

## Appendix H

### Interventions to Manage Diplopia due to Paralytic Strabismus in the Adult Client

#### Occlusion

The occlusion techniques described in this handout are **only for the adult client**. They provide no **therapeutic benefit** to the client **other than to eliminate the double image**. Using occlusion in this manner is **not** an example of vision therapy in adults. **NOTE:** Because children are susceptible to developing sensory suppression and amblyopia, **OCCLUSION SHOULD NEVER BE USED WITH CHILDREN WITHOUT THE DIRECTION OF AN OPHTHALMOLOGIST OR OPTOMETRIST**

Occlusion eliminates diplopia by blocking the image to **one** eye. There are two types of occlusion: full and partial.

#### *Full Occlusion*

##### Procedure

1. Completely eliminate the vision in one eye with a pirate patch or use a plastic clip-on occluder or opaque tape to cover the lens of a pair of eyeglasses.
2. Fully occluding one eye eliminates the double vision but forces the client to rely on the other eye for all visual activities. Forcing the client to use one eye will be stressful and fatiguing and the client will have difficulty wearing the occluder for long periods of time. To minimize stress and fatigue alternate the occluder between the eyes every hour.

##### Advantages

1. Cheap and easy to apply.

##### Disadvantages

1. Eliminates peripheral visual input on the side of the occluder, which disrupts brain mechanisms that control balance and orientation to space. This may cause the client to feel off balance and disoriented.
2. Poor client compliance due to the discomfort of moncularity, especially when the dominant eye is covered.

#### *Partial Occlusion*

There are 2 common forms of partial occlusion: nasal and spot. Both techniques apply occlusion to the lens of a pair of eyeglasses. If the client does not wear prescription eyeglasses, use a pair of inexpensive frames with clear (non- refractive) lenses. Harry Potter glasses work well and can be purchased from Amazon.

## Procedure

### ***To apply nasal occlusion:***

1. Instruct the client to focus on an object that is doubling in their central field.
2. Apply a strip of opaque or translucent tape (such as transpore surgical tape) to the nasal (e.g., nose) side of the lens covering the **non-dominant** eye. This will block visual input to the central visual field. Applying tape to the nasal side ensures that the client sees single images in their central field.
3. Begin applying the tape next to the nose and continue to apply strips of tape towards the center of the lens until the client reports seeing a single image of the object. Leave the peripheral visual field un-occluded (see figure next page).

### ***To apply spot occlusion:***

1. Instruct the client to focus on an object that is doubling in their central field.
2. Cut a small circle of opaque/translucent tape and place it in the center of the lens so that it covers the pupil in the non-dominant eye.
3. Experiment with the size of circle to ensure that it covers the pupil but does not extend past the iris (into the periphery of the eye).

The non-dominant eye is occluded for the greater comfort of the client. Every few days or weeks gradually reduce the width/diameter of the tape as the muscle paresis resolves. The tape does not need to be alternated between the eyes because the occluded eye is never completely covered. The spot occlusion stays in place until the diplopia resolves during recovery.

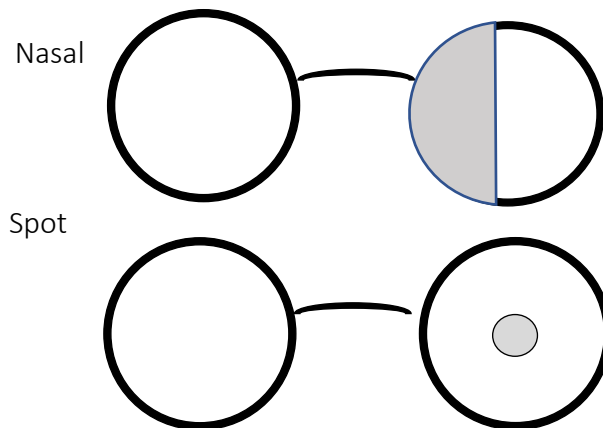
## Advantages

1. The client is more comfortable and experiences less eye fatigue because both eyes contribute to seeing. This increases compliance wearing the occlusion.
2. It is not necessary to alternate the occlusion between the eyes.
3. Peripheral vision is left intact and available for use in orientation to space and balance.

## Disadvantages

1. The client either must wear prescription lenses or have tape applied to a pair of frames with plain, non-refractive lenses.

### Example of Partial Occlusion



### Prism

Optometrists and ophthalmologists apply prisms to reestablish single vision in the primary directions of gaze: straight-ahead and looking down. Application of a prism displaces the image in space. The eye doctor uses the prisms to manipulate the disparate images created by the strabismus so that they overlap and create a single image. The prism can be ground into the client's eyeglass lenses or temporarily applied to the lens using a Fresnel press-on prism. Prism strength is measured in diopters. Sufficient prism strength is applied to enable the client to maintain fusion without discomfort. Prism is used only as long as needed to maintain fusion. If the paresis is resolving, the client is gradually weaned from the prism by reducing the strength of the prism over a period of time commensurate with the rate of recovery.

### Eye Exercises

Eye exercises as a part of vision therapy fall within the scope of practice of optometry. Eye exercise programs are developed and completed by the optometrist or orthoptist. Currently there is limited research evidence that exercises can restore eye movements beyond what can be expected from normal recovery. However, the efficacy of interventions to improve accommodation, vergence and eye movements is an increasingly active area of optometry research and several studies have shown that providing eye exercises using careful and precise protocols is effective in improving binocular function in adults with acquired brain injury.

### Surgery

Surgery is recommended when the angle of deviation of the strabismus is too large to be consistently and easily overcome by fusional effort, or when there is a significant non-concomitant condition that does not resolve within 15 months. The general surgical approach is to make the action of one of the extraocular muscles either weaker or stronger by changing the position of its attachment on the eyeball. The procedure alters the resting position of the eye in the socket and the image is realigned. An ophthalmologist completes the surgery.

## Resources

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3. Iliescu, D.A., Mihaela, T. M., Alexe, N., Gosav, E., De Simone, A., Batras, M., Stefan, C (2017). Management of diplopia, *Romanian Journal of Ophthalmology*, 61(3), 166-170. Doi: 10.22336/rjo.2017.31
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