



SHORT COMMUNICATION

Iatrogenic pneumomediastinum and facial emphysema after endodontic treatment

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KEYWORDS

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Summary Subcutaneous emphysema is well known, but diffusion of gas into the mediastinum is not so common, particularly if it is caused by treatment of a root canal without apparent osseous fenestration or mucoperiosteal lesions. We report a case of iatrogenic pneumomediastinum and facial emphysema after endodontic treatment. The diagnosis was confirmed by computed tomography, and the patient recovered after treatment with intravenous antibiotics and analgesia.

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Case report

A 25-year-old woman who was allergic to penicillin was referred to our department with considerable emphysema on the left side of her face.

She had complained of discomfort over the left hemiface 10 min after conventional endodontic re-treatment (with sodium hypochlorite and EDTA) of the left lower first molar for persistent periapical periodontitis. Compressed air had been used to dry the root canal. Any technical hitch must have happened during these stages.

One hour later, the patient presented a dyspnoea with considerable hemifacial and cervical swelling, but no inflammation, dysphagia, trismus or fluid collection. On examination she had a soft swelling with obvious bilateral crepitus over the cervical and presternal regions. Microbiological tests showed no evidence of infection.

A computed tomogram (CT) of the thoracocervicofacial area confirmed the diagnosis of subcutaneous emphysema of the head, neck, and presternal regions and showed air in the deeper regions from the perimandibular and retromandibular spaces to the submaxillary and latercervical area along the vascular sulcus and retropharyngeal space (Figs. 1 and 2), descending into the mediastinal space (Fig. 3).

Treatment with intravenous antibiotics and analgesics was given and 7 days later she was discharged after regression of both the swelling and dyspnoea. At this time, her chest radiograph was within normal limits.

Discussion

Surgical emphysema was reviewed in 1957 by Shovelton who reported 13 cases after endodontic treatment.¹

Many authors have reported similar complications after dentoalveolar treatment (pneumomediastinum, pneumoperitoneum, and even death).²

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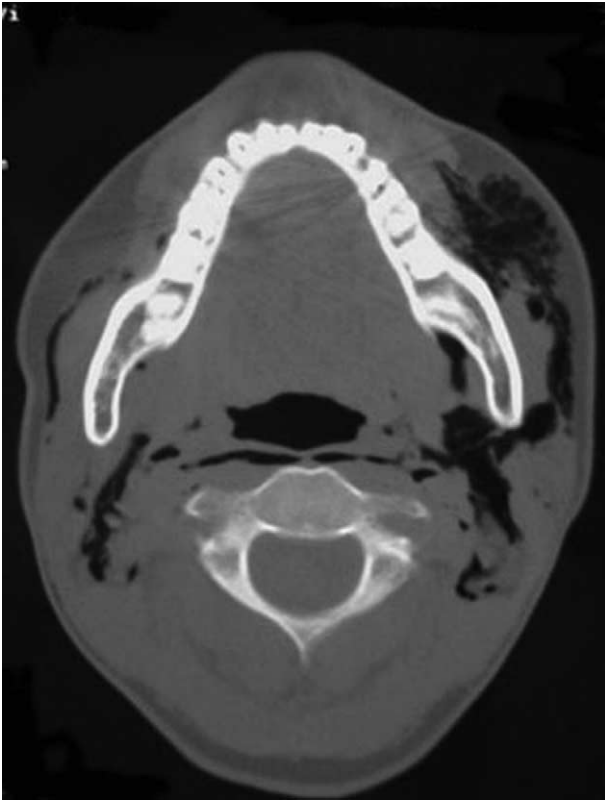


Figure 1 Computed tomogram of the mandibular region showing air in the perimandibular and retropharyngeal regions.

Several causes of emphysema can be differentiated including trauma, infections and dental treatments, accidents during dentoalveolar and maxillofacial operations when hydrogen peroxide solution has been used.³

Gas may be introduced into the soft tissue spaces by several routes: usually it passes through the dentoalveolar membrane or a root canal.⁴

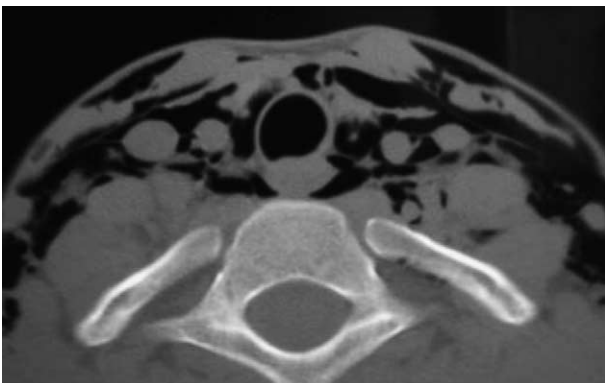


Figure 2 Computed tomogram of the cervical region showing air in the soft tissues and laterocervical area along the vascular sulcus.

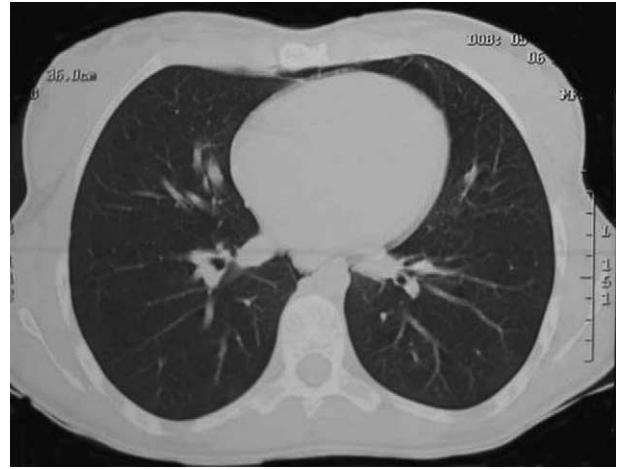


Figure 3 Computed tomogram of the thoracic region (T8) showing the pneumomediastinum.

Preparation of a flap, other mucosal lesions, and even extraction of a tooth can cause emphysema. Air can diffuse into the pterygomaxillary region and into the lateral pharyngeal space from the molar-retromolar region, and reach the mediastinum by dissecting the visceral space.

Extension of air into the retropharyngeal, mediastinal and peritoneal spaces is an early complication, which may lead to cardiopulmonary distress.

Later, secondary infections and mortality from sepsis and air embolism have also been described.⁵

In our case, the air could have gone through the mandible to the soft tissues through a root lesion: a “valve effect” could have been present to capture a so much air. The most outstanding feature is the importance of the emphysema after a root-canal filling without a major lesion on orthopantography. It is also interesting that the way air dissects in the soft tissues, as seen in this case, corresponds to the diffusion of pus in the laterotracheal and mediastinal region in cases of severe cervicofacial cellulitis.

Oral surgeons and dentists should be aware of the possibility of subcutaneous emphysema after using compressed air during dental procedures.⁶

Early recognition may be of extreme importance in initiating treatment and to prevent possible secondary infections and cardiopulmonary complications.⁷

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