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Orbital and Premaxillary Emphysema as a Result of Nose-Blowing Following Blepharoplasty

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Abstract

A 41-year-old man presented with sudden-onset swelling, redness, and pain in the right eye, 4 days after bilateral upper and lower eyelid blepharoplasty. The symptoms were preceded by a forceful nose-blowing episode. Upon examination, periorbital edema and subcutaneous crepitus were observed, along with limitations in upward gaze. Computed tomography revealed bilateral premaxillary and extraconal air accumulation. Since there was no optic nerve ischemia or orbital compartment syndrome, the patient was closely monitored. Spontaneous regression of the emphysema was observed during follow-ups. Orbital emphysema, although commonly associated with trauma, can also arise from compelling movements such as severe nose-blowing, as demonstrated in this unique case postblepharoplasty. The structural changes during surgery may contribute to weakened support, predisposing patients to emphysema following sudden pressure changes. Clinicians should be vigilant for periorbital edema and subcutaneous crepitus after facial surgeries, emphasizing the importance of timely imaging for diagnosis. Awareness campaigns advising against forceful actions like sneezing, coughing, and nose-blowing during the initial postoperative period are crucial to prevent potential complications.

Keywords
- orbital emphysema
- nose-blowing
- blepharoplasty

Introduction

Orbital emphysema is a clinical picture that can occur anywhere in the orbit, manifesting itself with air spaces on computed tomography (CT), and subcutaneous crepitus on examination.[1] Most of the cases in the literature have been seen as a result of trauma with orbital wall defects or orbital bone fractures.[2] Although the most common etiological factor is trauma, it can rarely be seen iatrogenically after surgical operations, after forceful maneuver such as coughing, straining, nose-blowing, or after air travel.[3,4] While most cases have spontaneous resolution, cases that cause optic nerve ischemia and orbital compartment syndrome threaten vision very seriously, and in such cases the air must be evacuated.[5] Here, we present a patient with orbital emphysema after blepharoplasty operation followed by nose-blowing, which is the first case in the English literature to the best of our knowledge. The report adhered to the ethical principles outlined in the Declaration of Helsinki, and informed written consent was obtained from the patient.

Case Report

A 41-year-old male patient applied to our ophthalmic emergency department with complaints of sudden onset of

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swelling, redness, and pain in the right eye. When the patient's detailed history was taken, we learned that he had bilateral lower and upper eyelid blepharoplasty operation 4 days ago. When consulted with the operating doctor at the external center, we learned that during the blepharoplasty operation, the orbital septum was not opened and fat excision was not performed. Half an hour before the patient's complaints started, a severe nose-blowing had occurred. A full ophthalmological examination was performed. While the right periorbital area was edematous and hyperemic, subcutaneous crepitus was present on palpation (►**Fig. 1A**). The best corrected visual acuity was 0.7 in the right eye and 1.0 in the left eye using the Snellen chart. Both intraocular pressure values were normal. In the slit-lamp biomicroscopy examination, bilateral anterior and posterior segments were normal. Direct and indirect light reactions were positive and relative afferent pupillary defect was negative. Color vision examination was 12/12 in both eyes. While there was limitation in the right eye upward gaze, movement in other directions was normal. We then requested orbital and maxillofacial CT examination with the preliminary diagnosis of orbital emphysema in the patient; then we consulted the patient with otolaryngology. His CT was reported as: "Air spaces were observed in the bilateral premaxillary area, masticator space, between the common subcutaneous and muscle planes; and in the extraconal area on the right" (►**Fig. 2**). We decided to follow the patient since there was no suspicion of any optic nerve ischemia or orbital compartment syndrome. During follow-ups, we observed spontaneous regression of the emphysema (►**Fig. 1B**).

Fig. 1 (**A**) Photograph of the patient at the time of initial admission. There is intense edema in the right periorbital area and a blepharoplasty line on the right upper lid. (**B**) During follow-ups, periorbital edema appears to have decreased.

Discussion

Neighboring the orbit are the maxillary sinus inferiorly, the frontal sinus superiorly, and the ethmoid sinus medially. The lateral wall of the ethmoid sinus (lamina papyracea) of patients with chronic sinusitis is very thin and weakened. This can cause fracture and orbital emphysema as a result of the slightest trauma or sudden increase in intranasal pressure. In the case presented by Helvacı et al, a patient with chronic sinusitis developed orbital emphysema after severe nose-blowing and air drainage was applied to the patient at the bedside with a 22-gauge needle, since the periorbital edema was to a degree that would close the visual axis. After this intervention, a dramatic improvement was observed in the clinical symptoms.[6]

Studies have shown that intranasal pressure increases to 176 mm Hg when the mouth and nose are closed during sneezing. This pressure facilitates rupture of the lamina papyracea, which has weakened especially as a result of chronic sinusitis.[7] In addition, if mucosal ruptures and fractures in the bone line occur in the nose, they turn into a one-way valve system and cause the air to enter the orbit, but it does not allow its return.

Komro et al reported a case of periorbital emphysema in a 59-year-old male patient with a left anteromedial orbital floor defect after severe nose-blowing.[8] It was observed that orbital emphysema resolved after repair of the orbital floor defect. In another case presented by Akdag et al, orbital air drainage with a 21-gauge needle was applied in a case with progressive orbital emphysema after trauma and a remarkable improvement was detected in the patient's complaints.[9] The different aspect of our patient from these patients in the literature is that he was a case of orbital and premaxillary emphysema that developed on the fourth day following the blepharoplasty surgery after nose-blowing.

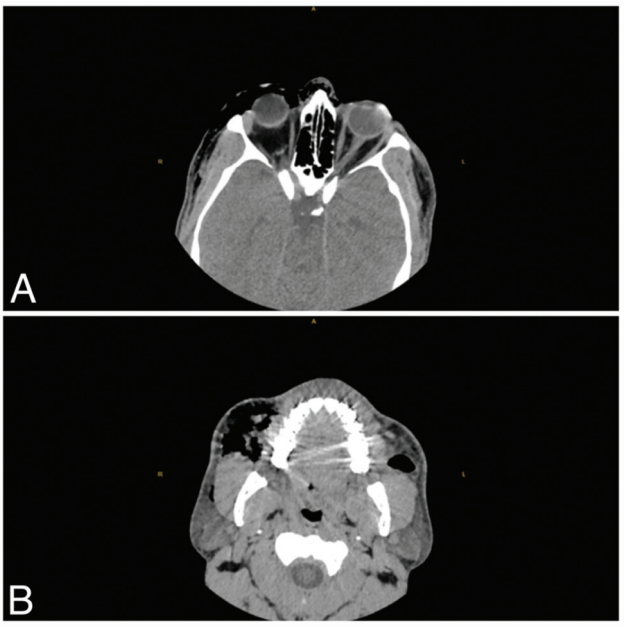

Fig. 2 Computed tomography image. (**A**) Air spaces in the right periorbital and extraconal area. (**B**) Air spaces in the premaxillary region and masticator space.

Retinal artery ischemia, optic nerve ischemia, and orbital compartment syndrome are among the indications for emergency treatment of orbital emphysema. In such cases, surgical treatment should be applied without waiting. It has been reported that milder cases can be followed up either without medical treatment or with antibiotics or corticosteroids.[10]

One of the most important differential diagnoses of postblepharoplasty periorbital swelling, pain, and ecchymosis is retrobulbar hemorrhage.[11] It is a vision-threatening clinical condition that can result in orbital compartment syndrome, particularly after surgeries like blepharoplasty, as seen in our case. While pain, periorbital ecchymosis, and vision loss are more prominent in retrobulbar hemorrhage, periorbital subcutaneous crepitus is more prominent in emphysema. In retrobulbar hemorrhage, bleeding areas are visible on CT, whereas in orbital emphysema, air pockets are observed in the orbit. Both clinical conditions can progress to orbital compartment syndrome, so they should be closely monitored and treated promptly when necessary.

Although orbital emphysema particularly occurs due to trauma, it can also occur as a result of severe nose-blowing, which is a forceful maneuver, as in our patient. The interesting feature of this case is that the patient had an underlying blepharoplasty operation history and orbital emphysema developed after nose-blowing. We believe that the cause of the resulting emphysema in this case may be the passage of air into the potential space formed in the subcutaneous tissue as a result of blepharoplasty. However, emphysema may have also occurred due to a previously unnoticed chronic sinusitis or a bone defect resulting from trauma, which the patient may not recall. As far as we know, there is no such picture in the English literature after blepharoplasty. It has been thought that factors such as excessive removal of orbital fat tissues and opening of the orbital septum in blepharoplasty surgery may weaken the structures in that area and cause emphysema when a sudden pressure such as blowing is encountered. In our patient, during blepharoplasty, the orbital septum was not opened, and fat tissue was not removed. It has been observed that this resulting emphysema occurred due to weakening of the subcutaneous tissue and was triggered by nose-blowing.

In conclusion, since orbital emphysema can threaten vision in severe stages, it is important to consider it when sudden periorbital edema and subcutaneous crepitus appear after actions such as coughing, sneezing, nose-blowing, trauma, or surgeries like blepharoplasty. It should be kept in mind that orbital emphysema may develop as a result of weakening of the support in structures, especially when excess adipose tissue is removed, and a pressure-increasing action such as nose-blowing is applied on it during blepharoplasty surgery. When we suspect this clinical picture, we should definitely request an orbital-maxillofacial CT examination. In addition, all patients should be warned not to sneeze, cough heavily, blow their nose, enter the pool, or take an airplane trip during the first 7 to 10 days postsurgery.

Patients' Consent

The report adhered to the ethical principles outlined in the Declaration of Helsinki, and informed written consent was obtained from the patient.

Funding

None.

Conflict of Interest

None declared.

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