A Case Report:

ORBITAL EMPHYSEMA

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A 52 yrs old man presented with sudden, painless lid edema and periorbital swelling of right eye following forceful nose blowing (6 hrs back). He had sustained injuries over forehead & face following a road traffic accident 2 days back and was diagnosed with right sided maxillary roof fracture on CT scan. On examination, there were bruises on forehead & right side of face, non tender lid edema, periorbital swelling & crackling sound (crepitus) was felt on palpation. There were multiple transparent cysts in conjunctiva, no congestion was present. Rest of the anterior segment was normal. Ocular movements, pupillary reactions and dilated fundus examination was normal. Left eye was within normal limits. Best corrected visual acuity of both eyes was 6/6, N6. A provisional diagnosis of subcutaneous orbital emphysema was made.

Orbital emphysema is the abnormal presence of air in the loose subcutaneous tissue around the orbit. It is usually a benign, self-limited phenomenon. It rarely can result in irreversible ischemic visual loss. It is commonly seen in cases with history of facial trauma, surgery or sinusitis, it is uncommon in the absence of trauma.

Orbital emphysema occurs when there is direct communication between the orbit and wall of the nasal sinuses and air is forced into the orbit under pressure, usually after forceful nose blowing, sneezing or valsalva maneuver. Lamina papyracea (medial orbital wall) being weakest is the most common site of bony defect for passage of air from paranasal sinuses. Trauma is the commonest etiology. Direct blunt trauma to orbit can cause fracture of lamina papyracea due to increased intraorbital hydraulic pressure or buckling force, allowing communication between the orbit and the ethmoid sinuses. Orbital blow out fracture and orbital wall fractures are common causes. Other causes include post-surgical, post sinus surgeries, pressure changes during air travel, compressed-air injuries, certain tumors or bacterial infections of the orbit.

Patients usually present with sudden, painless lid edema, periorbital swelling with crepitus (crackling sound) on palpation. They may present with conjunctival chemosis, restricted ocular movements, ptosis or mild proptosis

If the air cannot escape from the orbit because of a ball-valve mechanism, an acute compartment syndrome develops that may cause a compressive or ischemic optic neuropathy, central retinal artery occlusion, optic nerve ischemia, or direct optic nerve compression leading to loss of vision. Hence when orbital emphysema shows signs of pressure effect like restricted ocular motility, sluggish pupillary reaction, relative afferent pupillary defect, disc edema, venous congestion & tortuosity or decreased visual acuity then drainage of trapped air in the subcutaneous tissue should be considered.

Urgent orbital CT scan is indicated, it shows accumulation of air in orbit, localizes site of fracture, displacement of bone fragments if present & rules out associated intraorbital pathologies.

As emphysema is usually benign, self limiting, resolves over a period of about two to three weeks, no treatment is required unless there are associated visual symptoms. As fibrosis around the fracture sites of the lamina papyracea is expected to occur within two weeks, possibly closing a sinus–orbital communication, all patients with orbital emphysema should avoid nose blowing, sneezing, coughing, vomiting, or Valsalva maneuvre for at least two weeks after the injury. This is beneficial for all patients who might have medial orbital fractures, because small fractures may not always

be readily seen on imaging studies. Antibiotics, decongestants, Intravenous steroids may be used to reduce intraorbital inflammation and acetazolamide or mannitol to reduce intraorbital pressure, however there are no randomized controlled trials investigating the efficacy of these treatments in this condition. When emphysema shows signs of pressure effect or decreased vision, immediate decompression should be done. Surgical options include decompression with a needle & syringe, underwater drainage of air by 24-gauge needle, lateral canthotomy, cantholysis, and direct aspiration of the air. Ischemic damage to the optic nerve can be prevented with the administration of intravenous steroids

Though orbital emphysema is usually a benign condition, because of the potential for severe vision loss, early diagnosis and immediate management are necessary.

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