

Orbital Compartment Syndrome: The Ophthalmic Surgical Emergency *Survey of Ophthalmology 2009 and Roberts and Hedges: Clinical Procedures in Emergency Medicine*

What are your time goals before the acute increase in orbital tension could produce permanent visual sequelae?

- **60-100 minutes**

Anatomy and Pathophys:

- The orbit has a volume of 30 mL
- Normal intraorbital pressure: 3-6 mmHg
- DDX: orbital hemorrhage (esp with coagulopathies), local

injections, post-op facial surgery near the orbit, fulminant orbital cellulitis, intraorbital cellulitis, orbital emphysema, inflammation and tumors.

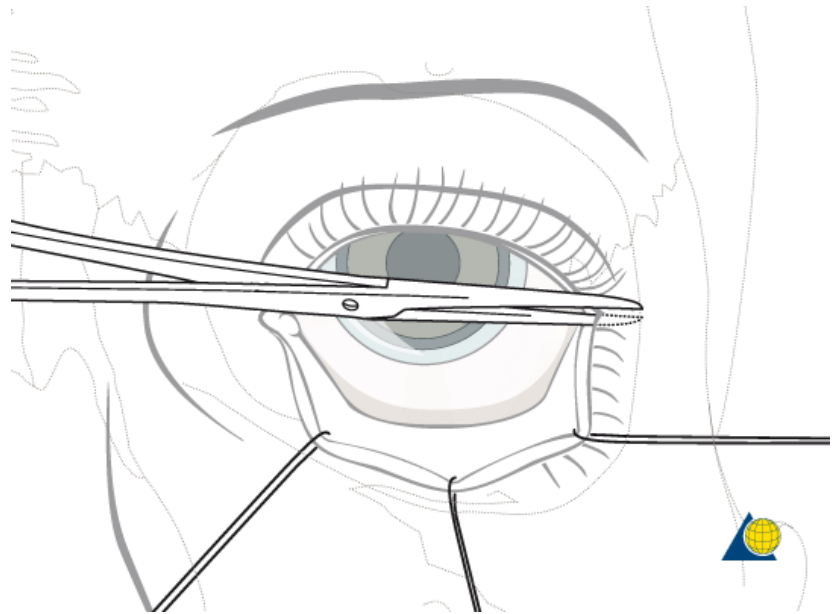


Figure 1A pointed scissor is inserted horizontally into the outer lid angle laterally so that the instrument contacts the underlying bone of the lateral orbital rim (approximately 7-10 mm).

Clinical Presentation and Diagnosis:

- Fast Onset of Symptoms: **decreased/double vision, painful periorbital edema, proptosis, ocular pressure greater than 40mmHg**
- Physical Exam: **Afferent pupillary defect, limited ROM, “tense lids”**
- Diagnosis is based on **clinical** exam and no imaging should be pursued if a lateral canthotomy is required, unless initial decompression fails to relieve the orbital compartment syndrome

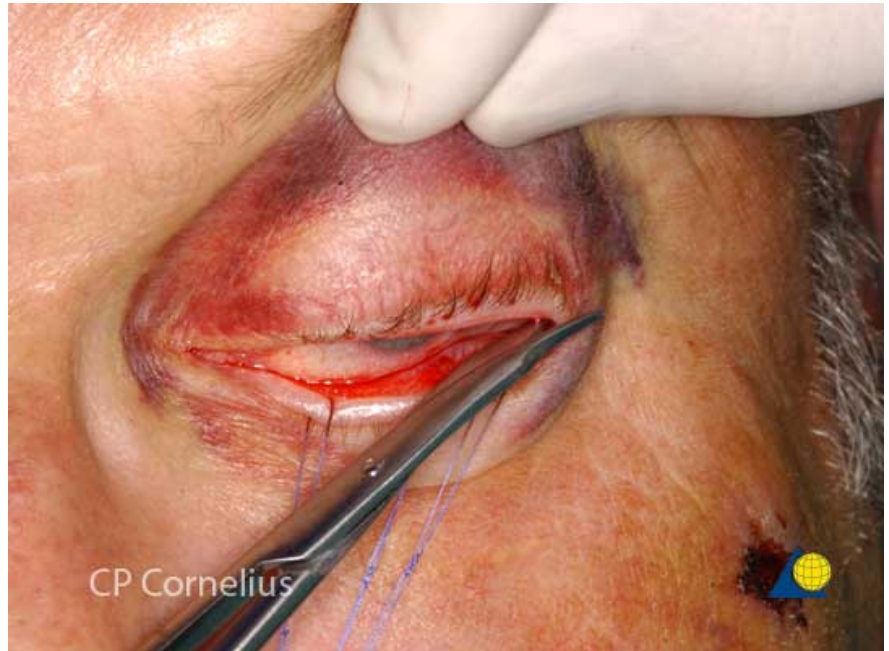
Surgical Decompression:

- Lateral Canthotomy (*alone reduces pressure by 14.2mmHg*) and inferior cantholysis (*alone reduces pressure by 19.2mmHg*): cutting the lateral tendon along its length to the orbital rim and disinserting the inferior limb of the tendon from the bony orbit. **Together, pressure is reduced by 30.4mmHg.**
- If Lateral Canthotomy/Inferior Cantholysis fail to relieve orbital tension, further disinsertion of the superior limb of the lateral canthal tendon may be performed. Clinical signs should show improvement **within minutes.**
 - Technique
 - Stabilize pt’s head and inject 1%-2% lidocaine with epinephrine around the lateral canthus

- Before incising, crush the lateral canthus with a small hemostat for 1-2 minutes to minimize bleeding
- Incise the canthus by using iris or Steven's scissors
- Begin incision at the lateral canthus and extend it toward the orbital rim.
- Find the superior and inferior crus of the lateral canthal tendon and release them from the orbital rim

Medical Management:

- Pts should avoid coughing/straining (if needed, use cough suppressants, antiemetics, and stool softeners)
- Head of the head elevated to 45 degrees.
- Normalize coagulopathies
- Ice may reduce blood flow/edema to the orbit
- The effectiveness of corticosteroids has not been assessed. (Including the use of osmotic agents, carbonic anhydrase inhibitors, or aqueous suppressants)
- Pts need to return immediately if there is increased pain/proptosis/blurry vision
- Incisions usually heal without suturing. Don't forget to consult your ophthalmologist.



Prognosis

- Delayed tx of Orbital Compartment Syndrome is more likely to result in **permanent vision loss**. Otherwise, with prompt treatment pts will likely regain vision.

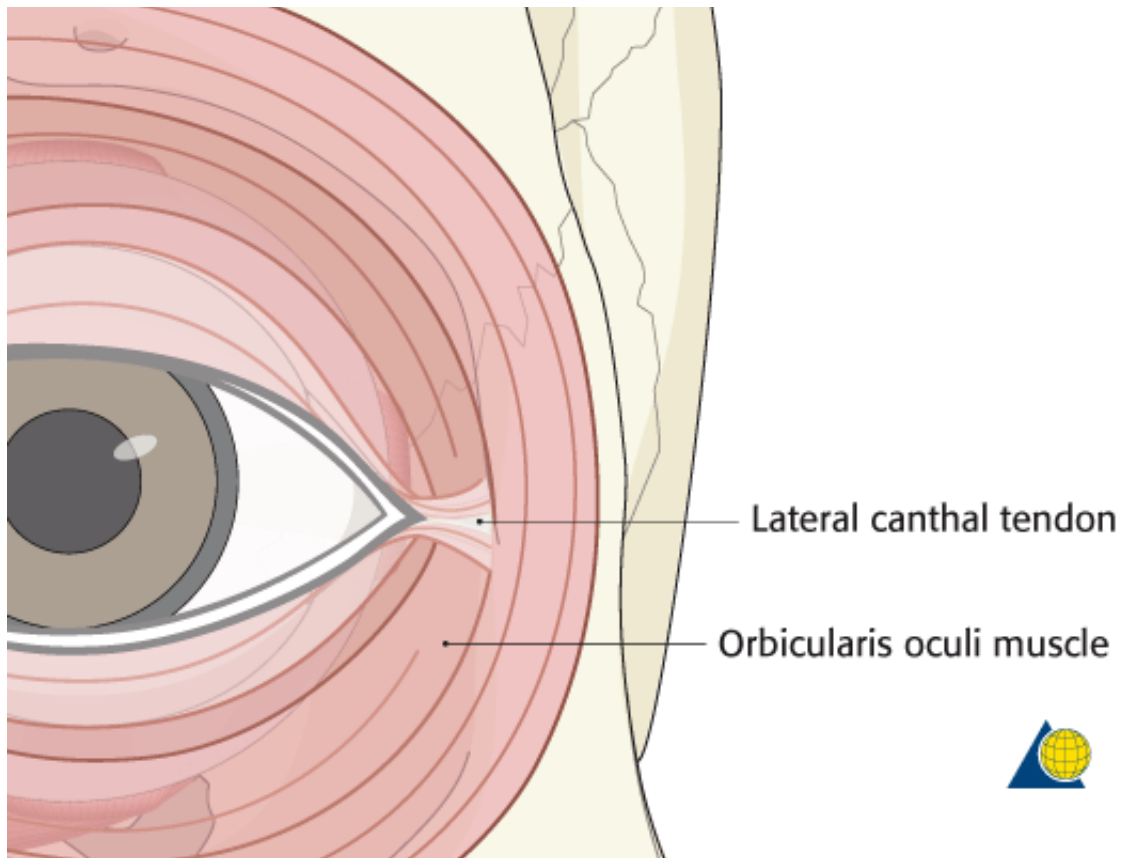


Figure 2 The lower eyelid is now everted using the traction sutures. It is still fixed to the lateral orbital rim by the inferior limb of the lateral canthal tendon. This part of the lateral canthal apparatus is transected (inferior cantholysis).