

## The EM Educator Series

Mini-Case: Hey Doc, I can't see?

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#1: A 36-year-old male was assaulted by several assailants. He suffered severe facial trauma. His airway is intact, and his GCS is 15. He is currently complaining of decreased vision in the right eye, with severe pain and swelling. His IOP is 45 mm Hg.

### Questions for Learners:

- 1) Compartment syndromes occur throughout our body, besides orbital compartment syndrome. What are other forms you should consider?
- 2) What are the etiologies of orbital compartment syndrome?
- 3) What is the differential of acute vision loss, painful vs. painless?
- 4) How do you diagnose orbital compartment syndrome?
- 5) How do you perform the procedure, and what do you need to perform it?
- 6) Who needs an emergent Ophthalmology consult?

### Suggested Resources:

- ✓ Articles:
  - [LITFL – Bashed, Blind and Bulging](#)
  - [emDOCs – Acute Visual Loss in the Emergency Department: Pearls and Pitfalls](#)
  - [CORE EM – Non-Traumatic Monocular Vision Loss](#)
  - [CORE EM – Traumatic Ocular Injuries](#)
  - [First 10 EM – Procedure: Lateral Canthotomy](#)
- ✓ Podcast:
  - [EM Cases – Blunt Ocular Trauma Live from The EM Cases Course](#)
- ✓ Videos:
  - [Larry Mellick – Lateral Cathotomy and Cantholysis](#)
  - [EM:RAP – How to do a lateral canthotomy](#)

## Answers for Learners:

### 1) Compartment syndromes occur throughout our body, besides orbital compartment syndrome. What are other forms you should consider?

Abdominal Compartment Syndrome, MSK (Forearm, Calf/Shin, Gluteal, Foot, Hand)

### 2) What are the etiologies of orbital compartment syndrome?

- Trauma (retrobulbar hematoma) - most common cause
- Spontaneous bleed
- Tumor
- Orbital cellulitis/abscess
- Prolonged hypoxemia

### 3) What is the differential of acute vision loss, painful vs. painless?

#### Painless

- Amaurosis fugax
- Central retinal artery occlusion (CRAO)
- Central retinal vein occlusion (CRVO)
- High altitude retinopathy
- Optic neuritis\* - can be painful on eye movement
- Posterior Reversible Encephalopathy Syndrome (PRES)
- Retinal detachment
- Vitreous hemorrhage
- Stroke
- Anterior ischemic neuropathy
- Hyphema
- Wet age related macular degeneration

#### Painful

- Acute closure angle glaucoma
- Temporal arteritis
- Corneal Ulcer / Abrasion
- Anterior Uveitis
- Iritis
- Endophthalmitis
- Ischemic optic neuropathy
- Traumatic lens dislocation
- Optic neuritis
- Traumatic optic neuropathy

### 4) How do you diagnose orbital compartment syndrome?

Suspected acute orbital compartment syndrome (OCS), plus one or more of the following:

- Decreased visual acuity
- IOP >40 or marked difference in globe compressibility by palpation
- Proptosis

Secondary indications (subjective and nonspecific) - if only secondary indications are present, get emergent ophthalmology consult prior to performing canthotomy.

- Afferent pupillary defect
- Cherry red macula
- Ophthalmoplegia
- Nerve head pallor
- Significant eye pain

## 5) How do you perform the procedure, and what do you need to perform it?

Consider sedating patient for procedure, if time allows

- Prep and drape the area (Irrigation with normal saline is acceptable prep given emergent nature of procedure)
- Inject lidocaine with epinephrine into the lateral canthus directing the needle tip toward the lateral orbital rim (away from the globe)
- Apply hemostat to the lateral canthus from the angle of the eye to the orbital rim and clamp shut for ~1 min. (provides relative devascularization as well as a landmark for the canthotomy)
- Using scissors, incise the lateral canthus from the angle of the eyelid to the orbital rim (~1cm).
- Retract the inferior lid and bluntly dissect tissue until the canthal tendon is identified.
- Perform inferior cantholysis - cut the inferior crus of the lateral canthus tendon (point scissors infero-posteriorly toward the lateral orbital rim, avoiding the globe)
- Recheck IOP → if still elevated, perform superior cantholysis - cut the superior crus of the canthal tendon (some experts recommend performing both inferior and superior cantholysis at the same time, prior to re-evaluating IOP)

## 6) Who needs an emergent Ophthalmology consult?

In general, when there is a threat to sight → orbital compartment syndrome, acute angle closure glaucoma, retinal detachment (MAC on), endophthalmitis, etc.