Blow-Out Fracture due to a Hazel Stick Beat

Özet

Dal Çarpmasıyla Oluşan Blow-Out Fraktürü

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Abstract

The aim of this case report is to demonstrate that blow-out fractures can occur not only by a classical trauma mechanism but also from the consequences of a stick beat. A 66-year-old male was admitted to our hospital complaining of a sudden swelling of his right eyelid after blowing his nose. In his medical history there was the report of a hazel stick beat the previous day. Upon ophthalmological examination, ecchymosis was observed in the right orbital region, and subcutaneous amphisema in addition to a dense subconjunctival hemorrhage were detected. Using computed tomography (CT), the intraorbital air density in the soft tissues and the right maxillary sinus wall fracture possessing fluid density compatible with hemorrhage was observed. The patient was treated conservatively with prednisolone and antibiotics. We conclude that a blow-out fracture may occur in patients who experience orbital trauma, even in cases of low-energy trauma. These patients may be symptomatic after an episode of hard nose-blowing.

Keywords: Blow-out fracture, Barotrauma, Subcutaneous emphysema

Anahtar Kelimeler: Blow-out fraktürü, Barotravma, Cilt altı amfizemi
Introduction

Blow-out fractures of the orbital floor are typically produced by a blunt, intensive force localized to the orbital region that is usually caused by an object larger than the orbital rim. The lateral and superior orbital walls are more resistant to an increase in intraorbital pressure and so the fracture usually occurs in the orbital floor along the thin bone that overlies the intraorbital canal. Notably, the orbital rim is undamaged in pure orbital fractures. Intraorbital soft tissue herniation is usually associated with blow-out fractures [1]. In the case presented herein, we report the case of a rare blow-out fracture due to a hazel stick beat that becomes symptomatic on the next day after the individual blows his nose.

Case Report

An otherwise healthy 66-year-old man was characterized by sudden swelling of his right eyelid after a vigorous nose-blowing episode. Notably, on the previous day the patient suffered a hazel stick beat. The patient said that he only suffered from hyperemia around his right eye and did not complain of pain or any significant discomfort, diplopia, or vision loss after the trauma. Subsequent examinations revealed periorbital edema, ecchymosis, wide subconjunctival hemorrhage, and periorbital subcutaneous emphysema (Fig. 1). Overall, the patient’s vision acuities were 10/10 and his retinal examination was normal. In addition, there were no abnormalities in regard to the patient’s eye movements and he did not suffer from diplopia. An orbital fracture was suspected. A right orbital computed tomography (CT) scan revealed an intraorbital air density in the soft tissues located anterior to the bulbus oculi in addition to the right maxillary sinus wall fracture characterized with a fluid density compatible with hemorrhage (Fig. 2). The patient was treated with oral prednisolone (40 mg/day) and prophylactic oral antibiotic was given. The periorbital subcutaneous emphysema and edema decreased in severity on the fourth day of treatment. Diplopia, enophthalmia or visual disturbances did not develop throughout this period and thus surgical repair was not considered.

Discussion

The mechanisms of orbital blow-out fractures have been discussed by numerous investigators, but it is widely held that most fractures are due to more than one mechanism [1].

One of these mechanisms is known as the hydrolytic theory, which suggests that increased intraorbital pressure causes the displacement of the posterior bulbus oculi such that the pressure conducted to the orbital walls generates the fracture. A previous study reported by Smith and Regan [1] supports this theory. They showed that classical trauma for blow-out fractures causes orbital floor fractures with undamaged rim in an intact orbita, whereas the same trauma cannot cause orbital floor or rim fractures in exenterated orbitas. When the force of the trauma increases there is a greater probability that a fracture will occur. In addition, Jones and Evans [2] studied this theory using the quantitative analysis of orbital anatomy.

Another theory is known as the buckling theory that suggests that direct trauma to the hard inferior orbital rim conducts the force to the posterior region producing a compression fracture on the orbital floor. McCoy et al. [3] and Dodick et al. [4] supported this theory by analyzing the clinical features of orbital fractures. Furthermore, Fujino et al. provided empirical support...
for this theory [5-7].

In this case study, we believe that the orbital floor fracture occurred by the beat of a hazel stick since we only observed features of periorbital ecchymosis and subconjunctival hemorrhage. The next day when the patient blew his nose, an intraorbital soft tissue herniation into the maxillary sinus and intraorbital region was observed. In addition, this nose-blowing episode led to peri-orbital emphysema due to an increase in the intraorbital pressure. Thus we believe that hydrolytic theory and buckling theory may both influence the blow-out fractures via different mechanisms.

**Conflict interest statement** The authors declare that they have no conflict of interest to the publication of this article.

**References**