

Subcutaneous Emphysema after Ultrasonic Treatment: A Case Report

Enfisema Subcutáneo Posterior a la Higienización con Ultrasonido:
Reporte de un Caso

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ABSTRACT: Subcutaneous emphysema is a rarely disease seen in dentistry. It can be caused by the inadvertent introduction of air into the soft tissue during oral cavity procedures. In this paper, we present a case that developed a subcutaneous emphysema in genial, submandibular and eyelid area, in a middle-aged woman after treatment with ultrasonic method.

KEY WORDS: subcutaneous emphysema, ultrasonic, odontology.

INTRODUCTION

Complications during and after a clinical procedure are varied and low prevalence (Chen et al., 1999), one of them is subcutaneous emphysema, which was first described by Tumbull in 1900 after the extraction of a premolar. Subcutaneous emphysema is a condition created by the introduction of air or other gases inside the soft tissue product of medical-dental actions or occurring spontaneously, sometimes triggered by the patient (Snyder & Rosemberg, 1977). The clinical significance of subcutaneous emphysema is the possible migration of air into the area of the mediastinum which may occasion death (Karras & Sexton, 1996). The etiology of this complication is caused by the use of compressed air used in modern dentistry either turbine or air syringes (Mather et al., 2006).

Emphysema can have three different etiologies: spontaneous, traumatic or iatrogenic (Salib et al., 1999). Emphysema can be induced spontaneously by the

patient to forcefully blow your nose or touching any wind instrument after an dental extraction (Mohan & Singh, 2001), the traumatic variety can occur secondary to fractures affecting the facial skeleton (Oliver *et al.*, 1993) and ultimately iatrogenic emphysema occurs after surgical procedures during which air is introduced into soft tissue (Schovelton, 1957).

In this paper we describe the case of a female patient which was hit by a subcutaneous emphysema in the genial area post an dentistry ultrasonic treatment.

RELATE OF CASE

Female patient, 46 years old, from the city of Coihueco, Chile, without clinical history of chronic diseases, go to the Rural General Medical Center of the city to take a calculus removal of tooth 2.6 (Fig.1),

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which showed a the probing depth of 7 mm. and that four months ago had a type of periodontal abscess, which was treated with antibiotic therapy (amoxicillin 500 mg c/8hrs for 7 days), with 0.12% chlorhexidine mouthwash, 2 times daily for 7 days plus asked periapical radiograph of the tooth by the recurrence of the abscess.



Fig. 1. Tooth 2.6, periodontally affected, which has a depth of 7mm.

Was performed with ultrasonic scaler the calculus removal of this tooth, completed the procedure shows a volume increase in the eyelid, geniac and left cervical region (Fig. 2), which presents crepitation on



Fig. 2. Patient Female 46 years old. Observed at the lower eyelid, genial and left neck area volume augmentation, diagnosis of subcutaneous emphysema.

palpation. It is derived from the Maxillofacial Service of the Hospital Herminda Martín de Chillán, diagnosed with emphysema in the face and neck, then his vital signs were; axillary temperature 37 ° C, 72 beats per minute and blood pressure of 90/60 mmHg. Waters radiograph was requested and begins anti-inflammatory and antibiotic therapy (Amoxicillin 500 mg w / 8 hours orally, Piroxicam 20 mg per day orally) plus soft regime, hydration and oral evaluation by interns on duty. Once hospitalized with headache starts in the frontal zone which is indicated by Dipyrone sodium (Dipyrone) intramuscularly.

On the second day of treatment is indicated Sodium Penicillin 1.000.000 units w / 8 hours, Metronidazole 500 mg w / 8 hours and Ranitidine 50 mg C/12 hrs by intravenous route, in addition Panoramic radiography, treatment is maintained for four days. The following day the patient appeared asymptomatic, without edema, and noting lesion was observed in the panoramic radiography, and then there is the medical health with indication of relative rest, Amoxicillin 500 mg w / 8 hrs and Metronidazole 500 mg w / 8 hrs per five days both orally plus Famotidine 40 mg per night for a week orally.

DISCUSSION

Emphysema is a condition that presents a low incidence in the dental field, but which is necessary to know and realize the clinical differential diagnosis with other diseases that produce increased volume in those areas (Bach *et al.*, 2004), among which include: hematoma, allergic reaction, angioedema, anaphylactic reaction or cellulitis (Ali *et al.*, 2000). To make a proper diagnosis requires a detailed clinical history or the events, thus the presence of crepitus, we will provide an important element of differentiation versus other clinical (Spaulding, 1978), and complementation with radiological studies can make an accurate diagnosis by observing the presence of air in the affected area (Vargas *et al.*, 2007).

In this case the patient has symptoms consistent with the literature, which has been described as pain resulting from stress may be subject to the tissues affected (Jovanovic & Hedreville, 2003).

The origin of the dental emphysema has been described after the completion of dental fillings (Steelman & Johannes, 2007), extractions of third

molars (Sekine *et al.*, 2000), after endodontic treatment (Smatt *et al.*, 2004), also as a result of midface trauma (Ong *et al.*, 2005). Although, the infection usually is not seen in a subcutaneous emphysema, there have been cases where this situation has developed (Gamboa *et al.*, 2006).

This is why even if the absence of infection, the use of prophylactic antibiotic therapy (Koumoura & Papakosta, 2004), due to the introduction of no sterile air and water (Ali *et al.*) could lead to severe sequelae in patient's health, as well as keep under observation (Bavinger, 1982) and prescribe analgesics (Schuman *et al.*, 2001).

One of the possible consequences of subcutaneous emphysema, is the migration of air into the area of the mediastinum, which may cause death (Davies *et al.*, 2002), the presence of pain in the chest in the back, would suggest the presence of air in this area (Zemann *et al.*, 2007), for which a chest radiograph is recommended to confirm the diagnosis. Another route of air is spread to the retropharyngeal region, with the consequent obstruction of the airways (Breznick & Saporito, 1990).

The process of bone resorption in the vestibular table result of traumatic or infectious processes (periodontitis) or the mere presence of bone alterations such as fenestrations and dehiscences defects on molar and premolar teeth whose vestibular bone tables are in intimate contact with the insertion of the buccinator muscle (Rouvière & Delmas, 1999; Latarjet & Ruiz-Liard, 2004) could be the origin of the easy passage of air into the geniatic region tank is at the adipose body of the cheek, or subcutaneous or submucosal tissues, which have loose connective tissue (Ross & Pawlina, 2007), where a liquid or gas under pressure may create a real space.

Cases of emphysema are usually completed after two to three days and overcomes completely after five to ten days.

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RESUMEN: El enfisema subcutáneo es una patología vista con poca frecuencia en odontología. Puede ser causada por la introducción involuntaria de aire en los tejidos blandos durante los procedimientos efectuados en la cavidad oral. En este trabajo, se presenta un caso de enfisema subcutáneo geniano, palpebral y submandibular, en una mujer de mediana edad después de un tratamiento de higienización con un equipo de ultrasonido.

PALABRAS CLAVE: enfisema subcutáneo, ultrasonido, odontología.

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