

# Diplopia Management

## 1 hour

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### Course Description:

During this lecture, we will discuss the role of using prism to alleviate diplopia. We will describe the testing used to evaluate a diplopic patient. We will use a stepwise approach to investigate the etiology of the double vision which will determine what type of prism to utilize. The advantages of ground-in, Fresnel and occlusion will be addressed. Finally, cases will be used to illustrate how to prescribe prism for common neuro-ophthalmic and neurologic disorders.

### Learning Objectives:

- Demonstrate comfort in evaluating a patient with double vision
- Identify and explain the three non-surgical way to treat diplopia
- Pinpoint advantages and disadvantages of permanent and temporary prism
- Specify when a patient should be referred for a surgical evaluation for diplopia

### OUTLINE:

#### Double Vision Evaluation

- History is key
  - Laterality
  - Direction
  - Duration
  - Location
  - History of eye turn or abnormal head posture
  - Associated pain, headache or neurologic symptoms
- Examination tools
  - Sensory
    - Testing ability to have fusion
    - Worth 4-dot
    - Randot stereopsis
  - Motor
    - Ductions/Versions
    - Cover testing
      - Unilateral – tropia
        - Direction and duration
      - Alternating – phoria
        - Helpful for evaluating comitancy and patterns
      - Neutralize with prism

- Maddox rod
      - Similar to alternating cover test
        - More subjective measurement
  - Exophthalmometry
    - Exophthalmos
  - Eyelid evaluation
    - Associated ptosis
  - Double Maddox rod
    - Evaluate for torsion

### **Treating Double Vision**

- Goal is binocular vision
- Prism
  - Put apex of prism where eye is
  - May need two pairs of glasses if deviation is different at distance and near
  - Fresnel
    - Press-on prism for immediate relief
    - Helpful to determine if patient can adapt
    - Etiology under investigation
    - Lightweight
    - Can go up to 40PD
    - Can create blur/distortion
    - Difficult to treat both horizontal and vertical
  - Ground-in
    - Prism built into prescription
    - Good to use when stable
    - Can be split over both lenses to make cosmetically pleasing
    - Limit on prism amount
    - Can be expensive
  - Occlusion
    - Goal – monocular vision
    - Immediate relief and inexpensive
    - Good if deviation non-comitant
    - Will lose depth perception
- Evaluating prism needed
  - Update refraction at distance and near
  - Cover test/Maddox rod without Rx in all positions of gaze
  - Cover test/Maddox rod with updated Rx at distance and near
  - Trial prism at distance and near with prism bar or in trial frame
  - Horizontal
    - Start with  $\frac{1}{2}$  objective measurement over either eye

- Move bar up and down by 2 PD until fusion breaks – median is end point
    - Recheck fusion
  - Vertical
    - Start with objective measurement and move bar up and down by 1-2 until fusion breaks – median is end point
    - Recheck fusion
  - Combination
    - Neutralize larger deviation first until images are lined up
    - Add second prism over fellow eye
- Prescribing prism
  - Start with Fresnel
    - Etiology unknown
    - Unsure how patient may respond
  - Consider ground-in prism
    - If any deficit remains
    - Once deficit is stable
    - Performed well with Fresnel
  - Consider referral for surgery
    - Constant diplopia x 1 year
    - Stable alignment
    - Able to achieve fusion with prism
- Cases to be discussed with prism applications:
  - Progressive supranuclear palsy
  - Vasculopathic CN III palsy
  - Traumatic CN VI palsy

## **Q&A / Discussion**