



"Endo-Oral Contrast-Puffing CT" in Pneumoparotitis: A Case Report

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Abstract

This case report aims to introduce pneumoparotitis and the correct execution of CT examination to ensure a proper diagnosis. A 45-year-old male presented several times to the ER with Oedema of the left parotid region and neck, along with crackles on palpation. This symptomatology raised suspicion of an inflammatory pathology complicated with abscesses of the parotid gland or a pneumomediastinum due to a traumatic lesion of the airways or oesophagus. Several imaging examinations, such as ultrasound and neck-chest CT, were performed for this suspicion without a correct diagnosis. The use of endo-oral contrast with "puffing" was useful in diagnosing pneumo-parotitis. Therefore, we believe that this procedure could be helpful in the future.

Pneumoparotitis is a pathology caused by incontinence of the Stenone duct which determines the reflux of saliva and air into the gland predisposing to the onset of recurrent infections. This pathology is characterized by swelling and subcutaneous emphysema of the parotid region.

Adequate knowledge of pneumoparotitis and the correct execution of the CT examination is essential to demonstrate the incontinence of the Stenone duct to be able to exclude emergencies such as abscesses, air-gas infections, and traumatic lesions of the airways and oesophagus.

Keywords

Pneumoparotitis, Ct, Stenone Duct, Oral Contrast, Parotitis, Case Report

Introduction

Pneumoparotitis is a rare condition characterized by the presence of air in the acini and the ducts of the parotid gland caused by abnormal continence of the Stenone duct [1].

This pathology is associated with recurrent

infections of the parotid gland due to the retrograde entry of microorganisms of the oral battery flora. This situation is usually consequent of conditions that, through the Valsalva manoeuvre, determine an increase in intraoral pressure (normal is about 2-3 mmHg) (cough, glass blowers, wind instrument players) or for hypertrophy of the masseter muscle

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and weakness of the buccinator muscle [1–3]. Swelling of the parotid region and the neck with associated erythema, pain, and rattles are typical pneumoparotitis. In some severe cases, pneumomediastinum could occur. These findings require a differential diagnosis with parotid infections, air from calculi, autoimmune pathologies of the parotid, and traumatic lesions of the oesophagus or trachea.

Patient Information and Clinical Findings

Our case concerns a 45-year-old man who came to the Emergency Room (ER) several times with



Fig-1:

The clinical condition of the patient at the time of admission to the Emergency Department.

symptomatology characterized by oedema of the left parotid region and the neck with crackles on palpation (**Fig-1**). In his history, he reports that the first episode begins after tooth extraction in which the stenone duct was insufflated by air.

Diagnostic Assessment

This symptomatology made the suspicion of an inflammatory pathology complicated with abscesses of the parotid gland or a pneumomediastinum due to a traumatic lesion of the airways or oesophagus.

For this suspect, several imaging examinations (such as ultrasound and neck-chest CT) were performed with evidence of structural inhomogeneity of the parotid gland and emphysema in the parotid region and along the fascial planes of the neck (**Fig-2A** and **Fig-2B**).

However, a clear cause of the symptoms was not identified and he has been always generically treated with analgesics, steroids, and antibiotic therapy without his problem being solved. In the last access to the ER of our hospital, in the suspicion of pneumoparotitis, we performed a “puffed” check CT

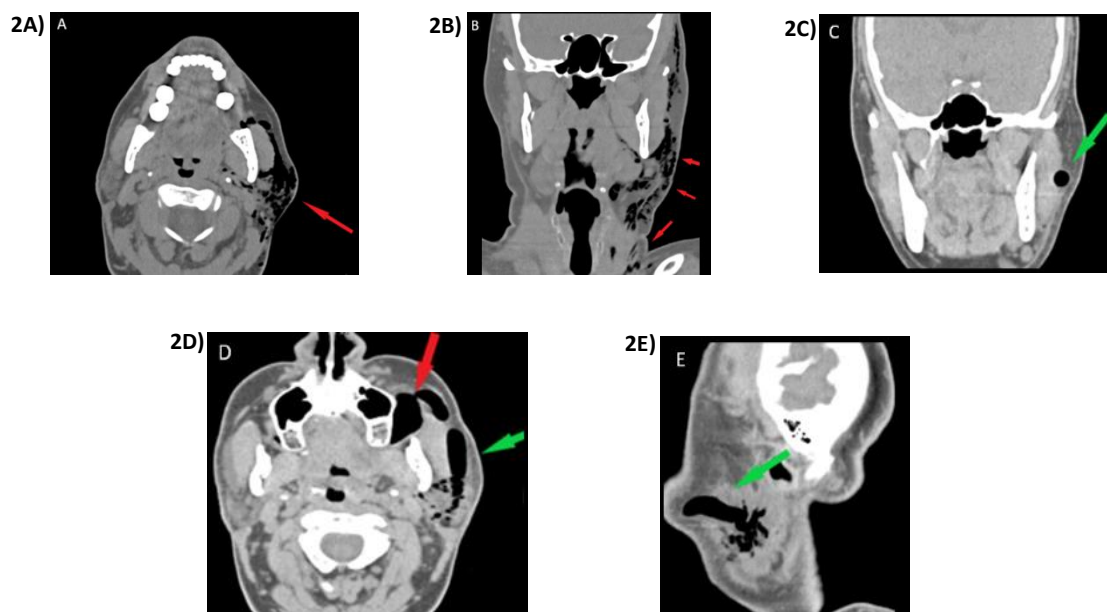


Fig-2:

2A: note the increase of air inside the ducts of the parotid gland with associated subcutaneous emphysema of the parotid region (red arrow).

2B: note the widespread subcutaneous emphysema extending into the deep fascial planes of the neck (red arrows).

2C, 2D, and 2E: note the air inside the Stenone duct (green arrows) and the dilated sphincter (red arrow). CT: Computed Tomography.

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during “Valsalva” in which we demonstrated the reflux of air inside the Stenone duct (**Fig-2C, Fig-2D and Fig-2E**). To confirm this relief, we also decided to repeat the same procedure by keeping an aqueous solution of iodine contrast (Gastrografin) in the oral cavity during “puffing” and “Valsalva manoeuvre”. This manoeuvre showed the reflux of the iodine contrast solution into the Stenone duct and the parotid gland (**Fig-3A and Fig-3B**), demonstrating its anomalous continence and therefore surely excluding the infectious pathologies of the parotid and a possible traumatic lesion of the airways or oesophagus.

Therapeutic Intervention

After the correct diagnosis, the patient was treated with anti-inflammatories and antibiotics to resolve the acute event. He was then educated to avoid puffing and use wind instruments to reduce the risk of recurrence. No surgery was performed. In the following years, thanks to the behavioural directives, no recurrences have occurred.

Discussion

The swelling of the parotid gland with the presence of crackles on palpation are symptoms that require a differential diagnosis with many pathologies of the parotid (infections, autoimmune pathologies, ductal obstruction with consequent formation of abscesses) and with traumatic lesions of the airways. This case report invites us to consider pneumoparotitis in the differential diagnosis, especially in those patients who have a history of recurrent episodes. Pneumoparotitis has been described in glassblowers, wind instrument players, undergoing dental procedures, suffering from COPD (Chronic Obstructive Pulmonary Disease), long-

term CPAP (Continuous Positive Airway Pressure), and self-induced in adolescent and psychiatric patients (Munchausen syndrome) [1,2,4,5]. Symptomatology is usually characterized by swelling of the parotid gland with crackling on palpation and the release of foamy or purulent saliva from the Stenone duct. In some severe cases, subcutaneous emphysema can extend into the neck and pneumomediastinum may occur [3,6,7]. The gold standard for diagnosis is the CT which identifies the air in the ductal system of the parotid gland.

The treatment can be conservative with analgesics, antibiotics, and duct irrigations with steroids during sialendoscopy to resolve the acute, or surgical, with the ligation of the Stenone duct or, in recurrent cases, parotidectomy [2,3]. In our case of recurrent undiagnosed pneumoparotitis, the “puffing” check CT during Valsalva and the CT performed with gastrografin in the patient's oral cavity during Valsalva were useful to demonstrate the incontinence of the Stenone duct; therefore, other causes of pneumomediastinum and subcutaneous emphysema in the parotid region and along the fascial planes of the neck have been excluded. In conclusion, pneumoparotitis is a rare cause of swelling of the face and neck characterized by air in the acini and the ducts of the parotid gland determined by abnormal continence of the Stenone ducts. Differential diagnosis with infections, autoimmune pathologies and traumatic lesions of the airways and the oesophagus is very important. Therefore, we believe that knowledge of this entity and the correct execution of CT could be very useful to make a correct diagnosis and avoid the repetition of instrumental investigations.

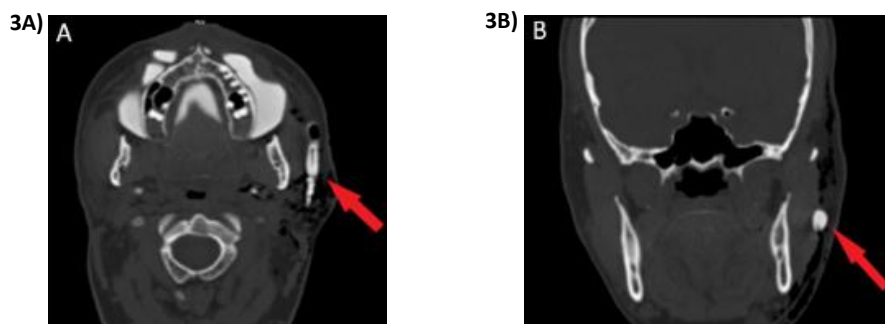


Fig-3:

Axial (A) and coronal (B) CT after oral somministration of gastrografin during puffing and the “Valsalva” manoeuvre. Note the oral cavity and the dilated Stenone duct filled by the contrast (red arrows). CT: Computed Tomography.

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Conflict of Interest

The authors have read and approved the final version of the manuscript. The authors have no conflicts of interest to declare.

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