

A Rare Presentation of Spontaneous Orbital Emphysema with Enophthalmos

A.R. RAJALAKSHMI, ASHOK KUMAR M, SRIKANTH K.

ABSTRACT

A 25-year-old man presented with sudden onset of pain, right sided enophthalmos and periorbital emphysema following nose blowing. Computerized tomography showed fracture of medial wall of right orbit and multiple air pockets in the orbit, confirming the diagnosis of Spontaneous Orbital Emphysema (SOE). The patient was managed

conservatively with spontaneous resolution of emphysema over 5 days. SOE following nose blowing is a rare but potentially blinding complication. Recognition of this rare, yet sight threatening complication is emphasized to prevent permanent visual loss. Most of the reports of SOE were associated with proptosis and hence the rarity of the case being reported.

Keywords: Spontaneous orbital emphysema, Nose blowing, Enophthalmos

INTRODUCTION

Orbital emphysema as a result of blunt orbital or facial trauma is a well-known entity [1]. Spontaneous orbital emphysema, (SOE) a rare condition induced by barotrauma has been reported following nose blowing [2], sneezing [3], and air travel [4]. We hereby describe a case of SOE following nose blowing presenting with enophthalmos which was managed conservatively.

CASE REPORT

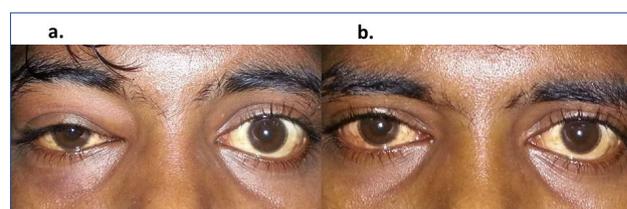
A 25 year old male presented with a sudden onset of pain and swelling in the right periorbital region following nose blowing. It was associated with a single episode of mild blood stained nasal discharge. The patient did not have any complaints suggestive of sinus disease. There was no history of previous trauma or surgery.

A detailed ophthalmic examination was done which revealed periorbital edema of the right eye with subcutaneous emphysema of both the lids and a palpable crepitus was felt. Visual acuity was 6/6 in both the eyes. On retracting the lids, the right eye showed enophthalmos which was confirmed with Luedde's exophthalmometer (13 mm in right eye and 17 mm in left eye). Extra-ocular movements were full and the pupil was briskly reacting to light. Anterior segment examination was normal. Fundus examination revealed no abnormalities.

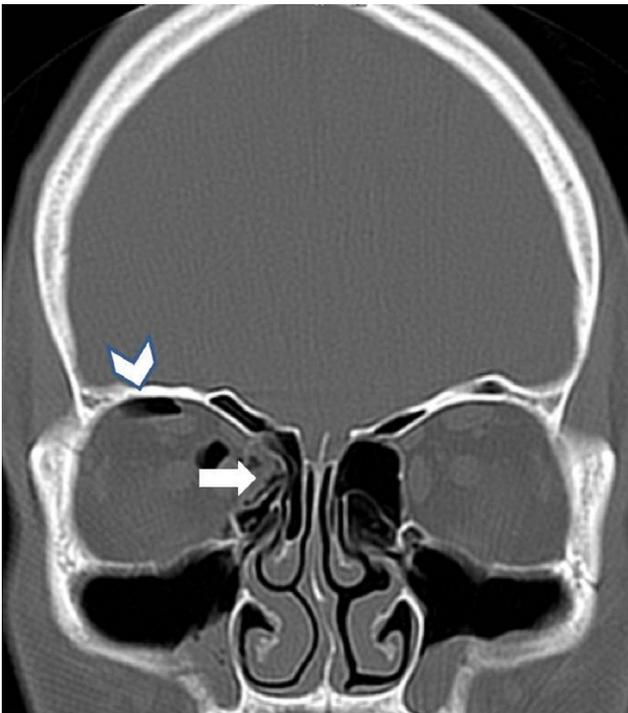
A subsequent otorhinolaryngological examination showed deviated nasal septum to the left with a compensatory

inferior turbinate hypertrophy on the right. A diagnostic nasal endoscopy revealed only a mild mucosal bulge in the region of ethmoidal sinus with an intact mucus membrane. There was no evidence of mucosal tear. Computerized tomography (CT) of the orbit and paranasal sinuses revealed fracture of medial wall of the right orbit with herniation of the orbital fat into the ethmoidal sinus. Multiple small air pockets were seen on the medial aspect of the orbit and in the retrobulbar region along with subcutaneous emphysema was detected.

The patient was managed conservatively with oral antibiotics (Cap. Amoxicillin 500 mg eighth hourly for five days), anti-inflammatory drugs and nasal decongestant drops. The patient was advised to avoid nose blowing. Follow up of the patient five days later showed a spontaneous resolution of orbital emphysema with minimal crepitus. There was an improvement in the enophthalmos on follow up examination with Luedde's exophthalmometer (15 mm in right eye and 17 mm in left eye) [Table/Fig-1a,b] and [Table/Fig-2].



[Table/Fig-1]: Clinical photograph showing: (a) right orbital emphysema with enophthalmos. (b) Spontaneous resolution of orbital and subcutaneous emphysema with improvement of enophthalmos



[Table/Fig-2]: Coronal view computerized tomography showing fracture of medial wall of orbit with orbital fat prolapse (arrow) and orbital air pockets (arrow head)

DISCUSSION

Blow out fractures of the orbital wall without involving the orbital rim are called pure blow out fractures and these are caused by trauma to the eye with objects whose diameter exceeds the orbital rim. The inferior orbital wall is commonest site of involvement followed by the medial wall. Rare case of orbital Roof fracture has also been reported. Orbital emphysema can complicate traumatic orbital fractures but it may also occur spontaneously. Orbital emphysema can involve only the eyelids/orbit or both. Emphysema involving the lids alone is a rare condition due to fracture of the lacrimal bone causing lacrimal sac tears. Fractures of the orbital wall involving the paranasal sinuses gives rise to true orbital emphysema and orbito palpebral emphysema occurs when the air from the orbit escapes through the orbital septum into the lid. Though orbital emphysema is usually benign, there may be a risk of orbital compartment syndrome [5].

The initial event that leads to orbital emphysema is the presence of a sino - orbital communication [5]. With a forceful expiratory effort, the intranasal pressure rises to around 114 mmHg, thereby creating a pressure gradient, pushing the air into the orbit [5,6]. The orbital fat then falls back and closes the communication, acting like a one way valve and trapping the air in the orbit. The entrapped air in most cases resolves spontaneously without sequelae [5]. However few cases have been reported in which there has been an associated

irreversible visual loss due to orbital compartment syndrome [7].

The reports of spontaneous orbital emphysema described in literature had a previous history suggestive of sinusitis [5,7], or old trauma [5]. However few cases have been reported which had no underlying cause for development of orbital emphysema [8,9]. The possible mechanism explained is the fracture of the lamina papyracea which is the thinnest of the orbital walls and easily gives way in case of barotrauma. Another possible explanation could be a developmental defect in the orbital wall structure which does not withstand the increased pressures inside the nasal cavity [8]. We herein report a case of spontaneous orbital emphysema with medial wall fracture following nose blowing, without any pre-existing sinusitis or orbital trauma. The orbital emphysema resolved spontaneously within five days with conservative management and the residual enophthalmos was cosmetically acceptable.

Hunts et al., [10] proposed a classification to manage orbital emphysema. Stage I is detected only radiographically, without much clinical evidence. Stage II presents with globe dystopia or proptosis. Stage III presents with increased Intra-Ocular Pressure (IOP) and optic nerve ischemia. Finally stage IV shows orbital compartment syndrome with significantly raised IOP and Central retinal artery occlusion. Stages I & II are managed conservatively with antibiotics, decongestants and avoidance of nose blowing. With stage III, orbital decompression is done with a needle attached to a syringe filled with saline and plunger removed. Additionally, treatment with high dose intravenous corticosteroids is indicated in patients with vision loss to prevent ischemic or direct injury to optic nerve. Stage IV orbital emphysemas are treated by immediate decompression with lateral canthotomy / cantholysis. Further management is as for stage III orbital emphysema.

Spontaneous orbital emphysema has been generally described in literature in association with proptosis. In this case, the presentation was varied with enophthalmos which partially resolved spontaneously. The enophthalmos can be explained by the orbital emphysema with medial orbital wall fracture leading to significant prolapse of orbital fat and loss of orbital volume as well as the large subcutaneous emphysema pushing the globe backwards. Resolution of the retropulsion effect of subcutaneous emphysema can explain the partial spontaneous resolution of enophthalmos.

CONCLUSION

We report a case of spontaneous orbital emphysema following nose blowing without any preexisting trauma or sinusitis. Although rare, we emphasize that orbital emphysema can lead to potentially serious visual complications. It is therefore imperative that a timely recognition of this severe complication be made in order to institute timely therapeutic strategies.

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FINANCIAL OR OTHER COMPETING INTERESTS:

None.

Date of Publishing: Dec 31, 2013