

Cervicothoracic Subcutaneous Emphysema and Pneumomediastinum After Third Molar Extraction

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Third molar extraction is one of the most common interventions in dental and maxillofacial surgery. Complications are frequent and well documented, with swelling, pain, bleeding, infection, and lingual or alveolar nerve injury being the most common. This report describes a case of subcutaneous extensive emphysema and pneumomediastinum that occurred 4 days after extraction of an impacted right mandibular third molar. The management and etiology of this case and those reported in the literature are discussed.

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Third molar extraction is one of the most common interventions in dental and maxillofacial surgery.¹ Complications are frequent and well documented, with swelling, pain, bleeding, infection, and lingual or alveolar nerve injury being the most common. This report describes a case of subcutaneous extensive emphysema and pneumomediastinum, a rare complication, that occurred 4 days after the extraction of an impacted right mandibular third molar. The management and etiology of this case and in those reported in the literature are discussed.

Report of Case

A 27-year-old man spontaneously presented to the authors' emergency department for moderate neck pain and an uncomfortable sensation of air bubbles beneath the skin after a vigorous mouthwash. His right mandibular third molar had been extracted 4 days previously by a dentist under local anesthesia. The dentist recalled no particular event during the extraction: he had removed the impacted third molar using a water-cooled handpiece. At initial examination, the patient had extensive cervicothoracic

emphysema, air crepitus, and neck widening. No signs of infection were found. The sutures had broken open in his mouth.

Computed tomographic (CT) scan showed extensive bilateral subcutaneous emphysema starting in the right mandibular angle and extending into the para- and retropharyngeal spaces (Fig 1), the supraclavicular areas, the 2 axillary spaces (Fig 2), and under the skin to the level of the first lumbar vertebra. Massive amounts of air also were seen in the mediastinum without compression of the airways or in the pericardial area (Fig 3).

The patient was admitted to the maxillofacial department and prescribed preventive oral antibiotic therapy with pristinamycin because of penicillin allergy. The open oral wound was filled with fibrin biological glue and he was told to eliminate mouthwashes. The pain slowly disappeared and the subcutaneous emphysema decreased. After a control CT scan was obtained, he was discharged on a 1-week course of antibiotics 4 days after initial admission. The CT scan confirmed the resorption of most of the emphysema in all areas. One week later, all signs of subcutaneous emphysema had disappeared.

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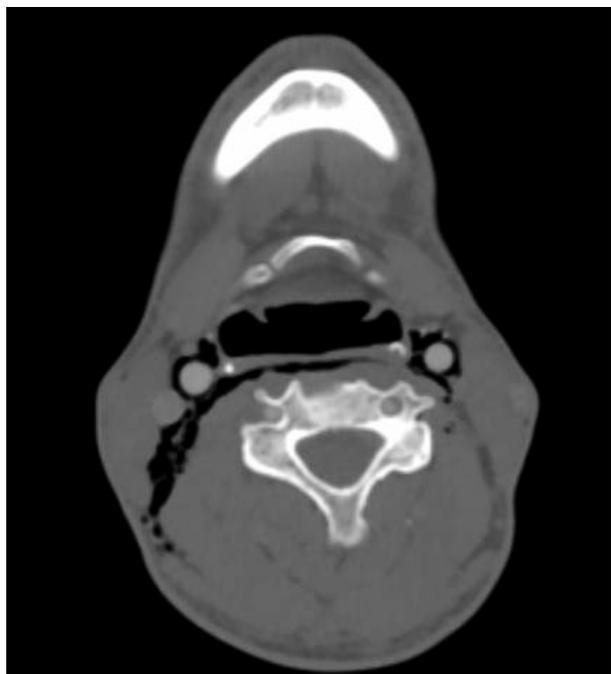


FIGURE 1. Axial computed tomogram showing bilateral subcutaneous emphysema extending to the retro- and parapharyngeal spaces.

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Discussion

Subcutaneous emphysema arises after the injection of air into loose connective tissue through a mucosal breach. The subperiosteal mandibular space, which is breached during third molar extraction, is connected to the sublingual and pterygomandibular areas. Hence, when under pressure, air spreads into the cervical dissection compartments through the parapharyngeal and retropharyngeal spaces to the carotid sheath, thorax, and mediastinum. This path is close to the extension procedure of dental cervicofacial cellulitis.

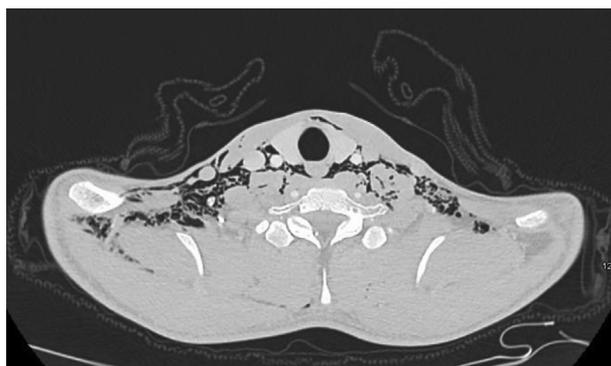


FIGURE 2. Axial computed tomogram showing bilateral subcutaneous emphysema extending to supraclavicular areas.

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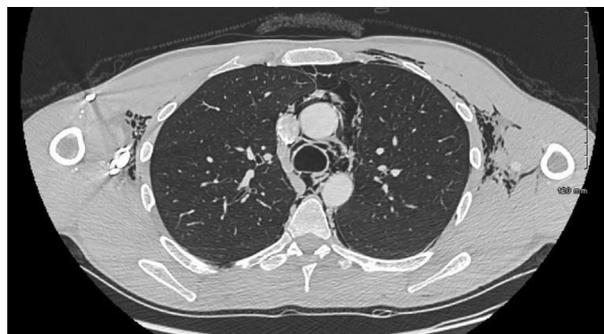


FIGURE 3. Axial computed tomogram showing emphysema extending to axillary spaces and mediastinum without any compression of the airways.

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Heyman and Babayof² reviewed 75 cases of emphysema after dental treatment from 1960 through 1993, and Arai et al³ reviewed another 47 cases from 1994 through 2008. Most cases were local subcutaneous emphysema. The complication occurred mainly after extraction or dental treatment using a high-speed air turbine handpiece.^{2,3} Such tools have since been upgraded and should rarely cause emphysema during extraction.

Emphysema also can be a result of patient activity. Any increase in air pressure in the mouth produced, for example, by playing a wind instrument⁴ or blowing up a balloon,⁵ can cause air emphysema. The use of a peak flow meter⁶ or a nasal continuous positive air pressure device⁷ can have the same effect. The present patient clearly recalled the symptoms appearing after a vigorous mouthwash, during which air is expelled under high pressure. The authors ask all their patients to rinse with a mouthwash after oral surgery and it is to be hoped that the present observation is an extremely rare occurrence. However, some cases of local emphysema can go undiagnosed because patients consider facial swelling common after dental surgery. The broken sutures and open surgical cavity increased the risk of emphysema, but the same complication has been described without any mucosal breach.³

Although there are no documented cases of mediastinitis complicating a pneumomediastinum after oral surgery, patients with extensive emphysema should be kept under medical observation because of the risk of infection. Management consists of prophylactic antibiotic treatment. The mechanism by which air is injected into the connective tissue should be identified and eliminated.

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