

# A CASE REPORT OF SUBCUTANEOUS EMPHYSEMA DURING ROOT CANAL TREATMENT

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## Introduction

Subcutaneous emphysema(SE) is rarely encountered during the process of root canal therapy. It has been reported following the use of high-speed, air driven surgical drills and compressed air syringes during restoration, endodontic procedures, extraction, scaling and osteotomies. It is caused by the introduction of air into the fascial planes of connective tissue through developmentally or traumatically interrupted mucosa or root canal. The clinical presentation is characterized by a sudden onset of swelling. Crepitation on palpation is pathognomonic for SE. A case of localized SE during root canal treatment of a 10-year-boy is reported.

## Case Report

A 10-year-old boy was presented with continuous sensitivity to cold in his right mandibular tooth for the past 2 days. Clinical examination revealed a pulp exposure of the first right mandibular molar. The roots appeared straight and normal in periapical film. The tooth was diagnosed with “irreversible pulpitis”, and root canal treatment was planned.

Under local anaesthesia, four root canal orifices were located after pulp extirpation. The patient complained of a sudden swelling and discomfort in the right submandibular region during root canal instrumentation. Physical examination revealed moderate asymmetry of the face as well as clear crepitus on palpation along the inferior border of the right mandibular angle. Cone beam CT (CBCT) showed a localized multilocular radiolucency in the soft tissue of right submandibular and submental area. Besides, CBCT revealed that the apical third of distolingual root curved to buccal side at an almost right angle. The alveolar lingual to the curved angle was absent. A diagnosis of subcutaneous emphysema was made, and root canal procedure was stopped.

Twenty-four hours later, the swelling and crepitus did not subside and the patient was complaining of a sore throat. Preventative antibiotics were then prescribed for 3 days. The patient slowly recovered and had a normal presentation at 1 week follow-up. Root canal treatment was completed. No sequela and discomfort were noted at three month follow-up.



Figure1. Swelling in the right submandibular region



Figure2. Localized multilocular radiolucency in the soft tissue

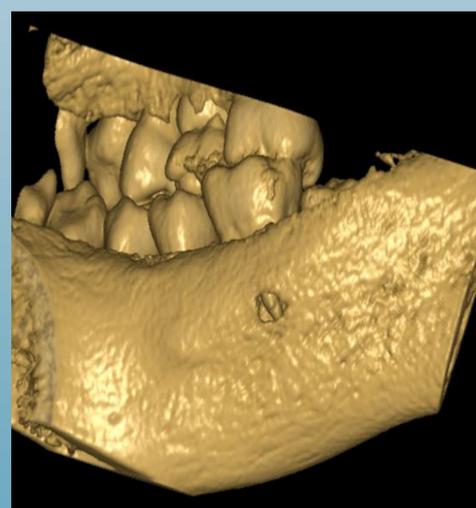


Figure3. Defect of the alveolar bone against the curved distolingual root of the right first permanent molar

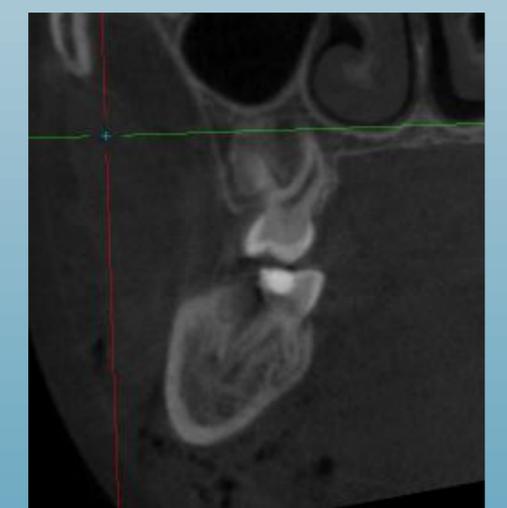


Figure4. The apical third of distolingual root of the right first permanent molar curved to buccal side at an almost right angle

## Comments

Subcutaneous emphysema could be fatal if it happened in mediastinum or pericardium. Precautions should be taken about the occurrence of subcutaneous emphysema during root canal treatment. When it happens, antibiotics should be prescribed to prevent infection. Prognosis was usually good.

This case also indicates the advantages of CBCT as a tool for providing detailed three-dimensional images. The anatomical deformity of root canal and mandible bone in this patient were detected by CBCT and may be the susceptible factor for the occurrence of SE.