Case Report

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Dentistry Section

Diagnosis and Conservative Treatment of Extraoral Submental Sinus Tract of Endodontic Origin: A Case Report

GEORGE G. SOTIROPOULOS[1], ELEFTHERIOS-TERRY R. FARMAKIS[2]

ABSTRACT

Sinus tracts (or fistulas) are a common manifestation of pulpal necrosis that requires conventional -or rarely surgical- endodontic treatment in order to heal. They are mainly identified intraorally and in rare cases they manifestate extraorally, depending on the causative tooth, root location, bone thickness and muscle inserts. Such conditions may be misdiagnosed and confused with other non-pulpal pathologies. A case of extra-oral submental sinus tract that was initially misdiagnosed by a physician as a non-odontogenic lesion is presented. Facial fistulas of endodontic origin, despite sparse, should be considered as an option in the differential diagnosis procedure. It is important that interaction occurs between physicians and dentists to avoid exposing patients to insufficient treatment schemes.

Keywords: Focal infection, Odontogenic fistula, SAF, Self-adjusting file, Sinus tract, Skin diseases

CASE REPORT

A 42-year-old female with a noncontributing medical history visited a dental office for a routine semiannual cleaning. During the initial extraoral examination, a discolored area in the middle submental region was noted [Table/Fig-1]. The patient recalled that the sinus tract started 18 months ago, as a small swelling in the submental region, associated with mild discomfort in the area. Soon after, it developed to a small skin lesion with spontaneous drainage. Following, she asked medical advice from a physician that started treating the lesion as of skin infection by means of systematic antibiotic administration (clindamycin hydrochloride, 300mg every 8 hours for 7 days). The scheme had been prescribed several times over these 18 months as the lesion and associated sinus tract were only transient subsided, after each treatment cycle.

Clinical examination revealed discoloration of teeth 31 and 41 along with composite resins in both teeth, mesial and distal to their lingual surfaces [Table/Fig-2]. Teeth were slightly sensitive to percussion and palpation. Pulp vitality tests, cold and electric stimuli, were negative. The sinus tract was inactive because of the recent prescription of antibiotics.

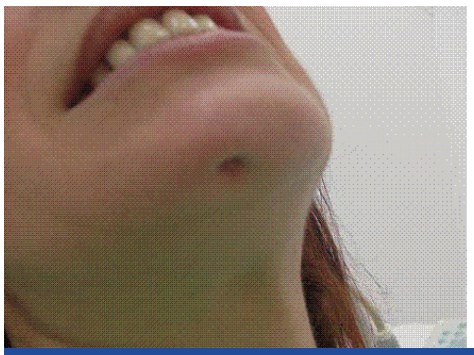
Radiographic examination of teeth 31 and 41 revealed diffuse periapical radiolucency associated with the apical third of their roots [Table/Fig-3]. Apical periodontitis due to pulpal necrosis was set as definite diagnosis.

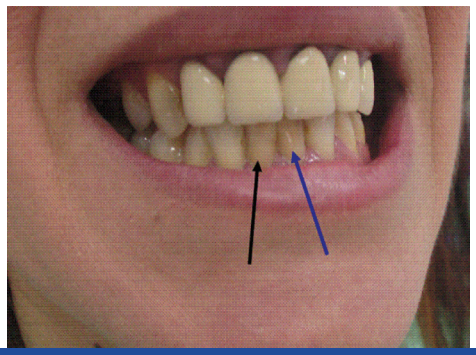
After local anaesthesia and rubber dam placement, root canal treatment was initiated with pulp chamber access and chemomechanical preparation of the root canals for both teeth. One oval root canal was located in each tooth on inspection with a dental operating microscope (Global Protégé plus, Global Surgical Corporation, St. Louis, MO, USA). Length was measured with Root ZX electronic apex locator (J. Morita, Kyoto, Japan) and size 10 K-File (Dentsply Maillefer, Ballaigues, Switzerland) and confirmed with a periapical radiograph, in the root canals of both teeth. As the canals were identified as oval-shaped, the instrumentation was performed via the SAF system (ReDent-Nova, Israel) [1].

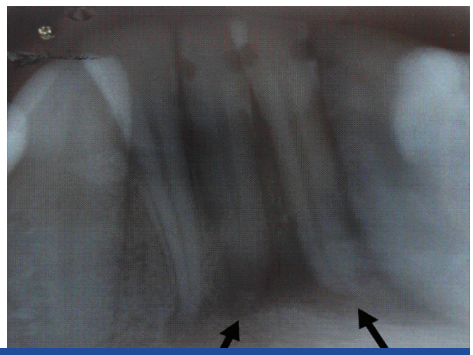
A new Self-Adjusting File (SAF) (1.5 mm diameter and 25 mm length) was used for each tooth. Irrigation was administered for 4min with 2.5% NaOCl solution at a 4mL/min flow rate, as suggested by the manufacturer. The final preparation was performed with a size 40/0.4 Profile system rotary file (Dentsply, Tulsa Dental Products, USA).

Next, the smear layer was removed with 3mL 17% EDTA (SybronEndo, USA) for 3min, and a final rinse with 3mL bidistilled water was performed. Pure calcium hydroxide was mixed with anaesthetic solution and placed as intracanal medicament with a size 35 Lentulo spiral file into the root canals. Teeth were then temporarily sealed with glass-ionomer cement (Fuji 9 Gold Label, GC Europe, Belgium), and the patient was scheduled to return in three weeks.

At the following appointment, patient was symptom-free, and the sinus tract mark was showing slight improvement. Rubber dam was placed, and a SAF file (1.5-mm diameter) was introduced into each canal and administered for 4min with 2.5% NaOCl solution at 4mL/min to remove the calcium hydroxide paste.







[Table/Fig-1]: Preoperative extraoral view of the submental sinus tract **[Table/Fig-2]:** Clinical view of discolorated teeth 31 and 41 **[Table/Fig-3]:** Initial periapical radiograph of teeth 31 and 41

[Table/Fig-4]: Periapical radiograph of final obturation, following restoration. Radiopacity present in the apical region of tooth 31 is extruded sealer. The healing potential of the sinus tract is not affected, as the sealer is biocompatible and absorbable **[Table/Fig-5]:** Clinical and radiographic appearance at the 6-month recall. Significant healing is noted in both, skin and periapical lesions

Final obturation was performed using warm vertical condensation technique and AH-26 root canal sealer (Dentsply DeTrey GmbH, Konstanz Germany) to establish an apical seal (System B, SybronEndo, Orange, CA, USA) and warm gutta-percha was injected to fill the coronal two-thirds of the root canals (Obtura II, Obtura Spartan, USA) [Table/Fig-4]. The opening access was restored with a composite resin for tooth 31 and a fiberglass post and composite resin for tooth 41.

At the 6-month follow-up, the clinical appearance of the skin had returned to a healthy status and the periapical lesions had resolved significantly [Table/Fig-5].

DISCUSSION

When a draining lesion is observed on the facial skin, an endodontic origin should always be considered in the differential diagnosis, including suppurative apical periodontitis, osteomyelitis, pyogenic granuloma, congenital fistula, salivary gland fistula, infected cyst, and deep mycotic infection [2].

These suppurating sinus tracts of endodontic origin are found most commonly in the intraoral region. Eighty percent of extraoral sinus tracts are caused by mandibular teeth with purulent drainage in the chin or submental area [3].

However, such cutaneous lesions do not always reveal the origin of the infection, and only few patients' report toothaches and other symptoms, complicating definitive diagnosis. Sheehan et al., observed an extraoral fistula in the nasofacial sulcus, which was first diagnosed as a facial furunculous [4].

Because a tooth with a necrotic pulp can appear normal or have slightly altered colour, a periapical radiography is necessary to demonstrate bone loss in the apex of the infected tooth, facilitating the diagnosis [5].

Clinical examination, dental radiography, and sometimes Cone Beam Computed Tomogrphy (CBCT) can help identify the location of the teeth that are involved, avoiding unnecessary antibiotic and surgical therapies. Nonsurgical endodontic therapy, sometimes complemented by surgery, or dental extraction, is the preferred treatment for extraoral sinus tracts of endodontic origin[6].

The teeth in this report were restorable; thus, endodontic therapy was performed. Definitive treatment of the draining sinus tract requires the source of the infection to be eradicated through root canal therapy. Spontaneous closure of the tract should be expected in 5 to 14 days after root canal therapy or extraction [7].

CONCLUSION

A dental cause must be considered and investigated for any cutaneous sinus tract that involves the face or neck. Clinical and radiographic dental examinations can facilitate localization of the teeth that are involved and avoid unnecessary antibiotic or surgical therapies. In this case, the elimination of infection by conventional endodontic treatment affected the resolution of the sinus tracts and resulted in periapical healing.

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PARTICULARS OF CONTRIBUTORS:

1. Post Graduate Student, Department of Endodontics, Dental School, University of Athens, Athens, Greece.
2. Assistant Professor, Department of Endodontics, Dental School, University of Athens, Athens, Greece.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Sotiropoulos G. George,
Rethimnou 5, Ag. Barbara, Greece, Zip Code: 12351
Phone: +306937534766, E-mail: gsgsotirop@gmail.com

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