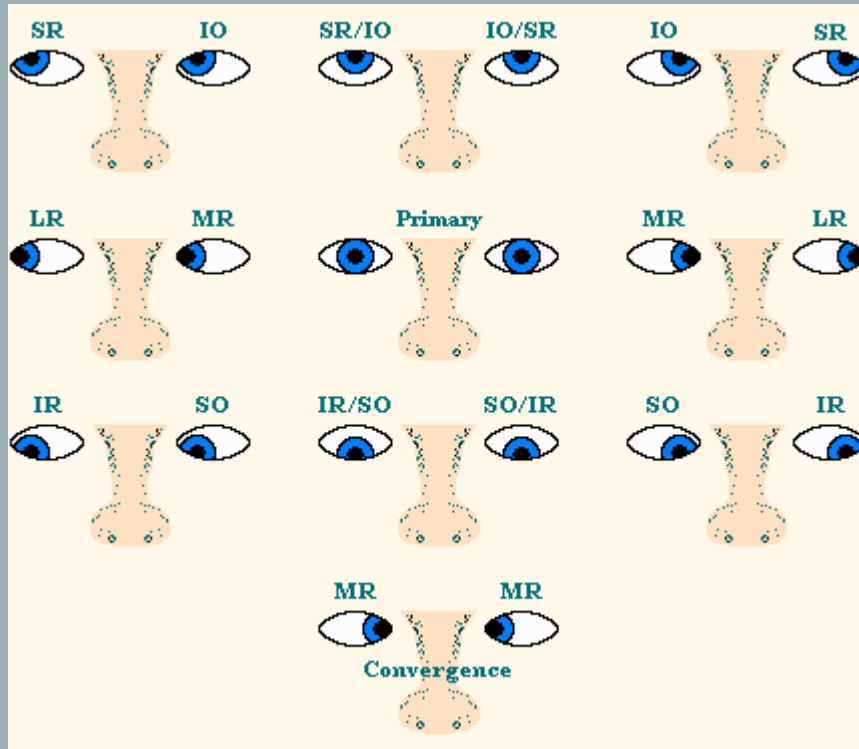


PRISM GLASSES: HELPING YOU SEE CLEARLY

Shannon Buckley, COMT

EYE MUSCLES FUNCTIONS



- Medial rectus: ADDuction
- Lateral rectus: ABDuction
- Superior rectus: Up/out
- Inferior rectus: Down/out
- Superior oblique: Down/in
- Inferior oblique: Up/in

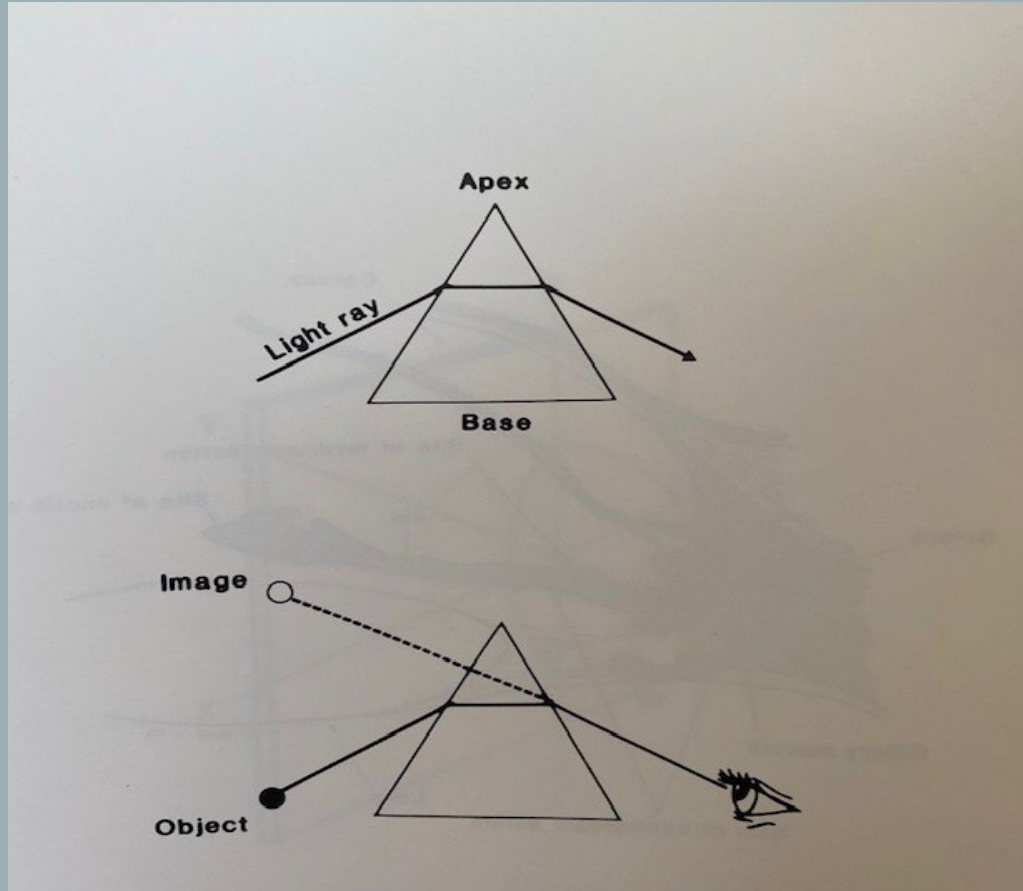
CRANIAL NERVES THAT INNERVATE EXTRAOCULAR MUSCLES

- Superior oblique: Fourth Nerve Palsy
- Lateral rectus: Sixth Nerve Palsy
- Superior rectus: Third Nerve Palsy
- Inferior rectus: Third Nerve Palsy
- Medial rectus: Third Nerve Palsy
- Inferior oblique: Third Nerve Palsy

WHAT ARE PRISMS AND WHY ARE THEY USED

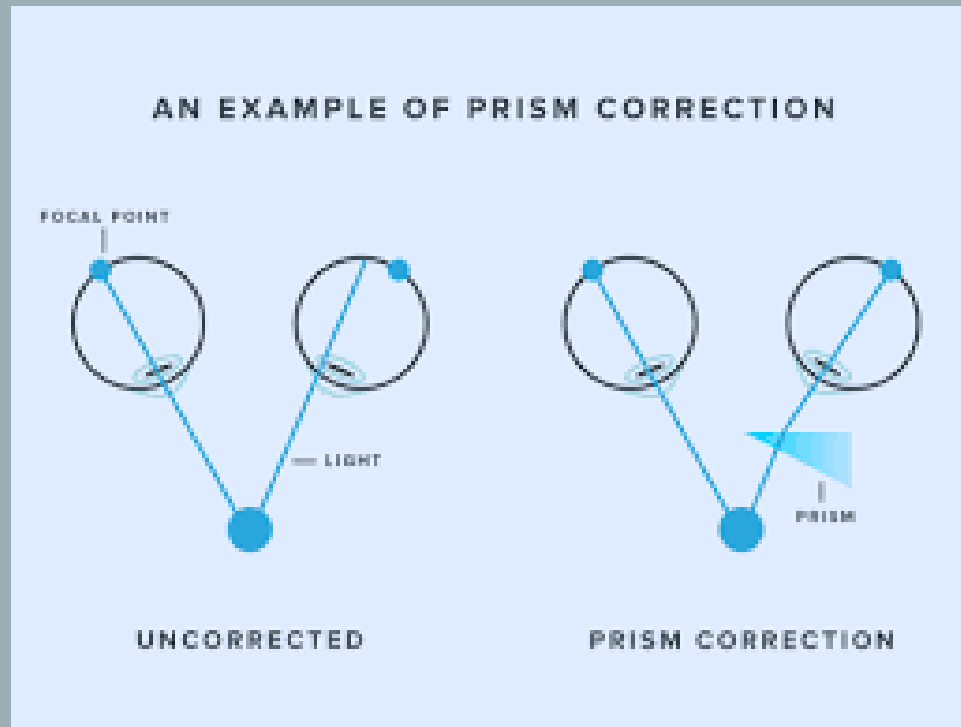
- Maintain comfortable single binocular vision in the presence of a deviation of the eyes
- Preoperative therapy to encourage single vision
- Postoperative therapy to neutralize residual or consecutive deviation
- Improve head position and depth perception

PRISM AND HOW THEY WORK

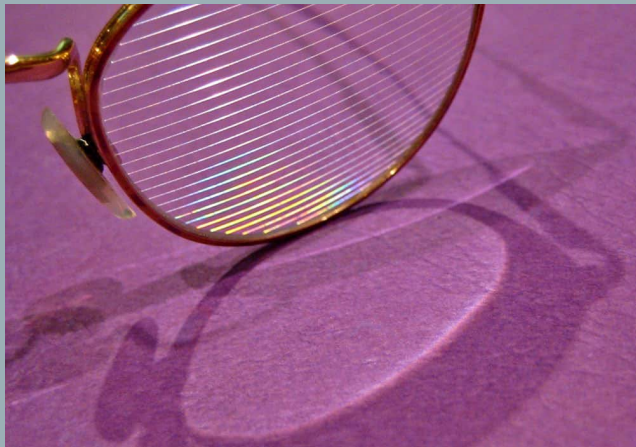


- The apex of the prism is placed toward the deviation of the eye and Snell's law of refraction dictates that the light is bent toward the base of the prism
- Goal is to have single binocular vision in primary gaze
- Prism may be split between both eyes to properly balance the eye and thickness of the glasses
- Fresnel prism is a temporary option and so is patching but both can create depth perception problems
- A thorough prism work up in clinic is necessary to determine the eye muscles that are affected

PRISM CORRECTION EXAMPLE IN FRONT OF THE EYE



GLASSES COSTS



- Fresnel prism- approximately \$65 and can range from state to state



- Prism Glasses can cost between \$600.00 and upwards of \$1500.00 depending on prescription requirements and frame preference

CASE STUDY

STRABISMUS FOLLOWING EXTRAOCULAR MUSCLE TRAUMA

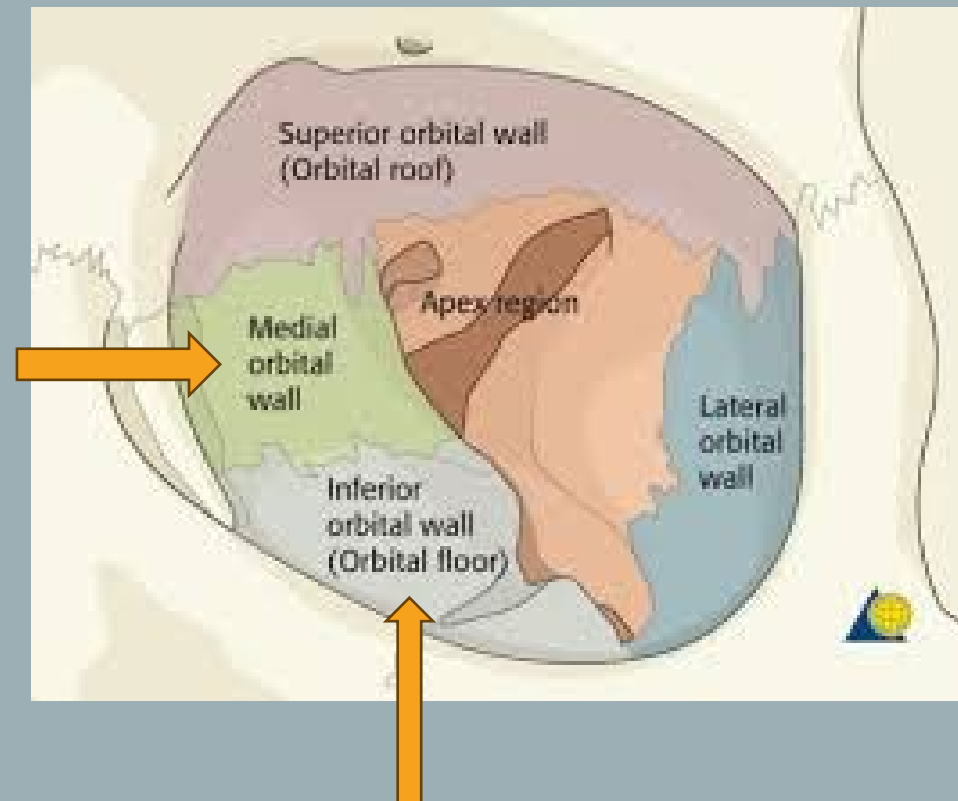
BY: ANDREA DELIA MOLINARI, MD

There are three basic mechanisms that can affect the extraocular muscles in the event of trauma and produce strabismus:

- Muscle involvement in orbital wall fractures
- Muscle Contusion
- Traumatic disinsertion or laceration of the extraocular muscles

ORBITAL WALL FRACTURES

Orbital wall fractures caused by a frontal impact of an object to the globe or the orbit will usually effect the inferior wall or the medial wall which are the thinnest anatomically

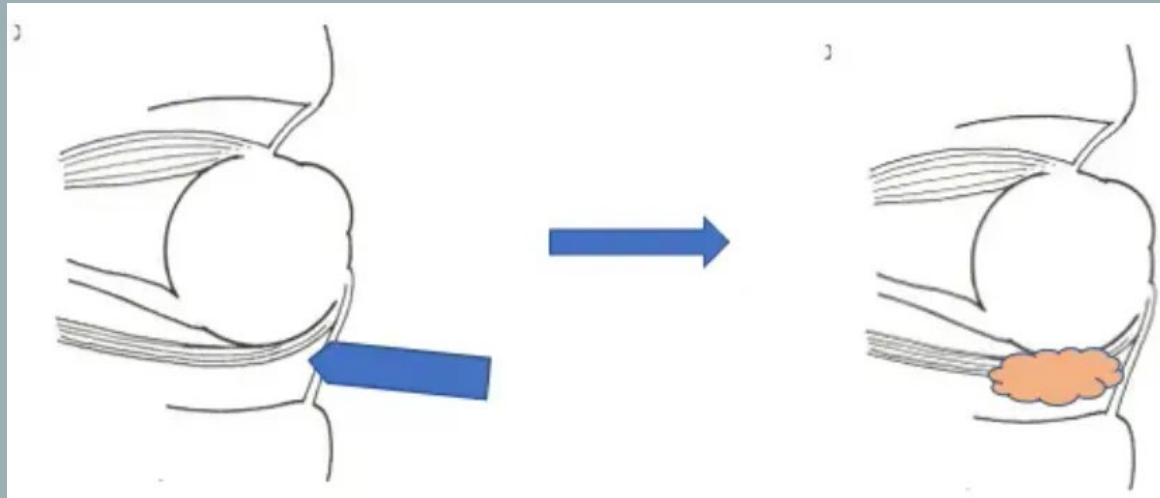


- The muscles more commonly affected are the inferior rectus, the inferior oblique, the medial rectus and the superior oblique. Superior rectus and lateral rectus are very infrequently injured by orbital wall fractures
- Entrapment of more than one muscle is also possible when the medial wall and the orbital floor are fractured, thereby affecting elevation and abduction in the same eye



MUSCLE CONTUSION

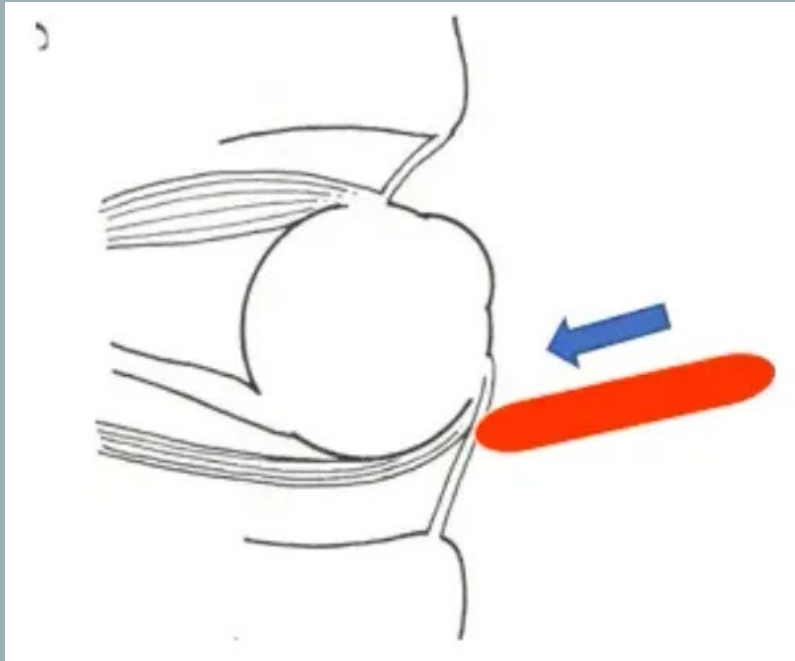
- Contusion of an extraocular muscle is produced by the impact of an object on the surface of the muscle without perforating any structure in the eye or its surrounding tissues. After impact, edema or a hematoma is formed in the muscle's belly limiting the muscle function
- This type of trauma produces incomitant strabismus. The muscle does not contract very well and the most important feature is that the strabismus improves spontaneously.
- The most susceptible muscles to suffer a contusion is the inferior rectus.





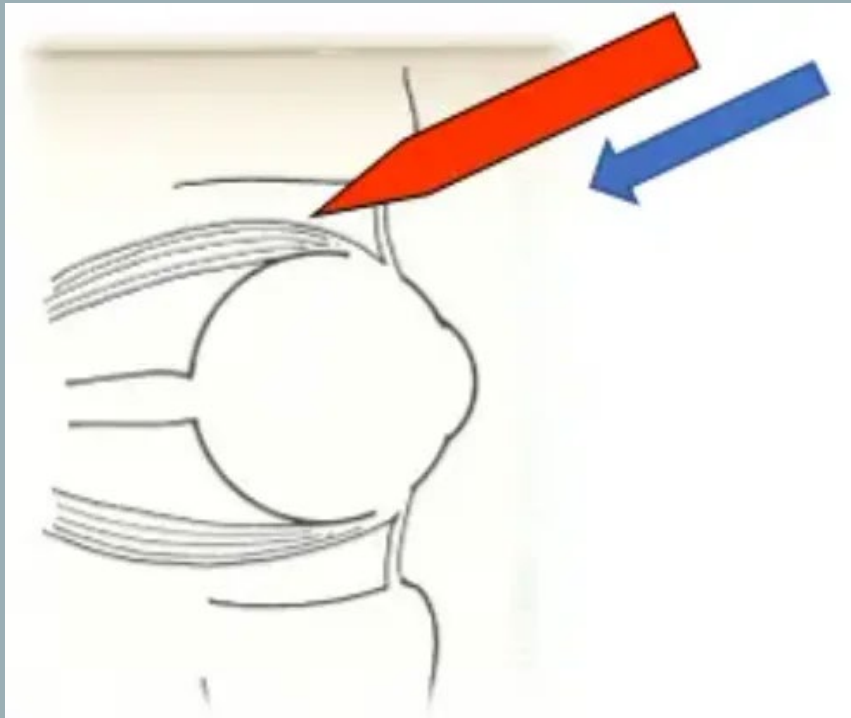
This patient suffered non-perforating trauma with contusion to the left inferior rectus. Complete resolution of her strabismus after one month can be appreciated

TRAUMATIC DISINSERTION OF EXTRAOCULAR MUSCLES



Traumatic disinsertion is caused by the impact of a blunt object that perforates conjunctiva and disinserts the muscle cut flush with the sclera. Attachment of the muscle capsule to the check ligaments and intermuscular membrane prevents the muscle from retracting deeply into the orbit so the muscle is usually found reattached behind the normal insertion site. For this reason, muscle function might be preserved

LACERATION OF EXTRAOCULAR MUSCLES



Laceration of the muscle is usually caused by the impact of a sharper object that perforates conjunctiva and ruptures the muscle. These cases, demonstrate larger limitation of the function of the compromised muscle than in cases involving muscle disinsertion. The angle of strabismus might be larger and a fibrotic reaction around the affected tissue can be significant which makes surgical repair more difficult.

CASE STUDY CONCLUSION

- Trauma to an extraocular muscle without globe or eyelid involvement is a rare but can occur
- Meticulous examination of the globe should always be done to rule out associated injury to the globe
- Determining the condition of the compromised muscle is very important to plan for the best strategy in managing the case.
- Crucial information for the management of the patient can be obtained through detailed orbital imaging via CT scan or MRI.

QUESTIONS