

The Day His Orbit Blew Up

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After years of severe tearing from his left eye, Ronald North* was excited to have recently had surgery to remedy the problem. Postoperative recovery from the dacryocystorhinostomy really hadn't been too bad—until, that is, the day when his eyelid suddenly became droopy and he realized he could barely move his eye. He didn't feel pain or notice any change in his vision, but anxious nonetheless, he called the local Veterans Affairs ophthalmology clinic and asked to be seen urgently.

Five days earlier, the 79-year-old Korean War veteran had undergone routine external DCR with Crawford tube intubation. This had been performed for significant epiphora from a nasal lacrimal duct obstruction. The surgery proceeded without complication, and routine postop follow-up had been scheduled.

Mr. North's ocular history was significant for bilateral dermatochalasis and left lower lid ectropion, previously corrected with bilateral blepharoplasty and left lateral tarsal strip procedures, respectively. His general medical history included diabetes, hypertension and coronary artery disease. He was taking insulin, metoprolol, lisinopril, hydrochlorothiazide, diltiazem, simvastatin and aspirin, as prescribed by his internist.

We Get a Look

On arrival at our clinic, the patient's visual acuity was 20/30 in the right eye and 20/50 in the affected left eye, which was stable with preoperative measurements. There was no relative afferent pupillary defect or red desaturation. The exophthalmometry readings were 17 mm for the right eye and 20 mm for the left eye, with a base of 98 mm. Bullous chemosis was present, but the sclera and conjunctiva were clear, without injection.

Extraocular movements of his left eye were significantly restricted on

upgaze as well as on adduction and abduction. The interpalpebral fissure measured approximately 3 mm. We noted that the surgical site was nontender and without significant erythema, induration or discharge. Mild ecchymosis of the upper cheek on the affected side was present. No crepitus was noted.

Despite the surprising lack of pain and redness, the ophthalmoplegia, ptosis and proptosis were a huge concern for orbital cellulitis or even retrobulbar hemorrhage. We immediately sent Mr. North for orbital imaging.

Diagnosis and Treatment

The noncontrast orbital CT showed extensive soft tissue emphysema involving the orbit and eyelids (Fig. 1). Subcutaneous air was seen at the osteotomy (Fig. 2) and extended throughout the superior and medial extraconal tissues to the orbital apex. The air also tracked between the medial orbital wall and medial rectus. There was no evidence of intraorbital hematoma or fluid collection.

After reassuring Mr. North that nothing dangerous was occurring, we asked him to use Afrin (oxymetazoline) and cool compresses, and to come back in two days. Because the patient was felt to be reliable and agreed to close follow-up, no systemic antibiotic was prescribed for the emphysema. On the follow-up exam, the proptosis, ophthalmoplegia and blepharoptosis had largely resolved with the conservative management.

Discussion

DCR is performed routinely for obstruction of the nasal lacrimal duct and succeeds in more than 90 percent of cases.¹ It creates an osteotomy and mucosal anastomosis through the lacrimal sac fossa and superior nasal wall of the nasal lacrimal duct at the level of the middle turbinate. Formation of the passage between the lacrimal sac and the nasal cavity allows for the obstruction to be bypassed.

Complications that can occur fol-

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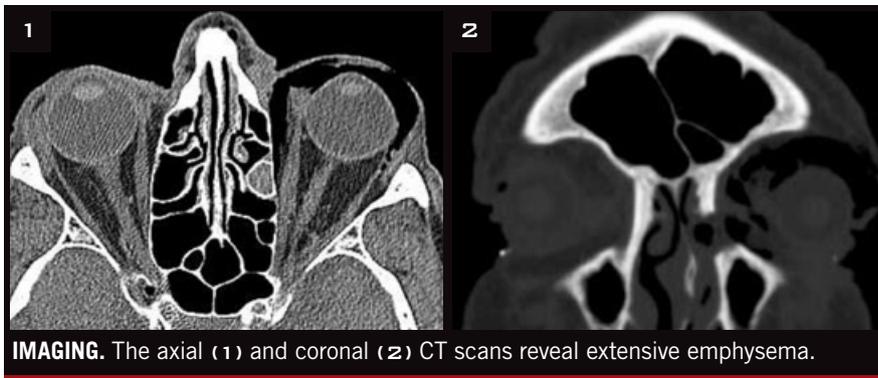
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lowing DCR are generally well known and include surgical failure, usually from membranous adhesions across the osteotomy,² bleeding,³ facial nerve damage leading to temporary lid weakness or lagophthalmos,⁴ orbital hemorrhage,⁵ cerebrospinal fluid leakage⁶ and various complications related to the silicone stent used in the procedure.⁷ Postoperative reflux of air can occur,¹ but only in rare instances does it cause significant problems. Our case seems unique in that extensive emphysema of the orbit causing proptosis, ophthalmoplegia and blepharoptosis—as best we are aware—has not been reported previously.

The mechanism of how the air entered the orbit is not known precisely. We suspect that it entered the orbit as a result of Valsalva or nose-blowing, though there is no history to support this. The space-occupying air led to proptosis and severely limited extraocular movements. In addition, the air infiltrated the soft tissues of the upper eyelid, causing the blepharoptosis.

Extensive intraorbital air following DCR is an uncommon complication. Hypothetically, subcutaneous and

intraorbital air following DCR could occupy enough space to have an effect like compartment syndrome, with significant morbidity following an otherwise safe and effective procedure.

In this case, we managed the condition conservatively and it resolved without further sequelae.

* Patient name is fictitious.

1 Herbert, H. and G. Rose. *Arch Ophthalmol* 2007;125:1674–1676.

2 Evereklioglu, C. et al. *Am J Ophthalmol* 2007;143:328–333.e321.

3 Tarbet, K. and P. Custer. *Ophthalmology* 1995;102:1065–1070.

4 Vagefi, M. R. et al. *Ophthalmology* 2009; 116:585–590.

5 Hurwitz, J. et al. *Can J Ophthalmol* 1992; 27:139–142.

6 Neuhaus, R. and H. Baylis. *Ophthalmology* 1983;90:1091–1095.

7 Vicinanza, M. G. et al. *Ophthalmology* 2008;115:1241–1244.

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