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Diplopia After Surgical Repair of an Orbital Blowout Fracture

Abstract Text:

Although surgical repair of an orbital blowout aims to improve diplopia and gaze restriction, similar complications can arise after surgery. A case of double vision and gaze restriction presents in a patient after surgical repair of an orbital floor fracture.

Case History

A 51 yo African American female presents with diplopia in downgaze after an orbital floor fracture secondary to being punched in the face s/p repair with open reduction internal fixation (ORIF) and placement of a plate OD

Ocular History:

Orbital blowout fracture OD-s/p repair with ORIF and placement of a plate 7 weeks prior

Type 2 DM with h/o PDR OD, OS

HTN retinopathy OD, OS

Medical History:

Type 2 DM, HTN, HL, end stage renal disease, anemia of chronic disease

Pertinent Findings

BCVA: 20/50 OD, 20/25 OS

EOMs: severe reduction in infraduction OD

(+) binocular diplopia in downgaze

Pain: 0/0

CT: 20 pd right hyper, 10 pd CAXT with preference for OS

(+) Forced duction test OD (no movement of eye downward)

IOP: 11 mmHg OD, 12 mmHg OS

ONH: small disc heme OD, pink/healthy OS

Vitreous and peripheral retinal hemes OD
FANG: Vitreous heme with evidence of NVD/E OD, superior IRMA vs NVE OS

CT head and orbits: question of muscle inflammation vs. entrapment, (-) mass

MRI ordered to better evaluate muscles

**Differential Diagnosis**

Primary/leading: Post-surgical right inferior rectus muscle inflammation

Others: posterior entrapment of right inferior rectus, right isolated inferior rectus paresis

**Diagnosis/Discussion**

Because diplopia and motility restriction only occurred in downgaze and given that forced duction testing is positive, the most likely diagnosis is inflammation of the right inferior rectus. Uniquely there was no restriction in supraduction, which is typical in inferior rectus entrapment. However, restricted movement in the direction of the entrapped muscle is possible in posterior entrapments, while restricted movement away from the direction of the entrapped muscle usually occurs in anterior entrapments. ¹ Lastly, isolated paresis of the right inferior rectus was considered, but not likely because there was no movement of the eye downward with forced duction testing.

**Treatment/Management**

Initial treatment: NSAIDs PO or steroid injection to reduce inflammation of the inferior rectus muscle

Possible secondary treatment if no improvement: surgical removal of the plate and possible replacement pending MRI results or prism in glasses as a less invasive option

**Conclusion**

Surgical repair may eliminate diplopia in most orbital blowout cases. ² Less frequently, diplopia can be reported after surgery from mechanical or neurogenic causes. Positive forced duction testing was a key finding in determining whether the gaze restriction was due to a mechanical restriction or a paresis of the muscle. This finding needs to be confirmed when considering secondary surgical intervention to treat residual diplopia after a repaired orbital blowout fracture. ³

**Sources:**
