

Orbital Compartment Syndrome

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Related Documents:

SOP 2.5 Traumatic brain injury
PAM 14 Lateral canthotomy

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1.0 Aim

1.1 The purpose of this SOP is to describe the pre-hospital management of orbital compartment syndrome due to retrobulbar haematoma. This SOP outlines the signs and symptoms of an orbital compartment syndrome and how to undertake a lateral canthotomy to treat this.

2.0 Background

2.1 The orbit is a confined space surrounded by bony walls. Trauma leading to retro-bulbar haemorrhage can cause raised pressure within the orbital compartment. This increased pressure can cause compression and ischaemia of the optic nerve and an orbital compartment syndrome. This is a sight threatening ophthalmological condition that requires rapid decompression to prevent permanent loss of vision. Irreversible blindness can be expected with retinal ischaemia that lasts longer than 120 minutes.

3.0 Identifying orbital compartment syndrome

3.1 A retro-orbital haematoma is the most common cause for orbital compartment syndrome. In the context of pre-hospital care these are almost exclusively in patients who have sustained trauma to the head and face.

3.2 Key symptoms include:

- Periorbital swelling, ecchymosis and bruising
- Widespread subconjunctival haemorrhage
- A feeling of tightness/hardness around the eyelid when palpated
- Resistance to pushing the eye deeper into the orbit when palpated through the eyelids (known as decreased retropulsion)
- An afferent pupillary defect; the pupils will constrict less (appearing to dilate) when a bright light is swung from the unaffected to the affected eye.

3.3 If conscious the patient may complain of or exhibit

- Marked reduction in visual acuity
- Eye pain
- Diplopia
- Ophthalmoplegia

4.0 Pre-hospital management

4.1 The primary treatment for orbital compartment syndrome is decompression of the orbit through a lateral canthotomy with inferior cantholysis as outlined below. This procedure is time critical and should be undertaken as soon as the team is able. ABC priorities should normally be addressed first.

5.0 Procedure – lateral canthotomy with inferior catholysis

5.1 Please refer to PAM 14 Lateral canthotomy for further information including images of the procedure.

- i) Cleanse the incision site lateral to the orbit with a chlorhexidine stick. Avoid direct contact with the eye.
- ii) If the patient is awake inject approximately 1ml of 1% lidocaine into the lateral canthus.
- iii) Clamp a straight haemostat (artery forceps) horizontally at the lateral canthus to assist with haemostasis.
- iv) Using canthotomy scissors incise approximately 1cm through the lateral canthus horizontally.
- v) Grasp the lower lid at the inferior edge of the incision using toothed forceps and in a supine patient, provide upward traction towards the ceiling. This will help expose the canthal ligament.
- vi) Locate the canthal ligament by inspection, gentle palpation or by sweeping the curved scissors inferiorly from the point of incision. It should feel like a tough fibrous tissue.
- vii) Cut the tendon (approximately a 1-2cm incision) using the scissors, pointed inferiorly (ie towards the patient ear lobe). Avoid aiming scissors superiorly as this may cause injury to the lacrimal artery and gland or the levator aponeurosis with ptosis.
- viii) Haemostasis may be achieved by direct compression on the incision site, however avoid direct compression of the orbit.
- ix) Reassess the patient. Signs this has been done include:
 - increased laxity of the lateral eyelid; it should be freely mobile when successfully dissected.
 - Improved visual acuity
- x) If these have not been achieved recheck the tendon has been fully incised and if not consider extending the incision to the superior canthol ligament.

6.0 Transport of patients with orbital compartment syndrome

6.1 The following additional management should be undertaken post procedure to reduce intra-ocular pressure in the self-ventilating patient:

- Head up elevation 45 degrees (20 degrees if immobilised on scoop stretcher).
- Adequate pain control.
- Administering of an antiemetic to avoid vomiting.

6.2 Ventilated patients should have the following management:

- Ensure collar and tube ties are loose.
- Maintain paralysis to prevent coughing/gagging on ET tube.

6.3 Patients should follow the trauma triage tool. If this triages to a trauma unit consider requesting a bypass to an MTC through the Network Coordination Service (NCS). Patients that undergo a lateral canthotomy should ideally be taken to a hospital with onsite ophthalmology unless clinical needs dictate otherwise. If an orbital compartment syndrome is suspected this should be conveyed with a pre-alert to the receiving hospital to ensure prompt ophthalmological consult. Most patients will undergo surgical closure in the few days after swelling resolves.

Lateral Canthotomy

Indications

Facial trauma and suspected orbital compartment syndrome. Signs include:

- Markedly decreased visual acuity
- Diffuse subconjunctival haemorrhage
- Increased resistance when pushing down on eyelid
- Occulomotor palsy
- Proptosis
- Tight, hard eyeballs

Equipment

- Chlorhexidine stick
- Lidocaine 1% with needle and syringe
- Tenotomy scissors
- Straight artery forceps

Landmarks and technique

The left eye is depicted in these images.

- Identify the lateral canthus (see arrow). Cleanse the area with antiseptic and anaesthetise with 1ml of 1% lidocaine.
- Crush the lateral canthus with the forceps for 1 to 2 minutes to reduce incisional bleeding (not shown). Then, cut through the crushed tissue with tenotomy scissors to perform the canthotomy.
- Pull the lower eyelid away from the globe with toothed forceps (arrow)
- 'Strum' the tissue under the canthotomy with the scissors to identify the inferior crus of the lateral canthal ligament. Cut through this ligament with scissors to perform the inferior cantholysis. Note the scissors are directed inferiorly during this step, perpendicular to the canthotomy incision.
- The eye after canthotomy and cantholysis. This procedure relieves increased intraocular pressure by allowing the globe and orbital contents to move forward.



NOTE: if intraocular pressure remains elevated after inferior cantholysis, the superior crus of the lateral canthal ligament may be released in a similar fashion.