Case Report

Cervicofacial, Retropharyngeal and Mediastinal Emphysema: A Complication of Orbital Fracture

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Retropharyngeal and mediastinal emphysema is associated with traumatic aerodigestive tract injury, and may be associated with potentially severe and even life-threatening complications. Retropharyngeal emphysema or pneumomediastinum, in the absence of severe trauma to the visceral organs, is rare following facial fractures. We report a case of extensive subcutaneous emphysema extending to the retropharyngeal space and mediastinum following an orbitozygomatic fracture. [Asian J Surg 2005;28(4):305–8]

Key Words: emphysema, facial fracture, mediastinum, retropharyngeal

Introduction

Retropharyngeal and mediastinal emphysema is associated with traumatic aerodigestive tract injury. It may be associated with potentially severe and even life-threatening complications. Though uncommon, it has been described after dental extractions and treatment with an air syringe or a high-speed hand piece. Retropharyngeal emphysema or pneumomediastinum, in the absence of severe trauma to the visceral organs, is uncommon following facial fractures. We report a case of extensive subcutaneous emphysema extending to the retropharyngeal space and mediastinum following an orbitozygomatic fracture.

Case report

A 70-year-old female was admitted after being found lying unconscious. She complained of left facial pain and swelling. Clinical examination showed an alert lady in a stable condition, with extensive soft-tissue swelling extending from the left periorbital region to the submandibular region. Palpation of the left periorbital region, cheek and neck revealed marked crepitus. A step deformity was felt in the left infraorbital rim, the maxilla was depressed and there was left infraorbital paraesthesia. There were no other injuries. Occipitomental radiographs showed displaced fractures of the left orbit, zygoma and maxilla (Figure 1). Extensive emphysema was evident in the soft-tissue planes (Figure 2). A

Figure 1. Facial X-ray showing displaced left orbitozygomatic and maxillary fractures.
Air was also seen in the anterior aspect of the right orbit (Figures 4–7). Subcutaneous emphysema was present from the left mandibular region tracking inferiorly through the tissue planes behind the oesophagus, anterior to the thyroid gland, into the superior mediastinum and around the trachea to the level of the arch of the aorta. Apart from the pneumomediastinum, no other abnormality was seen within the mediastinal structures. A barium swallow was performed to exclude perforation of the oesophagus and did not reveal any abnormalities.

The patient was managed conservatively with antibiotics and analgesia. The crepitus and swelling subsided over the next 9 days, and she was discharged from hospital well.

Discussion

Surgical emphysema occurs when air under pressure dissects through tissue planes to occupy the subcutaneous layer and the potential deep tissue spaces in the neck. It is generally thought to follow nose blowing in an attempt to clear the nasal passages after an associated fracture.3 The use of compressed air and water-cooled turbine burr drills in dental procedures may allow large amounts of air and water to be driven into the field, through the fascial planes into the mediastinum, pleural space or even the retroperitoneum.4

Air may enter the mediastinum through deep fascial planes in the neck. A fracture through the posterior wall of the maxillary antrum allows air to track to the lateral parapharyngeal space. This space contains loose connective tissue and is bounded by the pharynx medially and the pterygoid muscles laterally. It is continuous on each side with the retropharyngeal space, which is the area of loose connective tissue lying behind the pharynx and in front of the prevertebral fascia that extends upwards to the base of the skull and downwards to the superior mediastinum.5 This potential space is well illustrated in this patient by the presence of air in the mediastinum. In our patient, trauma causing tracking of air at the time of the injury, Valsalva manoeuvre or forced blowing of the nose after regaining consciousness are the possible mechanisms causing this retropharyngeal emphysema.

Due to the close proximity to vital structures in the neck and mediastinum, a complication such as retropharyngeal and mediastinal emphysema can be life threatening. Frequently, subcutaneous emphysema in the neck may be the only sign of pneumomediastinum.6 The patient may also complain of pleuritic retrosternal chest pain. Respiratory compromise may occur depending on the degree of airway

lateral cervical spine radiograph showed retropharyngeal gas in the precervical region (Figure 3). No pneumothorax or mediastinal air was present on chest X-rays. Further examination failed to reveal any abnormalities of the cardiopulmonary system.

Computed tomography (CT) of the neck and thorax revealed fractures of the left lateral orbital wall, floor and maxilla. Pockets of air were seen in the left periorbital, temporal and infratemporal regions, down to the left mandible, along the left parapharyngeal space and to the retropharyngeal space.

Figure 2. Extensive emphysema evident in the soft-tissue planes of the cervical spine radiograph.

Figure 3. Lateral view of the cervical spine showing retropharyngeal gas in the precervical region.
compensation. The apex beat may not be palpable, and the heart sounds diminished.

While facial subcutaneous emphysema can occur easily after a facial fracture, such extensive cervicofacial emphysema extending to the retropharyngeal space and mediastinum is unusual. A review of the literature shows only a few cases of mediastinal emphysema complicating facial fractures.7–10

Such an unusual presentation of extensive surgical emphysema with retropharyngeal and mediastinal extension, while not dangerous in isolation, may mask the presence of a concomitant aerodigestive tract injury. The consequences of missing such an injury are often disastrous. Prompt recognition is essential as, for example, an oesophageal perforation will require urgent surgical intervention with intravenous antibiotics. In most circumstances, the pneumomediastinum is self limiting and subsides with conservative treatment. A minimal workup should be carried out to exclude injuries with potentially severe complications before conservative management.

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References