

Iatrogenic Cervicofacial Emphysema and Pneumomediastinum after Wisdom Tooth Extraction

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Abstract: *Subcutaneous emphysema and pneumomediastinum following extraction of mandibular third molars are rare. These complications are caused by air forced into the loose connective tissue under the dermal layer at the site of extraction while using a high-speed air-turbine dental drill. The symptoms may vary depending on the quantity of air, its location and the presence or absence of infection. In most cases, the subcutaneous emphysema will begin to disappear in 3-5 days. This report presents a case of subcutaneous emphysema and pneumomediastinum after wisdom extraction.*

Keywords: Subcutaneous Emphysema; Third Molar Extraction; Dental Surgery Complication

1. Introduction

The surgical extraction of the third molar is the most common procedure in oral surgery [1]. Common complications include pain, bleeding, infection, perforation of the maxillary sinus and nerve injury [2]. Subcutaneous emphysema and pneumomediastinum are rare complications of dental treatment. We present a case of cervicofacial emphysema and pneumomediastinum occurring in a 22-year-old male following the removal of the right third mandibular molar.

2. Case Report

A 22-year-old male patient came to the emergency department, due to crepitations in the face and neck 1 day after a right third molar extraction under local anesthesia. At the admission, the patient had difficulty breathing but he was hemodynamically stable and afebrile.

Clinically, an extensive swelling in right side of patient's face was visible. On palpation, there was a manifest crepitus of the cheek, laterocervical, supraclavicular regions and the anterior chest wall with a substernal pain (Figure 2). No erythema was noted over these areas.



Figure 1: Cervicofacial swelling at the time of patient admission

An examination of the oral cavity revealed a slight trismus, and intraorally the buccal sulcus adjacent to teeth 48 was slightly raised with palpable crepitus. No bleeding, pus, or exudate was noted from the dental socket. The auscultation of his lungs revealed symmetrical air entry. Endoscopic examination was normal.



Figure 2: Preoperative radiograph showing right third mandibular molar with caries

The chest X-ray showed the presence of pneumomediastinum and adiffuse subcutaneous emphysema in the neck (Figure 3). No pneumothorax was detected. The C reactive protein was within level ranges.

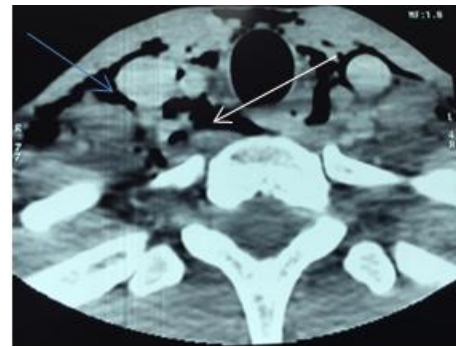


Figure 3: Chest X-ray showing subcutaneous emphysema and pneumomediastinum

A computed tomography (CT) scan of the face and the neck was performed which showed subcutaneous gas along the face and deep neck spaces (masticator, parapharyngeal, carotid, parotid, prevertebral), with extension into the mediastinum (Figure 4). There was no significant narrowing of the central air-ways.



(A)



(B)

Figure 4: CT Scan showing emphysema extending from the mandibular region to the mediastinum

- Head computed tomography scan showing air in the perimandibular (blue arrow) and retropharyngeal (white arrow) regions.
- Subcutaneous (blue arrow) and mediastinal emphysema (white arrow).

The patient was admitted to oral and maxillofacial surgery emergency department for airway monitoring and parental antibiotic therapy. He was placed on supplemental oxygen and commenced intravenous amoxicillin–clavulanic acid and paracetamol. The patient was kept under observation.

The clinical course was favorable, with a progressive reduction in the emphysema and no apparent complications. The patient was discharged from the hospital 48h later. 7 days later chest x-ray control was normal.

3. Discussion

Cervical emphysema and pneumomediastinum can be defined as the presence of air in subcutaneous soft tissue and mediastinum. Cases have been observed following a variety of dental procedures, such as tooth extraction and restorative dentistry [1], [3].

The roots of molar teeth are connected directly with the submandibular space, which communicates with the retropharyngeal space and mediastinum [4].

Two factors are prerequisite for the formation of subcutaneous emphysema: air forced under pressure and a communication between the oral cavity and the subcutaneous tissue [1],[5].

Air can be introduced into the soft tissue spaces using high speed air turbine drills [6]. In our case, a history of tooth extraction using compressed air equipment was available.

It is reported that subcutaneous emphysema and pneumomediastinum can also be seen after sneezing and nose blowing [4].

It should be noticed that surgery is not the only procedure at risk for the development of subcutaneous emphysema, as cases have been described during restorative procedures, crown preparation, and endodontic therapy [4].

The symptoms may vary depending on the quantity of air, its location and the presence or absence of infection. We may find from simple subcutaneous emphysema that is asymptomatic, to pneumomediastinum, pneumothorax or pneumopericardium [7]. The majority of patients are paucisymptomatic.

Crepitus on palpation and tenderness are findings of cervical emphysema. Retrosternal pain and dyspnea are characteristic findings of pneumomediastinum. Venous distension, hypotension, hypercapnia, and acidosis are life-threatening consequences of massive air trapping in the mediastinum. Infections can arise when these fascial planes are exposed, so that evaluation for infection and treatment with antibiotics might be necessary.

Complications of cervical emphysema and pneumomediastinum after oral surgery may include mediastinitis, cardiac tamponade and airway obstruction [8].

The diagnostic of a patient with suspected subcutaneous emphysema includes a clinical examination, laboratory analysis (CRP levels) and a CT of the affected region [5]. Following the exclusion of potentially life-threatening complications, conservative treatment is recommended, with hospitalization under observation and prophylactic antibiotics [9].

4. Conclusion

Subcutaneous emphysema and pneumomediastinum are rare complications after oral surgery and dental treatment. In order to prevent these complications, the compressed air should be used carefully and it is important for patients to avoid high intraoral pressures.

Prophylactic antibiotics may be prescribed, as the introduction of air and oral cavity flora into the mediastinum may lead to secondary infection, which is an uncommon, but possible complication.

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