

## **The management of an odontogenic cutaneous sinus tract: a case report**

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### **Summary**

The odontogenic cutaneous sinus tract on the facial and cervical skin is known to occur as a result of pulp necrosis and chronic periapical periodontitis. A 15 year-old male was referred to our clinic complaining of a draining sinus tract on his right cheek. In clinical examination, caries was detected in the mandibular right first molar tooth. In radiographic assessment, periapical lesion was noticed associated with roots of mandibular right first molar. Root canal treatment was indicated. The root canal was shaped with step-back technique. Calcium hydroxide was used as intracanal medicament. The sinus tract disappeared one week later and root canals were obturated with sealer (AH Plus) and gutta-percha points using lateral condensation technique. Two months later the sinus tract healed completely and the periapical lesion disappeared. Calcium hydroxide dressing is recommended in the treatment of extraoral lesions communicating with necrotic teeth.

**Key words:** Cutaneous sinus tract, root canal treatment, child.

### **Introduction**

The odontogenic cutaneous sinus tract on the facial and cervical skin often develops as a result of chronic apical periodontitis caused by pulpal degeneration or necrosis [1, 2, 3, 4, 5]. The apical infection may spread through the marrow space, then perforate the cortical bone. In soft tissue, the infection may spread through the path of least resistance between facial spaces and finally perforate a mucosal or cutaneous surface [2, 6]. However, Chan [2] et al. reported an extraoral cutaneous sinus tract caused by vertical root fracture. Calýskan [7] et al. also reported a case of cutaneous sinus tract originated from a fractured crown caused by trauma.

Cutaneous sinus tracts most commonly present on the chin and the cheek area [6]. They are rarely found in the nasal region [6, 8, 9]. These tracts usually appear as suppurative lesions of the chin or neck. The inner surface of sinus tracts may be partially lined with either granulomatous tissue or epithelium [7, 10, 11].

Cutaneous sinus tracts of dental origin have been well documented in the medical literature [5]. However, these lesions continue to be a diagnostic dilemma [5, 6]. The differential diagnosis is of prime importance. The differential

diagnosis should include traumatic lesions, fungal and bacteriologic infections, neoplasms, presence of foreign body, local skin infection, pyogenic granuloma, chronic tuberculosis lesion, osteomyelitis, actinomycosis and gumma of tertiary syphilis. Rare entities to be included in the differential diagnosis are defects of thyroglossal duct origin or branchial cleft, salivary gland and duct fistula and suppurative lymphadenitis [1, 5, 6, 7, 12, 13, 14, 15].

The principle of managing such lesions is to remove the source of dental infection [2, 6]. Conventional root canal treatment and occasionally periapical surgery and extraction are effective in providing disappearing sinus tract in a very short duration [5, 6, 14, 15].

The purpose of this report is to present a case of cutaneous sinus tract successfully managed with only conventional root canal treatment in a few weeks.

### **Case report**

A 15-year-old male was referred to Yeditepe University Faculty of Dentistry with a chief complaint of purulent discharge from extraoral sinus tract on his right cheek. The patient reported that he had large caries in the mandibular right

first molar tooth and left it untreated because he had no pain. However, as the lesion started to discharge pus, then he decided to treat his tooth.

There was extremely large caries in the mandibular right first molar tooth in clinical examination (*Figure 1*). A draining sinus tract on the right cheek, 1 cm below the inferior border of the mandibula was detected. On palpation, a thumb-tip-sized nodal swelling around the fistula was found (*Figure 2*). The tooth was not tender under percussion or painful on biting and didn't respond to electrical pulp testing. Radiographic examination revealed periapical radiolucent lesion associated with the roots of mandibular right first molar (*Figure 3*). The diagnosis was established as chronic apical periodontitis resulting from pulp necrosis due to caries.

During the first visit, after placing a rubber dam, the necrotic content of pulp chamber and root canal was removed. Working length was

established and biomechanical preparation was performed with combined nickel- titanium rotary and hand instrumentation using crown-down techniques. Root canals were irrigated using 5,25% sodium hypochlorite in abundance. Calcium hydroxide was used as intracanal medicament. The sinus tract disappeared one week later (*Figure 4*) and root canals were obturated with sealer (AH Plus) and gutta-percha points using lateral condensation technique.

Complete healing of the extraoral fistula was observed with minimal scar formation two months after the treatment (*Figure 5*) and the radiographic examination revealed complete disappearance of the radiolucent lesion (*Figure 6*).

## Discussion

Odontogenic cutaneous sinus tracts in the face and neck region are rare [2] and present a



**Figure 1.** Intra-oral appearance of the patient demonstrating large caries in the mandibular right first molar



**Figure 2.** Extra-oral appearance of the patient presenting a sinus tract on the right cheek



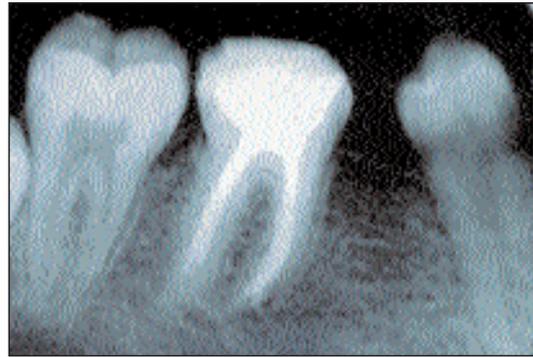
**Figure 3.** Periapical radiograph showing periapical radiolucent lesion associated with the roots of mandibular right first molar



**Figure 4.** Extra-oral appearance of the patient showing disappearance of sinus tract one week after calcium hydroxide treatment



**Figure 5. Extra-oral appearance of the patient presenting complete healing of fistula with minimal scar formation two months after the treatment**



**Figure 6. Periapical radiograph showing complete disappearance of the radiolucent lesion two months after the treatment**

diagnostic challenge to clinician as they may present a wide variety of diseases [2, 5, 6]. Patients with such lesion generally go to plastic surgeon and dermatologist rather than dentists for treatment. They may undergo unnecessary multiple biopsies, multiple surgical excision or multiple antibiotic regimens, however recurrence of the sinus tracts becomes unavoidable [2, 5], because the primary dental aetiology is never correctly diagnosed or addressed.

Misdiagnosis and delay in accurate treatment protocol may often be encountered [2, 3, 5]. Therefore, when diagnosing and treating sinus tracts of unknown aetiology in the head and neck region, dermatologist or plastic surgeon should always consult dentists to rule out a dental cause even though there is no dental complaint. This is because the cutaneous sinus tract caused by chronic infection is often painless and may develop over a long period of time without alarming the patient [2, 5, 6]. Patients rarely relate the symptoms to dental infection [2]. Therefore, early and proper diagnosis is essential. An accurate diagnosis should include medical history of the patient, inspection and palpation of the lesion, pulp vitality test and intraoral radiographs [1, 5, 6]. In addition, the insertion of a probe or gutta-percha through the fistula to take radiographs is an effective method for determining the involved tooth [6].

As suggested in literature, nonsurgical endodontic therapy is the treatment of choice of such lesions and should be attempted first [6]. In the present case, only nonsurgical endodontic therapy was carried out and the sinus tract was successfully treated with minimal scar forma-

tion. Calcium hydroxide was used as an intracanal medicament in the present case due to its beneficial effects [7, 16, 17]. The advantages of calcium hydroxide treatment are stimulation of bone repair and bactericidal effects due to its high alkalinity. Usage of calcium hydroxide paste was advocated for rapid and successful treatment of sinus tract associated with necrotic teeth [7]. After a long-term postendodontic observation period, surgical removal of the lesion was not necessary.

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