Lateral Canthotomy and Cantholysis

INTRODUCTION
A retrobulbar hematoma occurs in the setting of eye trauma and is an ophthalmologic emergency. It causes an orbital compartment syndrome, which if left untreated results in permanent vision loss from compromise of the ophthalmic artery. The pressure behind the globe is transmitted to the eye and results in increase IOP and the clinical signs of retrobulbar hematoma. The globe is a relatively closed space as a result of firm attachment of the eyelids to the orbital rim by the medial and lateral canthal ligaments. This pressure must be relieved by a lateral canthotomy and cantholysis as quickly as possible to prevent permanent vision loss. Fortunately, lateral canthotomy incisions generally heal without suturing or significant scarring.

Clinical signs of a Retrobulbar Hematoma
- Proptosis
- Reduced visual acuity
- Limited eye movements
- Afferent pupillary defect (APD)
- Marked elevated IOP
- Other signs of eye trauma (subconj. hemorrhage, ecchymosis, facial fractures)

GOALS OF THE PROCEDURE
- To release the pressure on the globe and decrease IOP enough to reinstitute retinal artery blood flow.

INDICATIONS
- Primary
  - Intraocular Pressure > 40 mmHg
    - Usually required before you start cutting
  - Proptosis
  - Decreased visual acuity
- Secondary
  - APD
  - Cherry red macula (i.e. retinal artery compromise)
  - Ophthalmoplegia
  - Nerve head pallor
  - Eye Pain

CONTRAINDICATIONS
- None if indications are met

COMPLICATIONS
- Mechanical Injury (i.e. globe rupture)
- Hemorrhage
- Infection
ANATOMY

EQUIPMENT
- Lidocaine 1% with epinephrine
- Small hemostat
- Iris or Steven’s scissors
- Toothed forceps

STEPS
1. Rapidly cleans the lid and lateral canthus with saline or antiseptic
2. Anesthetize the lateral canthus by injecting lido 1% with epi
3. Crush the lateral canthus with a small hemostat for 1-2 min to minimize bleeding
4. Using scissors carefully cut through the lateral canthus extending to the orbital rim avoiding the protruding globe
5. Pull the lower eyelid away from the globe with toothed forceps and identify the inferior crus of the lateral canthal ligament
6. Cut through the inferior crus with scissors pointing inferiorly and perpendicular to the canthotomy incision (Inferior Cantholysis)
   a. This should relieve IOP and allow the globe and orbital contents to move forward
7. Recheck IOP
8. EXTRA: If IOP still remains elevated, you can raise the superior eyelid with your forceps, identify the superior crus of the lateral canthal ligament, and cut this in a similar fashion (Superior Cantholysis)
VIDEO INSTRUCTION

- [https://www.youtube.com/watch?v=bUAagMd_Q8A#t=283](https://www.youtube.com/watch?v=bUAagMd_Q8A#t=283) (longer)
  - Great instructional video showing a real time lateral canthotomy on an awake patient
- [https://www.youtube.com/watch?v=MhGQ1ikN93M#t=100](https://www.youtube.com/watch?v=MhGQ1ikN93M#t=100) (short)

DEEP DIVE

Further Reading


FOAM and other videos

- EM Blog containing 2 great videos on doing a lateral canthotomy and cantholysis
- EM Curious blog – Lateral Canthotomy
- Thebluntdissection.org
  - [http://thebluntdissection.org/2014/04/eye-for-an-eye/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+TheBluntDissection+%28The+Blunt+Dissection%29](http://thebluntdissection.org/2014/04/eye-for-an-eye/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+TheBluntDissection+%28The+Blunt+Dissection%29)