

## **Advanced and Innovative Techniques Managing Strabismus from Orbital Trauma**

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### **Gaier: Using 3 D reconstruction to shorten operative time**

Two strikingly similar cases of traumatic avulsion of the inferior and medial rectus muscles in two middle-aged men demonstrate the utility of 3D reconstruction of orbital MRI images to model EOM structural changes and insertions. This technique, used in the second and not the first of these two nearly identical cases (serendipitously serving as case-control), allowed for targeted dissection at the imaging-predicted points revealing the new insertions. This approach ultimately reduced the surgical time by 30% in the second case compared to the first.

### **Smores and more: Traumatic burn of the medial recuts muscle**

A 32-year-old woman suffered penetrating trauma to the nasal orbit with a hot metal marshmallow skewer, immediately resulting in restriction of abduction and diplopia. The suspected mechanism of injury was cauterization of the medial rectus muscle, not previously described. She regained near complete abduction over months. Despite orthophoria in primary gaze, she ultimately required one-muscle surgery to address flashbacks to the traumatic event triggered by diplopia in side gaze. Adjustable suture technique allowed for enhancement of her medial rectus recession to 3-fold of the initial dose, possibly reflecting a property of muscular cauterization injury.

### **Özkan: Use of botulinim toxin- special considerations in traumatic lost muscle:**

Two demonstrative cases are presented to highlight some challenges of traumatic lost muscle. The first case is an injury with transection of superior rectus and superior oblique muscles by a ram's horn where finding the posterior fibers could not be possible. Posterior Tenon's capsule was damaged by injury and abduction was also limited on immediate post operative period. The approach was to inject botulinum toxin (BTX) into the inferior rectus (IR) muscle in acute phase in an attempt to prevent the antagonist contracture and to reduce the effect of adherence problems. Vessel sparing transposition in combination with repeat BTX injection was performed 3 months after trauma with satisfactory result.

Second case is a traumatic IR transection with an unknown cause where immediate repair of the muscle was possible. Despite successful repair the IR did not function in long term and transposition surgery was required.

We demonstrate the effectiveness of BTX in reducing both antagonist contracture and motility limitation due to adherence syndromes and how this may increase the success of transposition surgery. Successful repair of a traumatic lost muscle does not guarantee its function. The coexistence of nerve damage may require transposition surgery.

### **Dagi: Signs and treatment of inferior oblique trauma due to repair of orbital blow-out fracture**

We will discuss two cases where placement of orbital medial wall and floor barrier implants were associated with evolution of hypotropia and incyclotorsional diplopia. Inferior oblique rather than inferior rectus trauma was the likely etiology.

How this occurs, what to look for, and the strabismus surgical management best suited for this iatrogenic exacerbation of pre-existing orbital trauma will be discussed.

### **Capo: Strabismus following dental implant surgery**

Zygomatic dental implants (ZIs) are used to support dental prostheses in patients with bone volume deficiency in the upper jaw. The most common complication associated with ZIs is sinusitis, however, as the implant is anchored in the zygoma and is in close proximity to the anterolateral orbital rim, a rare complication is penetration into the orbital cavity by the drill bit, which may result in injury to the extraocular muscles, most commonly the lateral rectus, inferior oblique and inferior rectus muscles. We will present two patients who developed diplopia and strabismus secondary to trauma to the inferior oblique and the lateral rectus muscles respectively during dental implant surgery.

### **Velez: Iris Angiography: Anterior segment ischemia- avoiding and diagnosing this challenge**

We will discuss the risk of anterior segment ischemia, and the benefit of choosing to operate on vertical rectus muscles, using plications rather than resections, small adjustable procedures that spare the ciliary vessels, and ciliary sparing augmented adjustable transposition surgery to decrease the risk of anterior segment ischemia. In addition, we will discuss currently knowledge about OCT-A .

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