

## Efficacy of cone-beam computed tomography for the diagnosis of external dental fistula

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### ABSTRACT

External dental fistula often presents with facial sinus, and patients visit dermatology clinics. Usually, diagnosis is not difficult by orthopantomography. We present a case of external dental fistula which was not detected by orthopantomography, but examination by cone-beam computed tomography (CT) revealed a small sequestrum.

**Keywords:** Dental fistula, Skin, Cone-beam CT

### CASE REPORT

A 62-year-old woman was referred to our hospital, complaining of a nodular lesion on her right cheek, with 2 months' duration. Previously, she visited otolaryngology department, and needle biopsy showed no malignancy. Administration of antibiotics resulted in no effects. On the initial visit to our department, a physical examination showed a reddish dimpled nodule located on the right cheek (Figure 1). Clinical diagnosis was external dental fistula, however, examination by pantomography did not detect any abnormalities. Histological examination showed non-specific granulation with dense infiltration of inflammatory cells composed of lymphocytes, neutrophils, histiocytes and plasma cells in the whole dermis (Figure 2). Tissue cultures for bacteria, mycobacterium tuberculosis and non-tuberculous mycobacterium were all sterile. Also, polymerase chain reaction (PCR) analysis for mycobacterium tuberculosis and non-tuberculous mycobacterium were negative. Laboratory examination showed no abnormalities including liver and kidney function, and tuberculin test revealed negative reaction. Cone-beam computed tomography revealed the presence of a small sequestrum (Figure 3). Surgical treatment with sequestrectomy resulted in improvement with scar within 3 months.

### DISCUSSION

It is important to make a correct diagnosis of external dental fistulas, because they sometimes masquerade skin tumors [1]. Orthopantomography is frequently used for making a



**Figure 1.** Clinical appearance of the dimpled nodule on the cheek

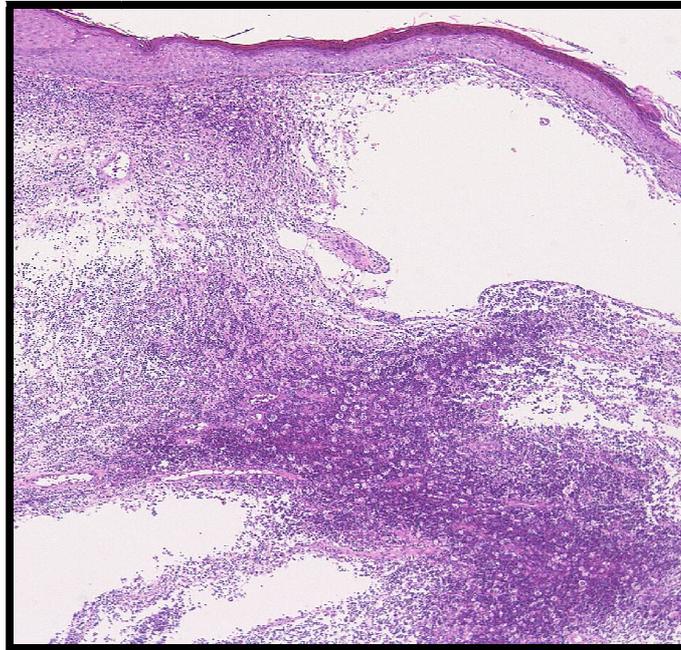
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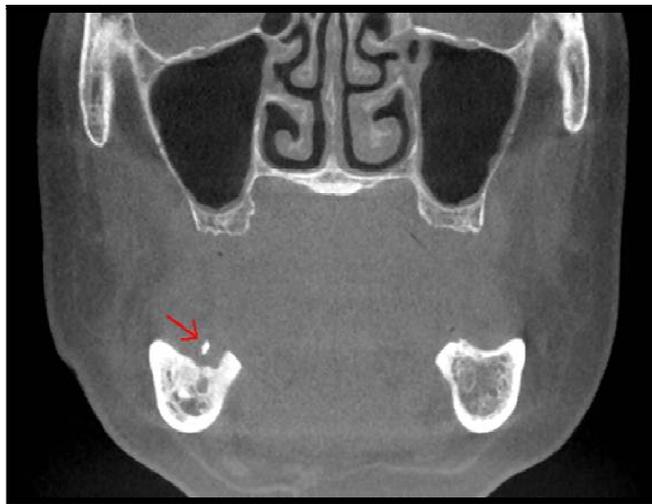
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diagnosis of external dental fistula. In this report, we show a case of external dental fistula, in which ordinal X-ray beam did not detect any abnormalities, such as apical infection, residual bone, radicular pulp, and fistula. However, cone-

beam CT demonstrated the presence of small sequestrum, which was the cause of the development of nodular lesions in this case.



**Figure 2. Histopathology showing dense infiltration of inflammatory cells**



**Figure 3. Horizontal plane of cone-beam CT reveals a small piece of sequestrum (arrow)**

Cone-beam CT scan is a cross-sectional, radiological imaging system for maxilla-facial skeleton. This technique

has overcome many of the limitations of conventional radiography, and is now widely used in dental practice [2]. It should be reminded that orthopantomography is not always

useful for the diagnosis of external dental fistula. In particular, X-ray beam permeability is insufficient in case of the tiny lesions of the root apex. We dermatologists should also be aware of the useful imaging tool of cone- beam CT for the diagnosis of external dental fistula.

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