Orbital Emphysema Leading to Blindness Following Routine Functional Endoscopic Sinus Surgery

Functional endoscopic sinus surgery (FESS) is a procedure commonly performed for sinus pathologic examination. It is a minimally invasive technique that aims to restore drainage and aeration of the sinuses.

Orbital emphysema is a reported complication of FESS and is often considered to be self-limiting and is not sight-threatening. We report the case of a patient who suffered irreversible visual loss following FESS. To our knowledge orbital emphysema causing complete and irreversible loss of vision has not previously been reported as a complication of FESS.

Report of a Case. A 60-year-old man had routine uncomplicated FESS for recurrent sinusitis and nasal congestion. He had bilateral uncinectomies, middle meatal antrostomies, and anterior ethmoidectomy on the left. He was discharged the following day on oral antibiotics. He returned 48 hours later complaining of moderate periorbital swelling around the left eye after sneezing. Visual acuity was 6/6 in both eyes, extraocular movements were full and there was no relative afferent pupillary defect. He was advised to avoid blowing his nose. Six hours later he returned with increased periorbital swelling, pain, and blurring of vision in the left eye. He had severe swelling of the left eyelids and a tense orbit. Movement of the left eye was severely limited and vision had fallen to counting fingers with a mild relative afferent pupillary defect. Funduscopy showed slightly engorged retinal veins with a patent central retinal artery and no disc swelling. A computed tomographic scan of the orbits revealed orbital emphysema in the left orbit superiorly (Figure). He was admitted to the hospital for close monitoring. The following morning, visual acuity was no perception of light in the left eye with a dense relative afferent pupillary defect. Fundal appearance was unchanged but the orbit was less tense. He was taken to the operating theater immediately for lateral canthotomy and orbital exploration. Blunt dissection of orbital tissues allowed air to escape. Intravenous acetazolamide was given at the time of surgery. Visual acuity was no perception of light on the first postoperative day. There has been no further visual improvement in 6 months.

Comment. Orbital emphysema occurs when there is direct communication between the orbit and 1 of the nasal sinuses and air is forced into the orbit under pressure, usually after nose blowing, sneezing, or a Valsalva maneuver. 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 leading to blindness. Reported cases cite central retinal artery occlusion, optic nerve ischemia, or direct optic nerve compression as the cause of transient visual loss. However, if the vision deteriorates, rapid action must be taken in order to prevent irreversible damage. This case illustrates that delaying surgical intervention can result in blindness, and we would advocate immediate surgery to decompress the orbit and allow air to escape. An urgent orbital computed tomographic scan should be requested to localize the air. Surgical options include lateral canthotomy, cantholysis, and direct aspiration of the air. Additionally, intravenous steroids to reduce intraorbital inflammation and acetazolamide or mannitol to reduce intraorbital pressure could be used, however, there are no randomized controlled trials investigating the efficacy of these treatments in this condition.

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