

## SHORT COMMUNICATION

# Severe orbitopalpebral emphysema after nose blowing requiring emergency decompression

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**PURPOSE.** *Orbital emphysema is a frequent condition associated with medial wall fractures after blunt trauma. It is usually a benign, self-limited phenomenon. The authors are unaware of previous reports of severe orbital emphysema needing emergency decompression with no evidence of any previous significant trauma such as the case presented herein.*

**METHODS/RESULTS.** *A 51-year-old woman had painful swelling of the left orbital region that prevented her from opening her eyelids. She complained of a coincident cold with abundant mucous rhinorrhea. She had blown her nose vigorously several times. A computed tomography scan revealed a left proptosis, an extensive orbitopalpebral emphysema, and a blowout fracture of the medial wall of the left orbit. A complete ophthalmic examination was only possible after a needle decompression. No significant ocular damage was observed, so outpatient treatment was provided. Twenty-eight hours later, the swelling had almost disappeared, and the ocular assessment was normal.*

**CONCLUSIONS.** *A forceful expiratory effort raising intranasal pressure may cause a medial wall orbital fracture. If the airway hyperpressure episodes are repeated, a severe orbitopalpebral emphysema may develop. Should there be any suspicion of vascular compression, it must be drained to allow the assessment of visual function and theoretically prevent a potentially irreversible ischemic visual loss. (Eur J Ophthalmol 2006; 16:339-42)*

**KEY WORDS.** *Decompression, Emphysema, Nose blowing, Orbit*

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## INTRODUCTION

Orbital emphysema is the presence of air in the orbit. This anomalous condition is observed with orbital fractures after paranasal sinus communication, normally after blunt trauma. The quantity of intraorbital air mass is usually of little clinical consequence, other than signifying an orbital fracture (1). However, severe orbital emphysema with no evidence of any significant trauma is an exceptional occurrence that may compromise retinal and optic nerve blood flow, and therefore requires rapid management.

## Case report

A 51-year-old woman presented with a painful swelling of the left orbital region. She complained of a concurrent upper respiratory infection with abundant mucous rhinorrhea which at that time she had had for 4 days. Before the swelling and during a nasal blowing she noted a "pop" followed by a limited left-sided nasal bleeding. After this moment, she had been blowing her nose vigorously several times for approximately 2 hours and she felt progressively the periorcular tumefaction and the pain. There had been no other known trauma (recent or ancient). She was



**Fig. 1** - Clinical view summary of the patient. Top: The patient on her arrival to the clinic. Middle: The patient immediately after the needle decompression. Note the reduction of the periorbital swelling. Bottom: The patient 28 hours after the needle decompression. The tumefaction had almost disappeared.

allergic to penicillin. Otherwise there was no previous history of medical problems such as osteoporosis or ENT diseases. The initial exploration showed a considerable, white, cold, crepitant tumefaction of the left periorbit that prevented both the patient and the ophthalmologist from opening the eyelids (Fig. 1, top). The patient was afebrile (36.5 °C). Blood examination showed moderate leukocytosis (11,700/ $\mu$ L with neutrophils 53.3% and lymphocytes 35.5%). The biochemical profile, including calcium and phosphate, was normal. An emergency computed tomography (CT) scan revealed a left proptosis, an extensive confluent orbitopalpebral emphysema, and a blowout fracture of the left orbit medial wall (Fig. 2).

A needle decompression was decided upon given the presumption of vascular compression and the inaccessibility of the eye for exploration purposes. It was performed with six palpebral punctures (three in the upper eyelid and three in the lower), followed by two superonasally peribulbar punctures using a 25-gauge hypodermic needle coupled to a syringe filled with normal saline with the plunger removed (Fig. 3).

The pain was immediately relieved by draining the orbitopalpebral emphysema, and the periorbital swelling considerably reduced, allowing the patient to open her left eyelid (Fig. 1, middle). A complete ophthalmic examination of the left eye was then possible. The patient had a visual acuity of 20/20 in the right eye and 20/32 in the left. The extrinsic ocular motility was intact with no binocular diplopia. Pupillary examinations revealed no relative afferent pupil defect. The intraocular pressure (IOP) was 16 mmHg in the right eye and 18 mmHg in the left. The fundus examination was normal in both eyes.

The patient was treated on an outpatient basis with a broad-spectrum oral antibiotic (ciprofloxacin 500 mg/12 hours), an oral steroid (deflazacort 30 mg/12 hours), an oral cough suppressant and analgesic (codeine phosphate 50 mg/12 hours), a nasal decongestant (nafazoline/6 hours), and ice pack applications. We advised her to refrain from strong nose blowing and to return to our ophthalmologic emergency service if swelling, pain, or vision loss occurred.

Twenty-eight hours later, the scheduled examination showed that the tumefaction had disappeared (Fig. 1, bottom). The patient had no complaint of pain. Visual acuity was 20/20 in both eyes. Extrinsic and intrinsic motility were normal. IOP was 15 mmHg bilaterally. Funduscopy presented no pathologic findings. The patient continued with the same treatment for a further 5 days, and she



**Fig. 2** - Computed tomography scan of the patient. Top: High axial section. Note the abundant preseptal and orbital air masses. Middle: Low axial section. There is a depression of fracture fragment (lamina papyracea) into the adjacent ethmoid air cells, which are opacified. There is no evidence of entrapment of the medial rectus muscle. Note the left proptosis. Bottom: Coronal section. Intraconal air bubbles seem to compress the optic nerve (also seen in low axial section). Also note the profuse air mass in the orbital roof.



**Fig. 3** - Punctures drain the trapped air. Note the appearance of bubbles in the saline signals penetration of the air pocket.

gradually reduced corticoid therapy. There has been no further recurrence of the condition after 14 months of follow-up.

## DISCUSSION

Orbital emphysema following nose blowing with no previous traumatic or surgical precedents is a rare phenomenon that has been reported (2-5). However, the quantity of orbital air in these reports was small, the eye was explored without any problem, and only medical treatment was needed. To our knowledge, no previous reports of severe emphysema after nose blowing requiring orbitopalpebral decompression exist.

In this case, and in the absence of external trauma, we presume that increased intranasal pressure as a result of repeated nose blowing caused the sudden fracture of the left lamina papyracea in a patient with a cold, but who was otherwise healthy. This fracture may have produced a valve effect, which allowed air to enter but not to leave the orbit, resulting in a high intraorbital pressure that may have potentially caused an irreversible, ischemic visual loss secondary to an ischemic optic neuropathy (6-8), or to an acute central retinal artery occlusion (9). In such a case, a rapid orbital decompression is necessary in order to avoid these complications, especially if the affected eye is inaccessible for a complete clinical examination, as illustrated in this case.

Oluwole and White presumed that an increased intranasal pressure may rupture the orbital bone wall that had become thinner with age (3). However, the present

case supports Suzuki et al, who suggested that the thin orbital wall may be broken merely by compressed air in the nasal cavity regardless of the aging process (5).

Treatment of orbitopalpebral emphysema using a needle with a syringe was first suggested by Linberg (9). The needle decompression technique is simple, is quick, involves low risk, and is familiar to ophthalmologists. In addition, this technique is the definitive treatment for a severe orbital emphysema, so this intervention was chosen instead of lateral canthotomy and cantholysis. A CT scan may provide information for a guided puncture of air pockets and also may reveal orbital abscess or tumors that may affect bone wall integrity, not observed in this case.

After decompression, prophylactic antibiotic was prescribed to avoid orbital cellulitis secondary to the sino-orbital communication. A decongestant, a cough suppressant, and instructions against nose blowing were used to avoid new airway hyperpressure episodes. A general steroid was thought to diminish periorbital inflammation.

In conclusion, repeated, vigorous nose blowing may cause a severe orbitopalpebral emphysema. Should this occur, a rapid drainage with needle punctures is suitable in order to achieve a prompt orbital decompression allowing opening of the eye and evaluation of the visual acuity. Theoretically, this procedure could prevent visual loss.

*None of the authors has a financial or proprietary interest in any material or method mentioned.*

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## REFERENCES

1. Lloyd GA. Orbital emphysema. *Br J Radiol* 1996; 39: 933-8.
2. Kaplan K, Winchell GD. Orbital emphysema from nose blowing. *N Engl J Med* 1968; 278: 1234.
3. Oluwole M, White P. Orbital floor fracture following nose blowing. *Ear Nose Throat J* 1996; 75: 169-70.
4. Mohan B, Singh KP. Bilateral subcutaneous emphysema of the orbits following nose blowing. *J Laryngol Otol* 2001; 115: 319-20.
5. Suzuki H, Furukawa M, Takahashi E, Matsuura K. Barotraumatic blowout fracture of the orbit. *Auris Nasus Larynx* 2001; 28: 257-9.
6. Carter KD, Nerad JA. Fluctuating visual loss secondary to orbital emphysema. *Am J Ophthalmol* 1987; 104: 664-5.
7. Dobler AA, Nathenson AL, Cameron JD, Carpel ET, Janda AM, Pederson JE. A case of orbital emphysema as an ocular emergency. *Retina* 1993; 13: 166-8.
8. Hunts JH, Patrinely JR, Holds JB, Anderson RL. Orbital emphysema staging and acute management. *Ophthalmology* 1994; 101: 960-6.
9. Linberg JV. Orbital emphysema complicated by acute central retinal artery occlusion. *Ann Ophthalmol* 1982; 14: 747-9.