Contact lens fitting, Myopia, Astigmatism, 4th Nerve Palsy, Myopia, Astigmatism, 4th Nerve Palsy, Myopia, Astigmatism, 4th Nerve Palsy.

Contact Author: ✉

Converging Cars: Adult Acute Onset Diplopia and Management with Fresnel Prism

Jessica Min, OD
Shmaila Tahir, OD, FFAO

Converging Cars: Adult Acute Onset Diplopia and Management with Fresnel Prism
Jessica Min, OD, Shmaila Tahir, OD, FFAO

Abstract: A patient with a history of myopia and astigmatism. She was referred for contact lens fitting. Her refractive error was -6.00 DS and -2.00 DC. She had a history of myopia and astigmatism. She was referred for contact lens fitting. Her refractive error was -6.00 DS and -2.00 DC.

Case Summary: An adult patient with acute onset diplopia. She was referred for contact lens fitting. Her refractive error was -6.00 DS and -2.00 DC. She had a history of myopia and astigmatism. She was referred for contact lens fitting. Her refractive error was -6.00 DS and -2.00 DC.

Management: Contact lens fitting, Myopia, Astigmatism, Diplopia, Myopia, Astigmatism, Diplopia, Myopia, Astigmatism, Diplopia.

Contact Author: ✉

(Full-size Poster can be accessed by clicking on the poster image.)

Management of Binocular Vision & Oculomotor Disorders in a Patient with Parkinson's Disease

Maggie Francisco, OD
Aubrey Breithaupt, OD

Management of Binocular Vision & Oculomotor Disorders in a Patient with Parkinson's Disease
Maggie Francisco, OD; Aubrey Breithaupt, OD
The Optometric Center for Vision Therapy, Austin, Texas
UTW Neurology School of Optometry, San Antonio, Texas

ABSTRACT
Parkinson's disease is a neurodegenerative condition that causes difficulty with motor control as well as visual disturbance and dysfunction. This poster will discuss the management of binocular vision and oculomotor disorders in a patient with Parkinson's disease. The patient's visual symptoms include double vision and diplopia. The patient's symptoms are managed with prism and vision therapy. The patient's symptoms are managed with prism and vision therapy. The patient's symptoms are managed with prism and vision therapy.

BACKGROUND
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DISCUSSION
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CONCLUSION
Parkinson's disease is a neurodegenerative condition that causes difficulty with motor control as well as visual disturbance and dysfunction. This poster will discuss the management of binocular vision and oculomotor disorders in a patient with Parkinson's disease. The patient's visual symptoms include double vision and diplopia. The patient's symptoms are managed with prism and vision therapy. The patient's symptoms are managed with prism and vision therapy.

Utilizing Binocular Double Vision Field for Management of Diplopia in Chronic Progressive External Ophthalmoplegia

Sepinood Sebghati, DDS, OD
Eric VA Medical Center

Utilizing Binocular Double Vision Field for Management of Diplopia in Chronic Progressive External Ophthalmoplegia
Sepinood Sebghati, DDS, OD
Eric VA Medical Center

ABSTRACT
Chronic progressive external ophthalmoplegia (CPEO) is a mitochondrial disorder characterized by bilateral progressive ptosis and diffuse ophthalmoplegia. Patients are unaware of diplopia and report double vision. This case demonstrates the application of binocular double vision field (BDVF) for managing the size and position of a restricted field in management of diplopia.

BACKGROUND
Ophthalmoplegia is associated with the spectrum of mitochondrial diseases such as CPEO, CPEO plus and Kearns-Sayre syndrome (KSS). The prevalence of an mitochondrial disease is 1/5000. They are caused by mutations of mitochondrial or nuclear DNA. In CPEO, isolated mitochondrial DNA (mtDNA) is present in extraocular muscle. The diagnosis is based on mtDNA testing, muscle biopsy finding of ragged fibers, and biochemical abnormalities of oxidative phosphorylation.

DISCUSSION
This case report describes the management of diplopia in a patient with CPEO. The patient's symptoms are managed with prism and vision therapy. The patient's symptoms are managed with prism and vision therapy.

CONCLUSION
Parkinson's disease is a neurodegenerative condition that causes difficulty with motor control as well as visual disturbance and dysfunction. This poster will discuss the management of binocular vision and oculomotor disorders in a patient with Parkinson's disease. The patient's visual symptoms include double vision and diplopia. The patient's symptoms are managed with prism and vision therapy. The patient's symptoms are managed with prism and vision therapy.

Contact Author: ✉

Contact Author: ✉

Applying Narrative and Integrative Medicine to Neurology Referrals for Visual Disorders in Post-Concussion Syndrome

Darrell G. Schlange, OD

Contact Author: ✉

(Full-size Poster can be accessed by clicking on the poster image.)

An Inter-Professional Investigation. Visual Tracing: Is There a Difference Between Children with Sensory Processing Disorder (SPD) and Typical Development?

Kristy Remick-Waltman, OD, FCOVD
Kimberly Walker, OD, FCOVD
Donna Redman-Bentley PT, PhD
Dayle Armstrong, PT, MS, DPT

Introduction
Sensory processing disorder (SPD) includes impairments that involve challenges in modulation, integration, organization, and discrimination of sensory input. A child may have difficulty responding appropriately to sensory input, such as touching, with both activities and interests. Children with SPD may exhibit difficulty organizing and responding to sensory input, such as touching, with both activities and interests. Children with SPD may exhibit difficulty organizing and responding to sensory input, such as touching, with both activities and interests.

Purpose
To investigate the difference in scores on the VTI in children with Sensory Processing Disorder (SPD) as compared to typically developing (TD) children.

Subject Population
148 children, ages 7-11 years old, were recruited from the surrounding community. 75 children were normal, typically developing and 73 were identified as having ADHD, SPD, or a score of ≥ 142 on the SPQ. Children were excluded if they had blindness, cerebral palsy, autism, or other sensory disorder within six months, or physical disabilities. See Figure 2 for demographic data.

Methods
VTI data were analyzed for 148 children in the sensory group. Results for the Visual Tracing Test demonstrated that children with SPD have decreased visual tracing ability compared with typically developing children. The results of a t-test indicated a statistically significant difference in age equivalent scores (AES) between the 2 groups (SPD: Mean = 10.1, SD = 1.8; TD: Mean = 11.2, SD = 1.2). Typical (n=75) M = 8.52, SD = 2.29.

Results
VTI data were analyzed for 148 children in the sensory group. Results for the Visual Tracing Test demonstrated that children with SPD have decreased visual tracing ability compared with typically developing children. The results of a t-test indicated a statistically significant difference in age equivalent scores (AES) between the 2 groups (SPD: Mean = 10.1, SD = 1.8; TD: Mean = 11.2, SD = 1.2). Typical (n=75) M = 8.52, SD = 2.29.

Conclusion & Discussion
Our study found that children with SPD have a statistically significant difference in visual tracing ability and scores on the VTI as compared with typically developing children ages 7-11. Few studies have investigated functional status and eye tracking utilizing the Visual Tracing Test in children with SPD. According to Laganas, et al., 8% of children with reading disability, normal eye use on the Goldfish Visual Tracking Test (GV) is compared to 25% of TD control group, and 34% of children with Developmental Coordination Disorder (DCD) control for on the VTI as compared with 25% in the TD group. 10 participants who had a deficit in eye coordination or eye tracking or reduced facial vision in children with SPD. Further research is needed to determine if these measures can be used to identify children with SPD. Supplemental testing, including developmental history and possible inter-professional referrals are recommended for pediatric patients with SPD symptoms with reduced eye tracking. Similarly health professionals including physical therapists, occupational therapists, speech-language pathologists, and psychologists are advised to perform oculomotor testing on SPD patients. SPD patients should be referred to an optometrist to perform a visual skill evaluation including the VTI. Alternatively the KID should recognize the potential correlation between reduced scores on the VTI and SPD.

References
1. Remick-Waltman, Kristy, OD, FCOVD, et al. (2017). An Inter-Professional Investigation. Visual Tracing: Is There a Difference Between Children with Sensory Processing Disorder (SPD) and Typical Development? *Journal of Optometric Practice*, 94(10), 10-15.

Acknowledgment & Contacts
We would like to thank the following individuals for their assistance in conducting this study: Kristy Remick-Waltman, OD, FCOVD; Kimberly Walker, OD, FCOVD; Donna Redman-Bentley, PT, PhD; Dayle Armstrong, PT, MS, DPT.

Contact Author:

Prescribe or not to Prescribe: A case report over an intermittent exotropia with accommodative dysfunction

Alex Conley, OD

Background
Intermittent exotropia (IXT) occurs when one or both of the eyes deviate outwardly some of the time. Accommodative insufficiency (AI) is the inability to focus or sustain focus at near. When the two are present concurrently in a patient, it can be challenging to determine what the correct course of action is when considering to prescribe lenses for near work due to how plus lenses affect convergence ability. This case will present management of a patient with IXT and AI under Vision Therapy.

Case Details
Case History: A 13 year old Native American male patient reported difficulty reading during school and headaches that were occurring throughout the week near and mid-day.
COVD Quality of Life Checklist: 32
WAK: 20/20 OD, 20/20 OS distance & near uncorrected
Phoria: PERLA: +1.00
COMS: SAFE ODS
Confrontation VF: FTFC ODOG

Background
Dry: +0.25 OD 20/20
+0.25 OS 20/20
Wet: +0.75 OD 20/20
+0.75 OS 20/20

Binocular Testing:
<C> Distance: 10 ILKT Near: 16 ILKT Trope 30%
<N>C: Broke at 8cm, increasing with each attempt after
<S>C: 30 sec arc with VOT circles
<V>C: +0.75DS; N/A/PRA +1.00; 1.00
<A>C: 3/1
<Accommodative Facility: could not clear +2.00
w/ +1.25 OD, 0.50 OS, 60pm OD, Regm
<Decades/Pursuits: Smooth and accurate ODOG

Verage activities
<V>C: 10/10
<S>C: 10/10
<N>C: 10/10
<A>C: 10/10
<Accommodative Facility: could not clear +2.00
w/ +1.25 OD, 0.50 OS, 60pm OD, Regm
<Decades/Pursuits: Smooth and accurate ODOG

Conclusion
This case shows the benefit of starting a vision therapy program without the need for corrective lenses for near work. If lenses are not going to be prescribed it is important to start therapy and stress accommodative and convergence abilities at the beginning of the therapy. This program was designed to specifically increase the patient's control and ability of the accommodative and vergence systems, in order to decrease the symptoms as fast as possible. A variety of activities were created in order to keep the therapy more than 30 minutes and to maintain the patient's involvement. Once the symptoms had subsided, the therapy was then altered to increase stamina of accommodation and vergence ranges.

Contact Author:

Alternative Uses of Bi-nasal Occlusion and Vision Therapy to Manage a Patient with Dizziness

Kelly Varney, OD
Mary Bartuccio Valentino OD, FAO, FCOVD

Mary Bartuccio Valentino OD, FAO, FCOVD

Introduction
Dizziness is a common complaint that can significantly impact a patient's quality of life. It is often associated with vestibular dysfunction, but can also be caused by visual factors. This case report describes the successful management of a patient with dizziness through the use of bi-nasal occlusion and vision therapy.

Case Presentation
A 45-year-old female patient presented with a 6-month history of dizziness. She reported that the dizziness was worse when she was reading or looking at a computer screen. She also reported that she had difficulty with balance and coordination. Her medical history was unremarkable, and she was on no medications. Her physical examination was normal, and her audiogram was within normal limits. Her vestibular evoked myogenic potentials (VEMP) were normal. Her optometric examination revealed a significant accommodative lag and a small angle of convergence insufficiency.

Diagnosis
The patient's symptoms were consistent with a diagnosis of dizziness secondary to visual factors. The patient's dizziness was likely caused by the accommodative lag and the convergence insufficiency, which were causing her to experience visual stress and fatigue. This, in turn, was leading to her dizziness and balance problems.

Management
The patient was initially treated with bi-nasal occlusion and vision therapy. The bi-nasal occlusion was used to reduce the accommodative lag and the convergence insufficiency. The vision therapy was used to improve the patient's visual skills and reduce her visual stress and fatigue. The patient's symptoms improved significantly after 12 weeks of treatment.

Conclusion
This case report demonstrates the effectiveness of bi-nasal occlusion and vision therapy in the management of dizziness. The patient's symptoms were successfully managed through the use of these techniques, and she was able to return to her normal activities of daily living.

Contact Author:

4th Annual Meeting Poster Preview

(Full-size Poster can be accessed by clicking on the poster image.)

The Interdisciplinary Approach to Care of a Child with Cortical Visual Impairment Secondary to Abusive Head Trauma

Adrienne Chan, OD

The poster displays a title slide, an introduction, a patient history, and a conclusion. It includes a photograph of a young child and a line graph showing visual evoked potentials. The text describes the interdisciplinary approach to the care of a child with cortical visual impairment secondary to abusive head trauma.

Contact Author: [Email Icon]

Surgically Assisted Vision Therapy for the Adult Strabismic Patient

Bruce Meyer, OD, FCOVD
Joseph Napolitano, MD

The poster is divided into sections: Background, Case Summary, Treatment Plan, Discussion, Conclusions, and References. It details the surgical and therapeutic approach for an adult strabismic patient, including a table of visual acuity and a list of references.

Contact Author: [Email Icon]

Clinical Management of a Pediatric Case of Strabismic Syndrome

Breanne B. McGhee, OD, MEd

The poster includes a title slide, a background section, a case summary, a discussion, and a conclusion. It describes the clinical management of a pediatric case of strabismic syndrome, including a table of visual evoked potentials and a list of references.

Contact Author: [Email Icon]

Batter Up: Implementing a Sports Vision Training Program After a Traumatic Brain Injury

Riyad Khamis, OD

The poster is divided into sections: Background, Vision Therapy Plan, Case Details, Goals, Sports Vision Integration, and Conclusion. It details the implementation of a sports vision training program for a patient with a traumatic brain injury, including a table of visual evoked potentials and a list of references.

Contact Author: [Email Icon]

47th Annual Meeting Poster Preview

(Full-size Poster can be accessed by clicking on the poster image.)

Optometric Management of a Patient with Anisometric Amblyopia

Corasol Marie S. Uy, OD, VSI, COVD
Charlie L. Ho, OD, FIACLE, ME, FPAO, LLB

“Optometric Management of a Patient with Anisometric Amblyopia”
Corasol Marie S. Uy, OD, VSI, COVD; Charlie L. Ho, OD, FIACLE, ME, FPAO, LLB
Vision Science Institute - Philippines

BACKGROUND: Amblyopia is a condition of the visual system that is characterized by a decrease in the visual acuity of one eye. It is caused by abnormal visual stimulation during the period of visual development. The most common cause of amblyopia is strabismic amblyopia, which is caused by a misalignment of the eyes. Other causes include refractive amblyopia, which is caused by a significant difference in the refractive error between the two eyes, and deprivation amblyopia, which is caused by a physical obstruction of the visual pathway.

TERAPY GOALS: 1. Establish functional binocular vision. 2. Improve visual acuity. 3. Improve reading and school performance. 4. Reduce symptoms. 5. Establish functional binocular vision. 6. Improve visual acuity. 7. Improve reading and school performance. 8. Reduce symptoms.

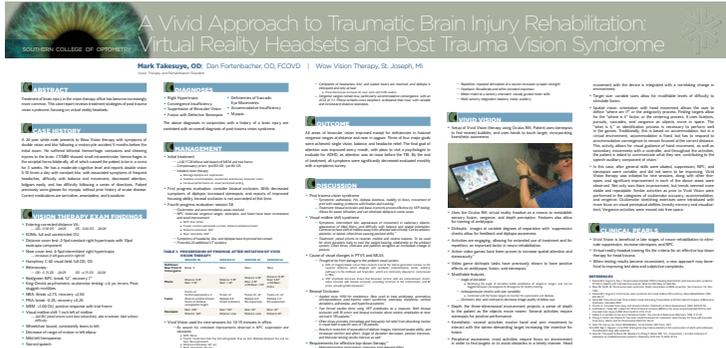
TERAPY PROGRAM ACTIVITIES: 1. Vision Therapy. 2. Reading Therapy. 3. School Performance. 4. Visual Acuity. 5. Binocular Vision. 6. Reading. 7. School. 8. Performance. 9. Visual. 10. Acuity. 11. Binocular. 12. Vision. 13. Reading. 14. School. 15. Performance. 16. Visual. 17. Acuity. 18. Binocular. 19. Vision. 20. Reading. 21. School. 22. Performance. 23. Visual. 24. Acuity. 25. Binocular. 26. Vision. 27. Reading. 28. School. 29. Performance. 30. Visual. 31. Acuity. 32. Binocular. 33. Vision. 34. Reading. 35. School. 36. Performance. 37. Visual. 38. Acuity. 39. Binocular. 40. Vision. 41. Reading. 42. School. 43. Performance. 44. Visual. 45. Acuity. 46. Binocular. 47. Vision. 48. Reading. 49. School. 50. Performance. 51. Visual. 52. Acuity. 53. Binocular. 54. Vision. 55. Reading. 56. School. 57. Performance. 58. Visual. 59. Acuity. 60. Binocular. 61. Vision. 62. Reading. 63. School. 64. Performance. 65. Visual. 66. Acuity. 67. Binocular. 68. Vision. 69. Reading. 70. School. 71. Performance. 72. Visual. 73. Acuity. 74. Binocular. 75. Vision. 76. Reading. 77. School. 78. Performance. 79. Visual. 80. Acuity. 81. Binocular. 82. Vision. 83. Reading. 84. School. 85. Performance. 86. Visual. 87. Acuity. 88. Binocular. 89. Vision. 90. Reading. 91. School. 92. Performance. 93. Visual. 94. Acuity. 95. Binocular. 96. Vision. 97. Reading. 98. School. 99. Performance. 100. Visual. 101. Acuity. 102. Binocular. 103. Vision. 104. Reading. 105. School. 106. Performance. 107. Visual. 108. Acuity. 109. Binocular. 110. Vision. 111. Reading. 112. School. 113. Performance. 114. Visual. 115. Acuity. 116. Binocular. 117. Vision. 118. Reading. 119. School. 120. Performance. 121. Visual. 122. Acuity. 123. Binocular. 124. Vision. 125. Reading. 126. School. 127. Performance. 128. Visual. 129. Acuity. 130. Binocular. 131. Vision. 132. Reading. 133. School. 134. Performance. 135. Visual. 136. Acuity. 137. Binocular. 138. Vision. 139. Reading. 140. School. 141. Performance. 142. 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47th Annual Meeting Poster Preview

(Full-size Poster can be accessed by clicking on the poster image.)

A Vivid Approach to Traumatic Brain Injury Rehabilitation: Virtual Reality Headsets and Post Trauma Vision Syndrome

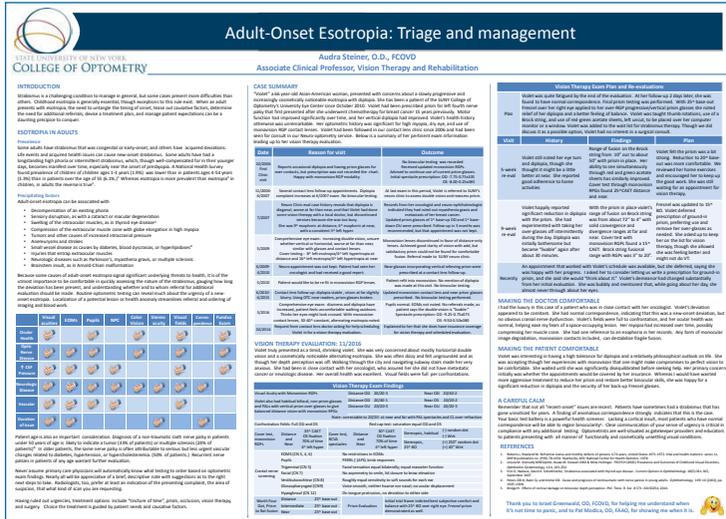
Mark Takesuye, OD
Dan Fortenbacher, OD, FCOVD



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Adult-Onset Esotropia: Triage and Management

Audra Steiner, OD, FCOVD



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Vestibular Neuritis and Vision Therapy

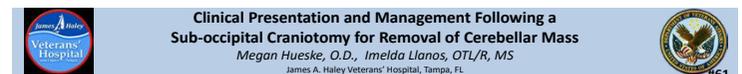
Dominick M Maino, OD, MED, FAAO, FCOVD-A

Kelsey Frederick; Stephanie Lyons

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Clinical Presentation and Management Following a Sub-occipital Craniotomy for Removal of Cerebellar Mass

Megan Hueske, OD
Imelda Llanos, OTL/R, MS



Background
Ependymomas are tumors that arise from the central nervous system from the fourth ventricle or spinal cord. Approximately 1,500 people in the United States are diagnosed with an ependymoma each year. They can occur in children and adults, and are more common in Caucasians. Ependymomas can compress on multiple structures, most commonly involving the cerebellum. The cerebellum has many functions including motor co-ordination, motor control, balance, and sensory perception. The cerebellum also has a big impact on eye movements as it is responsible for gaze holding (reflex), saccades, pursuit, processing vestibular signals and vestibulo-ocular reflex (VOR) responses.

Case History
A 40 year old white female reports to the polytrauma optometry clinic with complaints of diplopia following a sub-occipital craniotomy to remove an ependymoma in the posterior fossa. Prior to the operation, the patient experienced dizziness, gait instability, and headaches for three to four years. A few months prior to surgery, lumbosacral and left-sided blurry vision started to manifest. Her medical history was significant for diabetes, hypertension, hypothyroidism, sleep apnea, and benign paroxysmal positional vertigo (BPPV). These disorders were being managed appropriately by her primary care provider and physical therapist trained in vestibular therapy. Her ocular history included high myopia, anisometropia, and recurrent cataracts.

Clinical Findings
On initial presentation, patient presented with a pair of one year old single vision glasses, which gave her 20/20 vision monocularly, but diplopia when both eyes were open. She had difficulty with Eubank due to aural dysfunction and nystagmus that increased when looking to the right. A left gaze palsy and left hypertropia, worse on right gaze and left head tilt, indicated a right paramedian pontine reticular formation (PPRF) and a left cranial nerve palsy, respectively. Eye movement disorders were confirmed by a Neuro-Ophthalmologist. The patient had roughly 8.5 prism diopters left hypertropia and 6 prism diopters of esotropia. Since the patient could not obtain clear, comfortable, single vision with the use of prism, a patch was given to the patient to substitute the diplopia. 5 base out OD and 7 base down OD Fresnel prisms were added to patient's habitual distance glasses and 8.5 OD Fresnel prism to the near glasses one month after initiation of vision rehabilitation and physical therapy. 4 months later, the patient complained of intermittent diagnosed diplopia at distance with her current glasses. New glasses were ordered at follow up with 5.0 OD and 7.5 OD ground in prismes that best both eyes. This helped with vision rehabilitation. The patient required most of her right gaze.

Discussion
Symptoms are variable depending on tumor growth. Appropriate assessment is needed to determine the best treatment for patient. Visual Rehabilitation can improve eye movement disorders, binocular vision function, and improve quality of life and comfort. Improvement in oculomotor function leads to early transition to use of prism correction and promotes ease of therapy. An interdisciplinary approach to rehabilitation is key to attaining the best outcomes in patient rehabilitation.

Conclusion
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References
1. Ostrom QT, Cote TR, Liao P, et al. CBTRUS statistical report: primary brain and central nervous system tumors diagnosed in the United States in 2008-2012. Neuro Oncol. 2015; 17(10):1661-1682.
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Private Practice Residency in Vision Therapy & Rehabilitation

S. Moshe Roth, OD, FCOVD

Family Eye Care Private Practice Residency in Vision Therapy & Rehabilitation

Dr. S. Moshe Roth, OD, FCOVD
3111 Route 9 North
Old Bridge, NJ 08857

Vision Therapy & Rehabilitation

Vision Therapy & Rehabilitation is the primary focus of the program.

We see children and adults with:

- Developmental visual skills issues (Autism, Down's Syndrome, Dyslexia, Specific Needs)
- Binocular Dysfunction
- Learning Related Vision Problems
- Strabismus and Anisometropia
- Acquired or Traumatic Brain Injury, Concussion

You will expand your ability to evaluate and treat individuals in order to help them:

- Develop skills in Vision Therapy
- Regain skills with Neuro-Ophthalmic Rehabilitation

Practice Management

The practice management portion of the residency will give you insights and experience in running a successful practice.

You will have opportunities to:

- Treat alongside our experienced Vision Therapists
- Interact with other professionals such as OT, PT, neuropsychologists, physicians, educators, etc.
- Attend conferences, continuing education and committee meetings
- Make presentations to colleagues and other professionals

This residency will also enable you to maintain and develop skills in:

- Primary Eye Care and Family Practice Optometry
- General Ophthalmology and traditional optometry for children and adults
- Medical Ophthalmology: treat individuals with glaucoma, conjunctivitis, diabetic eye disease, dry eye, punctal plugs, eye emergencies, etc.
- Our clinic is equipped with OCT, Optomap, VEP, BCC, Visual Fields, Topographic, Pachymetry, etc.
- Myopia control and orthokeratology for children
- Ophthalmology for adults: myopic, hyperopic and multifocal IOLs
- Specialty lenses i.e. keratoconus, scleral lenses, etc.

Program Length: 54 weeks

Clinical Teaching Opportunities: Supervise optometry residents in running a successful practice.

Didactic Activities & Opportunities

- CEP Coursework
- Participation in attend approved education meetings: COVD, NORA
- Patient case review sessions
- Vision Therapy practice management discussion sessions

We welcome inquiries and invite you to visit with us to arrange a visit, please call our office at 1-732-878-2000 or contact Dr. Roth via email: EyeCare@familyeye.com

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(Full-size Poster can be accessed by clicking on the poster image.)

Survey of New Graduates Readiness to Provide InfantSEE® Exams

Cassidy Kesler
Laura Langford
Alissa Proctor, OD, FAO

Survey of New Graduates Readiness to Provide InfantSEE Exams
Cassidy Kesler, Laura Langford, Alissa Proctor, OD, FAO
Northeastern State University Oklahoma College of Optometry

Abstract
The goal of this research was to assess the preparedness of recent graduates to provide InfantSEE exams in an effort to help the infant response and expand the program. Data collected from survey questions were analyzed to determine the readiness of new graduates to provide InfantSEE exams. The survey was distributed to all graduates of optometry schools in the U.S. who were currently practicing.

Methods
The survey posed twenty-two questions and was emailed to all optometry schools in the U.S. who were currently practicing. The primary concern for each optometry school and state association was asked to distribute the survey to its alumni and members. Responses were collected and compiled by Survey Monkey into separate categories to be further analyzed. Categories the responses were organized into are as follows:

- Graduation Year versus Comfort
- Gender versus Comfort
- Percentage of InfantSEE Providers by Gender and Graduation Year
- Percentage of InfantSEE Providers by Overall Respondents

Results
216 optometrists participated in the survey. The majority of respondents were female, interestingly, male respondents rated their comfort level with a child higher than their female counterpart. A chart summarizing the distribution of female versus male respondents and an overall breakdown of their preparedness to see infants on a scale of 1 to 5 is shown in FIGURE 2. 82.25% of participants are members of their state's OD, 47.69% are registered InfantSEE providers. Lack of financial resources, lack of appropriate equipment, and lack of staff preparedness were the most frequently listed reasons new graduates were not InfantSEE providers. 80.0% of InfantSEE providers see 0-25 cases of strabismic, acute disease diagnosed during an infant's examination. Newly graduated optometrists were asked to rate on a scale from 1 to 10 how prepared they were to an InfantSEE provider. The largest amount of optometrists answered 8 (38.9%), with 7 (32.7%) and 10 (46.7%) responses being close behind.

Anisocoria & Horner's Syndrome

Joseph N. Trachtman, OD, PhD, FCOVD-A

ANISOCORIA & HORNER'S SYNDROME

ABSTRACT
Approximately 25% of the population having strabismic anisocoria can be made a differential diagnosis between a normal physiological anisocoria and a pathological condition.

Case Summary
Patient 1: A 35-year-old male's chief complaint was a history of anisocoria first identified by his mother in 1983. Examination revealed 2.5 D of anisocoria with a normal pupillary reflex. There was no evidence of anisocoria at rest, and a normal pupil D.D. in illumination of 1,000 photostimulus OD, remained no pupil dilation OD or OS.

Case Summary
Patient 2: A 25-year-old male presented with a 2.5 D of anisocoria. The patient had an abnormal relationship with his father, who was the first to notice the anisocoria. The patient had a normal pupillary reflex, and there was no evidence of anisocoria at rest. Examination revealed 1.00 D of anisocoria OD, with no effect OD. Upon further questioning of the patient and his mother, it was learned that the patient had a normal pupillary reflex at rest, and a normal pupil D.D. in illumination of 1,000 photostimulus OD, remained no pupil dilation OD or OS.

Case Summary
Patient 3: A 25-year-old male had had three different anisocoria and a history of anisocoria, which is consistent with the symptoms of anisocoria. Anisocoria, when the patient is at rest, was 2.5 D of anisocoria OD, and 2.5 D of anisocoria OS.

Discussion
This survey attempted to investigate how prepared recent graduates felt to provide infant vision care and recruitment by the ADA how they can better serve new optometrists in their quest to become InfantSEE providers. While the survey posed pertinent questions regarding preparedness, results indicate preparedness is not the primary concern amongst new graduates. Education and informational issues are an easy-to-access format, along with continuing education courses in order to better serve their pediatric population. Some optometrists are not prepared to provide InfantSEE services, whereas, a few others are prepared to provide InfantSEE services. The need for optometric-related services information and opportunities was the concern expressed by newly graduated optometrists attending further their clinical skills.

References
Schwartz D, Brown S, Brown L, Lauer R, Hester S, Springer J, et al. A new method for strabismic anisocoria: from measurement to treatment. *Journal of Clinical Optometry*. 2007; 8(1): 10-15.

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Schwartz D, Brown S, Brown L, Lauer R, Hester S, Springer J, et al. A new method for strabismic anisocoria: from measurement to treatment. *Journal of Clinical Optometry*. 2007; 8(1): 10-15.

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Screening for Suboptimal Learning Related Vision Skills in a Graduate School Population

Bennett McAllister OD, FAO
Kristi Jensen OD, FCOVD
Sandra Farah-Franco, DDS, MS
Brent Fung, DDS

Screening for Suboptimal Learning Related Vision Skills in a Graduate School Population

Bennett McAllister OD, FAO^{1,2} Kristi Jensen OD, FCOVD^{1,3} Sandra Farah-Franco DDS, MS^{2,4} Brent Fung DDS^{1,2,4}

Background
This poster is a preliminary presentation of our ongoing project in which we have screened incoming graduate students each of the past three years. Rather than focusing on the minimum necessary as often is done in general population screenings, we chose to screen for optimal visual performance skills. Our visual skills screening protocol consisted of nine individual data points that were collected upon physical examination as well as self-reported data from the COVID-19 nineteen question symptom survey of incoming first year dental medicine students. While all the graduate colleges have intense visual demands for learning, the College of Dental Medicine students face especially fine clinical tasks with critical visual motor coordination. In addition, anecdotal stories of dental medicine students struggling due to sub-optimal visual skills led to a partnership with the College of Dental Medicine in designing this study.

Methods
Western University of Health Sciences has nine graduate level health colleges. The College of Optometry in partnership with the College of Dental Medicine received IRB approval for this clinical study which began in 2013. Each incoming class was given a one-hour visual health orientation during their Welcome Week activities. A vision screening was subsequently performed. Our screening included the data points listed in Figure 1, which also shows the referral criteria in red. Within each of the data points, we used criteria from the 2nd edition of *Schiffman and Wink's Clinical Management of Binocular Vision*. If any one point was outside of this range, a referral was made for a comprehensive vision evaluation. Our valid N was 200 and statistical test used

Results Description
A high percentage of incoming graduate students did not pass our functional vision screening for optimal visual skills. The most significant and sensitive screening point was the near VA. 50% of students failed the near VA screening. 75% of students failed the near VA screening. 75% of students failed the near VA screening. 75% of students failed the near VA screening.

Discussion and Conclusion
Our data yielded some surprising results. Our initial hypothesis predicted NFD, NFD and local stereo as the most highly correlated with optimal learning skills. Our results, however, showed COVID-19 and near visual acuity as the most sensitive and specific.

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Accommodation & Blood Pressure

Joseph N. Trachtman, OD, PhD, FCOVD-A

ACCOMMODATION & BLOOD PRESSURE

ABSTRACT
The purpose of this study was to determine the relationship between accommodation and blood pressure. The study was conducted on a group of 100 individuals who were screened for accommodation and blood pressure. The results showed a significant correlation between the two variables.

Methods
The study was conducted on a group of 100 individuals who were screened for accommodation and blood pressure. The results showed a significant correlation between the two variables.

Results
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Conclusion
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(Full-size Poster can be accessed by clicking on the poster image.)

Massachusetts Vision Screening Protocols: Should additional tests be added?

Kathleen O'Leary, OD, FAAO
Anne Reuter, OD



Massachusetts Vision Screening Protocols: Should additional tests be added?

Kathleen O'Leary, OD, FAAO and Anne Reuter, OD
MCPHS University, School of Optometry, Worcester, MA



Purpose: Massachusetts College of Pharmacy and Health Sciences (MCPHS), School of Optometry, has been conducting school vision screenings at schools in and around the Worcester, MA area since September of 2013. A screening protocol was established at MCPHS that included all of the tests that are required by the state of Massachusetts, along with additional procedures. These will help to identify any child with either a significant binocular vision dysfunction or refractive error, as well as any abnormal findings relating to ocular health.

The tests performed that were required by the state of Massachusetts included:

- Preschool and Kindergarten: Monocular distance visual acuity (critical line 20/30, children 48 months and older) and Stereopsis with Random Dot E
- First through Third Grade: Monocular distance visual acuity (critical line 20/30), binocular near visual acuity (critical line 20/30) and Stereopsis with Random Dot E
- Fourth through Twelfth Grade: Monocular distance visual acuity (critical line 20/30) and binocular near visual acuity (critical line 20/30)

Additional tests that MCPHS School of Optometry performed included:

- Monocular Near Visual Acuity
- Pupils
- Extraocular Muscle Movements
- Cover Test and Distance
- Cover Test at Near
- Color Vision
- Stereopsis is done on all students regardless of grade
- Distance Refractive
- Gross External Ocular Health Assessment
- Internal Ocular Health Assessment: Direct Ophthalmoscopy

Each test above has certain pass/fail criteria that was collected on every child screened. The results of each test above, along with the age of the student, grade and gender were recorded and stored for comparative data analysis.

Results
Data was analyzed on 400 students that were screened. Of these 400 students, 275 (69%) passed both what was required by Massachusetts and the additional tests that MCPHS performed. 85 (21%) students failed one or more of the Massachusetts required tests. 40 (10%) students passed the Massachusetts vision screening requirements, but failed one or more of the additional tests that MCPHS conducts. The majority of these 40 students failed retinoscopy (45%), followed by cover test (17.5%) and color vision (17.5%). All students who failed color vision were males. One student failed both retinoscopy and cover test. Additional reasons students failed included appearance of a large c/f ratio, anisocoria, subjective complaints of floaters, and poor/jerky extraocular muscle movements.

Conclusion
In addition to the Massachusetts Vision Screening protocol, MCPHS will continue to do retinoscopy and cover test on all students. We will consider conducting color vision only on males. The rationale behind this conclusion is that retinoscopy can pick up uncorrected refractive errors that could be causing vision problems that interfere with learning, as well as uncorrected hyperopia that may not manifest in poor vision because the students is able to accommodate; cover test can pick up intermittent strabismus, higher esophoria and esophoria that would otherwise go undetected if stereopsis was the only form of binocular test being conducted, resulting in a higher yield of visually impaired students during screenings, while cutting down on absolute time needed to screen each child (as compared to MCPHS's extended protocol above).

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Mysterious Case of Sudden Diplopia After Surgery ... of the Foot???

Megan Sumrall Lott, OD

Abstract
A healthy 20-year-old male presented to my office with diplopia in his right eye that began 2 weeks after he underwent foot surgery. The diplopia was horizontal and worse in the right eye. He had no other symptoms. The diplopia was not relieved by eye patching or covering either eye and became more noticeable on left gaze. A change in the diplopia was noted during the examination. The diplopia was not relieved by either eye patching or covering either eye.

Case Report
20-year-old male presented to my office with diplopia in his right eye that began 2 weeks after he underwent foot surgery. The diplopia was horizontal and worse in the right eye. He had no other symptoms. The diplopia was not relieved by eye patching or covering either eye and became more noticeable on left gaze. A change in the diplopia was noted during the examination. The diplopia was not relieved by either eye patching or covering either eye.

cont.
After a series of MRIs, MRIs and ERG, specialists, and on work-up, the diagnosis was multiple sclerosis (MS). The patient reported that he had never had any symptoms of MS. The patient reported that he had never had any symptoms of MS. The patient reported that he had never had any symptoms of MS.

Multiple Sclerosis and Neuromyelitis Optica
Multiple sclerosis (MS) is a chronic inflammatory disease of the central nervous system. It is characterized by the presence of demyelinating plaques in the white matter of the brain and spinal cord. The disease is characterized by relapsing and remitting symptoms. The disease is characterized by relapsing and remitting symptoms. The disease is characterized by relapsing and remitting symptoms.

Contact Author:

Vestibular Therapy Techniques to Treat Esotropia

Jamie Bergmark, OD

Contact Author: