**ABSTRACT**

Maxillofacial trauma can lead to subcutaneous emphysema, which can dissect along fascial planes. A patient who sustained maxillofacial trauma after a ground level fall developed extensive emphysema within the deep tissues, including retropharyngeal emphysema and pneumomediastinum. After complete trauma evaluation, the patient was found to have an isolated orbital floor fracture. The patient described very aggressive nose blowing after the injury. The importance of complete evaluation for other potential sources of pneumomediastinum, including chest CT, flexible laryngoscopy, and water soluble esophagram. Ophthalmologic evaluation was negative for globe trauma. The patient was managed conservatively and was discharged to home on hospital day three with a regular diet and pneomediastinum. The patient was advanced to a regular diet and further outpatient intervention was required.

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**INTRODUCTION**

Maxillofacial trauma can have a wide range of sequelae. Nerve damage, scarring, disfigurement, and loss of function commonly occur as a result of displaced fractures. However, injuries resulting in airway compromise, hemorrhage, or infection can be immediately life threatening. Pneumomediastinum after isolated maxillofacial trauma is rare. Air can track through the subcutaneous tissue through the superficial and then deep cervical fasciae to reach the retropharyngeal space (Figures 1 and 2). The retropharyngeal space is bounded by the buccopharyngeal fascia anteriorly and the alar fascia posteriorly, and communicates inferiorly with the mediastinum. Usually an aerodigestive injury introduces air into this space. It is paramount that an injury of this nature is thoroughly evaluated, as mediastinitis is a feared complication. Evaluation with contrasted computed tomography (CT) scans of the neck and chest is standard. An esophagram to rule out a retropharyngeal laceration is also recommended.

**METHODS AND MATERIALS**

This is a case report of an isolated orbital fracture leading to pneumomediastinum and review of the literature.

**RESULTS**

A 56-year-old female had a ground level fall, sustaining trauma to the left side of her face. She subsequently blew her nose very forcefully and noted immediate swelling of her left periorbital, malar, and temporal crepitus. Maxillofacial CT demonstrated an isolated left orbital floor fracture, with extensive subcutaneous emphysema, including within the orbit, temporal and infratemporal fossa, submandibular space, parapharyngeal and retropharyngeal spaces, and mediastinum (Figures 3-8). The patient had a negative work-up for other potential sources of pneumomediastinum, including chest CT, flexible laryngoscopy, and water soluble esophagram. Ophthalmologic evaluation was negative for globe trauma. The patient was managed conservatively and work-up was negative for a retropharyngeal tear or mediastinitis. The patient was advanced to a regular diet and was discharged to home on hospital day three. There was interval resolution of the subcutaneous emphysema. No further outpatient intervention was required.

**DISCUSSION**

Subcutaneous emphysema may result from fractures of the maxillofacial skeleton, most commonly when the paranasal sinuses, orbit, or zygomaticomaxillary complex are involved. Nose blowing after maxillofacial trauma is frequently cited as a cause of subcutaneous emphysema. Fractures of the shared walls of the orbit and paranasal sinuses (i.e. orbital floor and medial orbital wall) cause lacerations of the mucoperiosteum, allowing for entry of air into the orbit. This air can then dissect through the loose connective tissue along fascial planes, which are the paths of least resistance. With sufficient force, air may dissect from the orbit through the inferior orbital fissure to the pterygopalatine fossa, through the parotid duct to the infratemporal fossa, and continue inferiorly along the deep cervical fascia through the parapharyngeal and retropharyngeal spaces and, ultimately, to the mediastinum. The rare occurrence of pneumomediastinum after isolated orbital fracture has only been reported three previous times in the English literature.

**CONCLUSIONS**

Pneumomediastinum caused by isolated orbital fracture is a rare but reportable event. The case presented here represents only the fourth reported in the English literature. Complete work-up should be undertaken to ensure no life threatening complications develop. A conservative approach with watchful waiting is an effective strategy in the management of pneumomediastinum after an isolated orbital fracture.

**REFERENCES**