

showed that persistent intubation attempts during airway emergencies were significantly associated with death or brain damage [7]. In light of the complications associated with multiple laryngoscopy attempts, it seems advisable not always to proceed with three intubation attempts, but to limit the attempts to one or two under optimal conditions, before using a secondary airway plan. The evidence presented justifies the change by the ASA Task Force of their definition for a difficult tracheal intubation and the abolition of the three attempts as a cut-off.

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References

1. Yildiz TS, Korkmaz F, Solak M *et al.* Prediction of difficult tracheal intubation in Turkish patients: a multi-center methodological study. *Eur J Anaesth* 2007; 24: 1034–1040.
2. Caplan RA, Benumof JL, Berry FA *et al.* Practice guidelines for management of the difficult airway. A report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. *Anesthesiology* 1993; 78: 597–602.
3. American Society of Anesthesiologists Task Force on Management of the Difficult Airway. Practice guidelines for management of the difficult airway. An updated report. *Anesthesiology* 2003; 95: 1269–1277.
4. Mort TC. Complications of emergency tracheal intubation: immediate airway-related consequences – Part II. *J Intensive Care Med* 2007; 22(3): 157–165.
5. Mort TC. Emergency tracheal intubation: complications associated with repeated laryngoscopic attempts. *Anesth Analg* 2004; 99: 607–613.
6. Mort TC. Complications of emergency tracheal intubation: hemodynamic alterations – Part I. *J Intensive Care Med* 2007; 22(4): 208–215.
7. Peterson GN, Domino KB, Caplan RA, Posner KL, Lee LA, Cheney MD. Management of the Difficult Airway. A Closed Claims Analysis. *Anesthesiology* 2005; 103: 33–39.

Postoperative pain and vomiting after orbital wall surgery in trauma

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EDITOR:

Blunt orbital trauma with need of surgical repair is common. Postoperative complications are rare but may include retrobulbar haematoma [1], which may be serious since it can evolve rapidly into visual impairment or even permanent loss of vision [2]. Anaesthetists implicated in the postoperative care of such patients should be aware of this problem and its symptoms in order to act rapidly in an adequate way. Isolated treatment of pain and nausea and vomiting may result in permanent loss of vision within hours.

Acute retrobulbar haemorrhage can follow as a severe complication of trauma, retrobulbar injections [3], orbital surgery or even minor eyelid surgery [4] with potentially devastating consequences such as loss of vision. Being aware of this potential complication and a rapid computed tomography (CT) scan may prevent grave sequel. This case

highlights the need for increased awareness after blunt orbital trauma and orbital surgery.

Case report

A 41-yr-old male was involved in a dispute and punched in the face. In the emergency room the patient was conscious, had amnesia for the event, a right periorbital ecchymosis and haematoma but no nausea, vomiting or any visual deficit. A CT scan of the skull and brain revealed a fracture of the right maxillary sinus, including a haematosinus and a medial and inferior orbital wall fracture with a minor enophthalmus. Clinically, the patient described a minimal infra- and supraorbital hypoesthesia. The patient was transferred to an intermediate care unit for neurological surveillance and a conservative treatment was planned for the orbital wall fracture. Routine blood tests, including coagulation studies, were within norm ranges.

Over the next 7 days, the hypoesthesia did not improve and the decision for surgical intervention was taken. The plastic and reconstructive surgeons performed a neurolysis of the infraorbital nerve and introduced a poly-*p*-dioxanon plate (PDS plate, 0.5 × 40 × 50 mm; Johnson & Johnson,

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Figure 1. *Transaxial computed tomography (CT), showing the retrobulbar haematoma and exophthalmus on the right hand side with compression of the inferior rectus muscle and compression of the optic nerve.*

Spreitenbach, Switzerland) to correct the enophthalmus. The patient was instructed not to blow his nose within the next 2 weeks.

Despite these instructions, the patient did blow his nose and massive pain and nausea and vomiting developed rapidly. This happened within 12 h after surgery; for this reason the plastic surgeons called the anaesthetist responsible for postoperative pain management demanding a better treatment for pain, nausea and vomiting. To the anaesthesiologist, the intensity of pain appeared excessive for the type of surgery performed a few hours ago and the sudden onset of severe nausea and vomiting also appeared unusual. Clinically, the patient had an exophthalmus, which was difficult to visualize due to postoperative swelling and dressings.

For these reasons a CT scan of the skull and the orbit was performed. These images revealed (Fig. 1) a massive right retrobulbar haemorrhage with marked proptosis and tenting (deformation) of the globe by the stretched optic nerve. The right pupil was deformed, indicating an optic nerve compression (relative afferent pupillary defect (RAPD)) and vision was reduced to 0.4 (normal = 1.0). The proptotic eye was immobile ('frozen globus').

An emergency revision with evacuation of the haematoma and removal of the PDS implant was performed. At the end of this procedure the globe was back in its proper position with improved extraocular movement and reduced RAPD. A few

weeks later, the vision of the right eye was restored to 0.9 with full visual field and minimal residual RAPD. No postoperative CT scan was performed.

Discussion

Loss of vision is a complication of maxillo-facial trauma occurring in 0.67–3% of cases [2]. In a retrospective study [5] an incidence of loss of vision of 0.24% was found as a complication of surgery for orbital fractures; in 48% of the cases a retrobulbar haematoma was identified as the cause of this devastating complication.

There is general agreement that the damage to the visual system caused by haematoma is the result of increased intraorbital pressure, which results in a decreased perfusion, representing a 'compartment syndrome'. Bleeding frequently originates from the infraorbital artery or one of its branches.

Owing to the anatomy of the orbit within inflexible walls, even a small haematoma may have catastrophic consequences. In fact, the orbital tissue seems to respond to fluid overload in such a way that once the hydraulic system of the orbit is exhausted, even small changes in volume can cause a dramatic increase in orbital pressure [1,6]. This pathology is also found in acute glaucoma. The pressure does not increase that dramatically when the haematoma finds its way into the periorbital sinuses via the orbital wall fracture. In this patient, however, this escape route was not possible because of the PDS plate in place.

An orbital haematoma can cause complications ranging from vascular compression to acute stretching of the optic nerve resulting from proptosis. The accompanying retrobulbar oedema may additionally reduce retinal perfusion and compress the long and short ciliary vessels, leading to ischaemic damage to the optic nerve. In most cases the ischaemia occurs to the anterior part of the optic nerve [7]. The optic nerve provides some protection to the enclosed central retinal artery from direct compression. The higher systolic pressure of this artery also gives some added protection. Other vessels lying within muscle cones and entering the eye around the optic nerve do not have such protection. These include the prepapillary choroid and post ciliary arteries. Loss of vision can therefore occur without central artery occlusion and has been documented as anterior ischaemic neuropathy [8].

In some cases the vision is not at risk but displacement of the orbital structures by haematoma interferes with ocular motility and function.

In the present case, the most critical aspect of orbital haematoma treatment is the rapidity of the diagnosis and the decision to perform immediate

surgical drainage. Any delay between the onset of symptoms and orbital decompression can have a marked effect on functional recovery. It has been stated that if decompression is carried out within 2 h of the onset of symptoms it is likely to be successful in avoiding permanent damage [9].

Emergency lateral canthotomy with inferior cantholysis has been recommended as first-line treatment to reduce intraorbital and intraocular pressure while waiting for a CT scan and definitive surgery. It is a safe and often effective procedure to be performed even without any anaesthesia on a patient entering the emergency room with clinical suspicion of a retrobulbar haemorrhage [10]. Our patient was agitated, vomiting and ready to go to the operating theatre with a CT scan showing a major localized haemorrhage needing to be evacuated. Therefore no time was lost with a lateral canthotomy.

Clinical diagnosis is based on a painful proptosis with or without visual deficit or loss of pupil reflex and nausea and vomiting. These symptoms are partially generated due to the rising intraocular pressure, which is 'acute glaucoma' due to the impossibility that liquid can leave the front chamber of the eye. An emergency multi-slice CT scan is a fundamental diagnostic aid.

The fundamental error that could have occurred in this case would have been to non-specifically treat pain with opioids and nausea and vomiting by central acting drugs such as serotonin antagonists, droperidol or dexamethasone. Symptoms would have been attenuated but the patient might have definitely have lost his vision on this eye.

In conclusion, retrobulbar haematoma is a rare but severe complication of surgery for orbital fractures, with potentially devastating consequences such as loss of vision. Being aware of this potential complication and a rapid CT scan may prevent grave sequelae as well as the search of surgical complications in the immediate postoperative period.

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References

1. Bailey WK, Kuo PC, Evans LS. Diagnosis and treatment of retrobulbar hemorrhage. *J Oral Maxillofac Surg* 1993; 51: 780–782.
2. Zachariades N, Papavassiliou D, Christopoulos P. Blindness after facial trauma. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1996; 81: 34–37.
3. Girard LJ. Subperiosteal orbital hemorrhage from retrobulbar injection resulting in blindness. *Arch Ophthalmol* 1997; 115: 1085–1086.
4. Hass AN, Penne RB, Stefanyszyn MA, Flanagan JC. Incidence of postblepharoplasty orbital hemorrhage and associated visual loss. *Ophthalm Plast Reconstr Surg* 2004; 20: 426–432.
5. Giroto JA, Gamble WB, Robertson B *et al.* Blindness after reduction of facial fractures. *Plast Reconstr Surg* 1998; 102: 1821–1834.
6. Korinth MC, Ince A, Banghard W, Huffmann BC, Gilsbach JM. Pterional orbita decompression in orbital hemorrhage and trauma. *J Trauma* 2002; 53: 73–78.
7. Ord RA. Post-operative retrobulbar haemorrhage and blindness complicating trauma surgery. *Br J Oral Surg* 1981; 19: 202–207.
8. Winterton JV, Patel K, Mizen KD. Review of management options for a retrobulbar hemorrhage. *J Oral Maxillofac Surg* 2007; 65: 296–299.
9. Hislop WS, Dutton GN. Retrobulbar haemorrhage: can blindness be prevented? *Injury* 1994; 25: 663–665.
10. Goodall KL, Brahma A, Bates A, Leatherbarrow B. Lateral canthotomy and inferior cantholysis: an effective method of urgent orbital decompression for sight threatening acute retrobulbar haemorrhage. *Injury* 1999; 30: 485–490.

Is *post partum* headache after epidural anaesthesia always innocent?

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Parturients with headache, who have received regional anaesthesia for labour, are usually treated

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for post-dural puncture headache (PDPH) [1–3]. Dural sinus thrombosis (DST) is a rare but potentially fatal condition, which may be encountered during pregnancy or puerperium and may be associated with obesity, hypercoagulable states, usage of some drugs, central nervous system infections, neighbouring infections or cancers. The similarity of symptoms between DST and PDPH makes diagnosis difficult. DST has a wide spectrum of