Subcutaneous emphysema secondary to dental treatment: Case Report

Claudio Andrés Gamboa Vidal [1], Carlos Andrés Vega Pizarro [1], Andrés Almeida Arriagada [2]

(1) Cirujano-Dentista. Universidad de la Frontera
(2) Cirujano Máxilo-Facial, Hospital Dr. Hernán Henríquez Aravena. Temuco, Chile

Correspondence:
Dr. Carlos Andrés Vega Pizarro
Eliodoro Yañez 2917 depto. 32,
Providencia, Santiago, Chile
E-mail: cvegap@gmail.com

Received: 6-05-2006
Accepted: 5-11-2006

Gamboa-Vidal CA, Vega-Pizarro CA, Almeida-Arriagada A. Subcutaneous emphysema secondary to dental treatment: Case Report. Med Oral Patol Oral Cir Bucal 2007;12:E76-8.

Indexed in:
-Index Medicus / MEDLINE / PubMed
-EMBASE, Excerpta Medica
-SCOPUS
-Indice Médico Español
-IBECS

ABSTRACT

Subcutaneous emphysema is a relatively rare complication of dental treatment, although increasingly due to the use of high pressure air instruments. Many cases go unrecognized or are misdiagnosed. Majority of patients with this complication resolve spontaneously after 5 to 10 days, however some can advance to potentially life-threatening complications. A case of subcutaneous emphysema during restorative procedure in a 52-year-old woman was treated in the Docent Odontological Clinic of the Frontera University is presented. The differential diagnosis and management of this condition is discussed.

Our purpose is not to add one more case of emphysema to literature, but to show dentists that in simple restorative procedures using air pressure instruments, they could be exposed to this complication.

Key words: *Subcutaneous emphysema, restorative treatment, high pressure air instruments.*

RESUMEN

El enfisema subcutáneo es una complicación poco frecuente en la práctica odontológica, que ha ido en aumento debido al uso de instrumentos con aire a presión. Muchos de los casos no son reconocidos o presentan un diagnóstico errado. La mayor parte de los pacientes con esta complicación presentan resolución espontánea después de 5 a 10 días, sin embargo, algunos pueden evolucionar con complicaciones que ponen en peligro la vida. Se presenta un caso de enfisema subcutáneo desencadenado durante un procedimiento restaurador en una mujer de 52 años que fue atendida en la Clínica Odontológica Docente Asistencial de la Universidad de la Frontera. Se discuten el diagnóstico diferencial y el manejo de esta condición.

El objetivo de esta presentación no es agregar un caso clínico más de enfisema a la literatura, sino que mostrar a los dentistas que en procedimientos restaurativos simples usando instrumentos con aire a presión pueden verse expuestos a esta complicación.

Palabras clave: *Enfisema subcutáneo, tratamiento restaurador, instrumentos con aire a presión.*

INTRODUCTION

The word emphysema arise in the ancient Greek language and means "to blow in". (1) Subcutaneous emphysema event is the consequence of air introduction or other gases into softs tissues. In dentistry, it may appear with the use of high pressure air during a procedure or in difficult or long extractions, that is to say, iatrogenic. Also, it may be due to traumatics causes namely fractures that affect the facial skeleton or can be of spontaneous occurrence and set off sometimes by the patients themselves. Blowing the nose vigorously or playing a wind instrument after an extraction may be the origin problem (2-5)

The appearance of this condition after dental procedures is infrequent, nevertheless due to the advent of high pressure air instruments such as high-speed hand pieces and air syringes, this phenomenon is increasing.(6,7)

CLINICAL CASE

A 52-year-old woman was treated in the De la Frontera University teaching Odontological Clinic for a class V restoration in the first left lower premolar, because it presented a graze accompanied of great sensibility. It is important to mention that the premolar had a gum pocket of 4 mm.

The medical history was normal, except for urinary infection which was being treated with ciprofloxacine in habitual dose.

Anesthesia was administered to the alveolar low nerve about one hour before the incident and the procedure was begun placing a retractor cord with a haemostatic solution because the restoration was subgingival. The cavity preparation was achieved by a high-speed hand piece and it was obtured with glass ionomer. During the polished procedure done with high speed hand piece and the use of air syringe, the operator observed the exit of air bubbles from the gingival sulcus and a strange vestibule volume increase, which decreased when pressed. Due to this situation an exhaustive intra and extraoral examination was performed, and expansion of the left jaw region up to the neck was noticed. No increase of temperature or rigidity of the tissue was observed, but the presence of crackling was evident. The patient presented only a slight discomfort, but was painless and had no difficulties to swallow or breath.

In the Dr. Hernán Henríquez Aravena Hospital, urgency room was she reexamined and head and neck X-Ray was taken, which confirmed the presence of air in the subcutaneous tissue (Fig. 1 and 2). Subcutaneous emphysema was the diagnosis and the route of air entry was assumed to be the gingival sulcus.

She was advised to continue the antibiotics treatment with ciprofloxacine that she was already taking and prescribed her an analgesic therapy with Naproxen of 550 mg., BID for three days. The next day, crackling and swelling persistence was evident, but not infection signs. Five days after, the swelling was solved and crackling disappeared in the neck tissue and the patient was asymptomatic.

Fig. 1. Frontal neck X ray with air presence in the subcutaneous tissue.

Fig. 2. Lateral X ray of the neck.

DISCUSSION

The subcutaneous emphysema is an uncommon pathology in dental practices, so that a secondary appearance in a restorative procedure can be alarming both for the patient and for the dentist. It is important to make differential diagnosis of this complication with others that also produce volume increase like hematoma, allergic reaction or angioedema(4,9,10).

In order to guided as to correct diagnosis, a detailed history of the fact is crucial, as well as a meticulous palpation of the involved tissue. Crackling is the most important sign that makes the difference from other pathologies(3,4,9,11,12). In most cases this sign is detected immediately, nevertheless there are reports in which it may appear subsequently, making diagnosis difficult.

The pain, although not present in this case, can happen with the subcutaneous emphysema when it causes tension in the involved tissues (8,11). The X ray of the affected zones confirm the diagnosis when display the air presence in the soft tissues.

Due to the fact that facial planes are contiguous to those of the neck and thorax, is possible that mediastinc emphysema appear. This results from the entry of a large quantity of air to the deepest planes of the neck, passing directly to the top part and then to the anterior of the mediastine(13,14). The presence of pain both in the thorax and in the back, would suggest the presence of this type of emphysema (6), and a thorax X ray to confirm the diagnosis is mandatory.

In our case, the patient did not report the mentioned signs and only X ray of head and neck were taken.

As was mentioned in this case, the treated premolar presented a gum pocket of 4 mm which could provide the emphysema formation. Consequently, it is important to take precautions when using air pressure instruments near the gingival margins, specially when there are gum pockets (11,15) or when the gum is slightly adhered, since a thin entry door is suitable to cause this phenomenon (3). In our patient we believed that the air entry took place in the gingival sulcus, since when introducing water in it, emergency of air bubbles was observed.

Although infection is not usually observed in a subcutaneous emphysema, cases have appeared where this condition has developed. For this reason, the use of a prophylactic antibiotic therapy is recommended, (3,15) since the introduction of air and not sterile water (10) could cause serious effects in the health of the patient.

Most cases of subcutaneous emphysema start resolution after 2 to 3 days, and they are completely overcome after 5 to 10 days(3,6). It is important to advise the patient that he must avoid increase the intraoral pressure, such as blowing the nose vigorously or playing musical instruments, which could introduce more air(10). Finally, it is important to register your complete procedure in the clinical card and to inform appropriately this condition to the patient.

REFERENCES

1. Kaufman E, Leviner E, Galli D, Garfunkl AA. Subcutaneous air emphysema - A rare condition. J Oral Med 1984;39:47-50.

2. Cardo Vito A, Mooney John W, Stratigos George T. Iatrogenic dental-air emphysema: report of case. JADA 1972;85:144-7.

3. Snyder Mark B, Rosenberg Edwin S. Subcutaneous Emphysema during Periodontal Surgery: Report of a Case. J Periodontol 1977;48:790-1.

4. Salib R. J, Valentine P, Akhtar S. Surgical emphysema following dental treatment. The Journal of Laryngology and Otology 1999;113:756-8.

5. Schovelton DS. Surgical emphysema as a complication of dental operations. Br Dent J 1957;102:125-9.

6. Reznick Jay B, Ardary William C. Cervicofacial subcutaneous air emphysema after dental extraction. JADA 1990;120:417-9.

7. Bavinger J. Subcutaneous and retropharyngeal emphysema following dental restorations: An uncommon complication. Ann Emerg Med 1982;11:371-4.

8. Guest P. G, Henderson S. Surgical emphysema of the mediastinum as a consequence of attempted extraction of a third molar tooth using an air turbine drill. Br Dent J 1991;171:283-4.

9. Mayorga F, Infante P, Hernandez JM, Garcia A. Angioneurotic edema caused by ACEI: a case report. Med Oral 2000;5:124-7.

10. Ali A, Cunliffe D R, Watt-Smith S R. Surgical emphysema and pneumomediastinum complicating dental extraction. Br Dent J 2000;188:589-90.

11. Sivaloganathan K, Whear N M. Surgical emphysema during restorative dentistry. Br Dent J 1990;169:93-4.

12. Spaulding C Ronald. Soft Tissue emphysema. JADA 1979;98:587-8.

13. Last R J. The Anatomy Regional and Applied. Livingstone: Edinburgh; 1972. p. 343.

14. Trummer, M. J; Fosburg, R.G. Mediastinal emphysema following the use of high-speed air turbine dental drill. Ann Thorac Surg 1970;9:378-81

15. Feinstone, Theodore. Infected subcutaneous emphysema: report of case. JADA 1971;83:1309-11.