



Acquired Trochlear Nerve Palsy from Traumatic Brain Injury

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Background

- In Sept 2015, a 48-year-old Active Duty male struck by vehicle resulting in post-traumatic amnesia, subarachnoid hemorrhage, pelvic/rib/tibia fractures and knee injury
- Persistent headaches, neck pain, vertical diplopia and cognitive disturbances started five days later
- Referred to Neuro-Optometry for head tilt and difficulty reading in Nov 2015

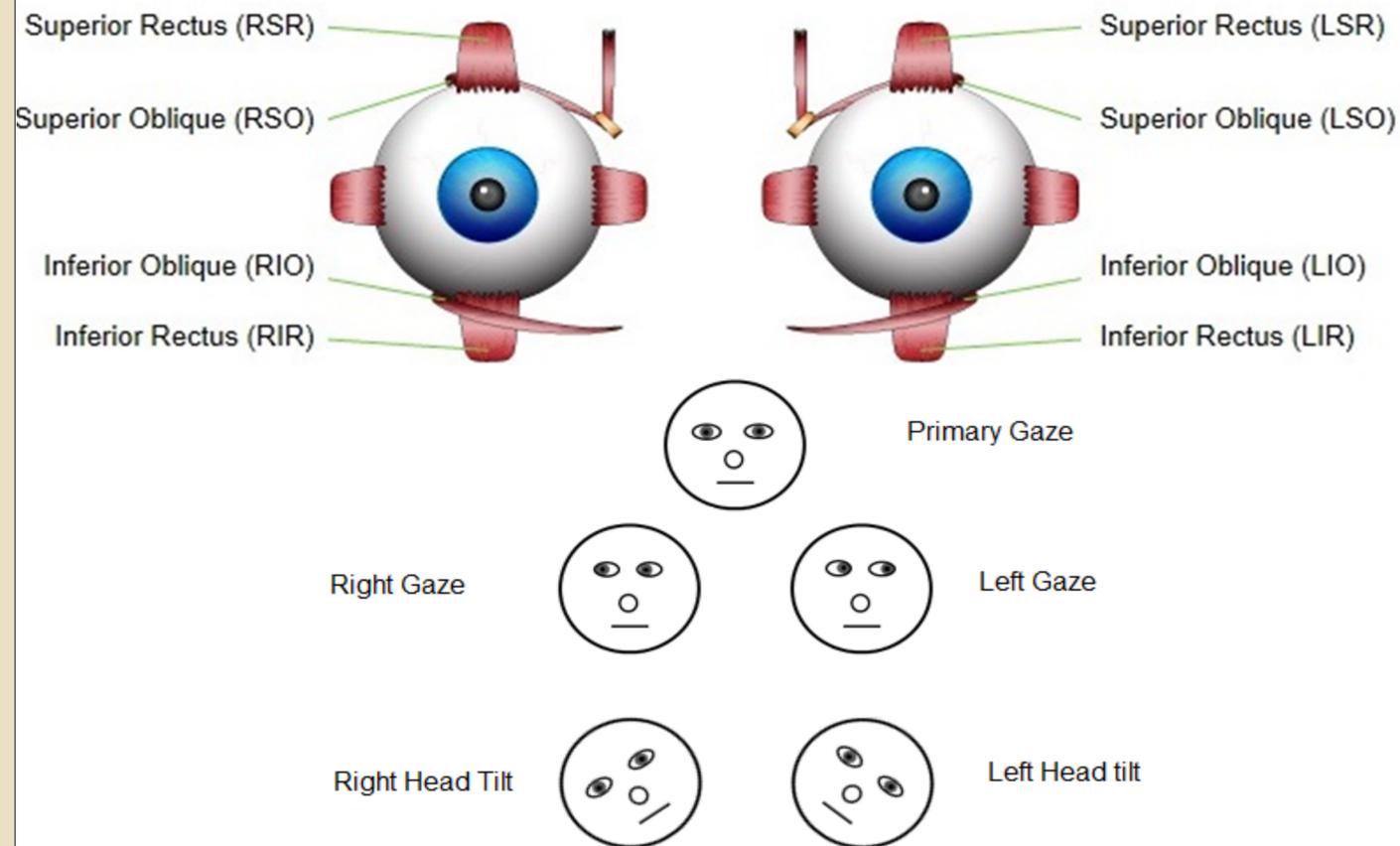
Methods

- Neuro-Optometry Exam:
 - Extra Ocular Muscle Test revealed left eye restricted on medial movement
 - Maddox Rod revealed left hypertropia
 - Park's 3-Step Test confirmed a left Superior Oblique Palsy

References

1. The Wills Eye Manual, 5th ed., 2008: 235-237.
2. Scheiman M, Wick B, . Clinical Management of Binocular Vision: heterophoric, Accommodative, and Eye Movement Disorders. 3rd ed. Lippincott, Williams and Wilkins; 2008.
3. Fourth Nerve Palsy. American Academy of Ophthalmology. 2016, <http://www.aao.org/bcscsnippetdetail.aspx?id=64558c0a-0659-4165-ac1a-4a2f7d4be069>.
4. Parks Three Step virtual simulator and picture. Eye Dock: a clinical reference for eye care professionals. 2016, http://www.eyedock.com/index.php?option=com_jumi&fileid=5&Itemid=85.

Parks Three Step



The Park's Three-Step Test is used to isolate the paretic muscle in acquired vertical diplopia.

The Park's Three-Step Test is not intended to be used for assessing horizontal diplopia, nor will it provide useful information in a restrictive strabismus or neuro-myopathic conditions. This test is most appropriate for neuro-paralytic disorders. Furthermore, be aware that patients who have had extra-ocular muscle surgery may not have predictable results.

The Park's Three-Step Test works by observing the vertical deviation in primary gaze, left and right gaze, and right and left head tilt. Where the hyper-deviations are of the greatest magnitude indicate where the paretic muscle should be working maximally. By comparing these deviations with each muscle's known primary field of action we can systematically eliminate them until there is only one muscle remaining.

Results and Conclusions

- Compensatory prism lenses in glasses reduced headaches, head tilt and visual disturbances
- Vision rehabilitation will also reduce headaches, head tilt and vertical diplopia and may reduce need for prism after vision rehabilitation goals are met
- Post-concussive injuries with intractable headaches and visual vertical diplopia can be quickly assessed by Primary Care Managers and referred to Neuro-Optometry for management and rehabilitation
- Vision Rehabilitation Results:
 - After attending 7 vision rehabilitation sessions, patient had no double vision when reading or in distance
 - Patient had improved his base out vergence ranges
 - Patient had improved his supra and infravergence ranges
 - Patient still had poor convergence (most likely due to age) but with glasses it was not affecting patient ability to read
 - Patient was discharged from vision rehabilitation

For Further Information

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