

TREATMENT OF EXTRAORAL CUTANEOUS SINUS TRACTS WITH NON-SURGICAL ENDODONTIC INTERVENTION: REPORT OF SIX CASES

Ağız Dışı Deri Fistüllerinin Cerrahi Olmayan Endodontik Tedavi ile İyileştirilmesi: Altı Olgu Bildirisi

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ABSTRACT

Clinically, extraoral sinus tracts of endodontic origin may be confused with a wide variety of diseases. Thus, the differential diagnosis of this clinical dilemma is of paramount importance in providing appropriate clinical care because misdiagnosis of this condition may result in healing failure or unnecessary treatments. For this reason, a dental cause must be considered for any cutaneous sinus tract involving the face or neck. Its diagnosis is not always easy unless the treating clinician considers the possibility of its dental origin. Once the correct diagnosis is made, definitive treatment, through either tooth extraction or root canal therapy to eliminate the source of infection, is simple and effective.

Keywords: Sinus tract; endodontic treatment; extra-oral cutaneous fistula; pus

ÖZ

Endodontik kaynaklı, ağız dışı fistül olguları, klinik yönden farklı birçok hastalıkla karıştırılabilir. Bu karmaşanın çözümü, doğru bir tedavi sunabilmenin tek şartı olan ayırıcı tanı ile çok yakından ilişkilidir; tanı basamağındaki hatalar, gereksiz birçok girişimin yapılmasına ya da lezyonun iyileştirilememesine neden olurlar. Dolayısıyla, boyun veya yüzde herhangi bir deri fistülü görüldüğünde, odontojenik kaynağın araştırılması çok önemli bir gerekliliktir. Bu kaynağın, sorgulanmaması ya da araştırılmaması, bu tip olguların tanısını daima zorlaştıracaktır. Doğru tanı konulduğunda ise, enfeksiyon kaynağının kolaylıkla ve başarılı bir şekilde yok edilmesi, kök kanalı tedavisi ya da ilgili dişin çekimiyle mümkündür.

Anahtar kelimeler: Fistül ağzı; endodontik tedavi; ağız dışı deri fistülü; cerahat



Introduction

A cutaneous sinus tract of odontogenic origin is a relatively uncommon condition (1-5). This rare entity is a pathway through the alveolar bone, which typically begins at the apex of an infected tooth or of an infected segment of the dental alveolus. It drains infected material (pus) through the skin (6-9). The site of a sinus tract depends on the location of the perforation in the cortical plate by the inflammatory process and its relationship to facial-muscle attachments (6, 10). If the apices of the teeth are above the maxillary muscle attachments and below the mandibular muscle attachments, the infection may spread to extra-oral regions (2, 4, 7, 11-14). These tracts tend to occur more frequently from infected mandibular teeth (80%) than from infected maxillary teeth (20%) (8, 15).

Although cutaneous sinus tracts of dental origin have been previously documented, these lesions still present diagnostic challenges. As the lesion develops, it is usually not thought to be of dental origin and the patients seek treatment from dermatologists, a family physician or a general surgeon, often undergoing multiple antibiotic regimens, surgical excisions, biopsies and even radiotherapy (9, 11, 12, 14, 16-18). Misdiagnosis adds to the chronicity of the lesion and has profound effects on facial esthetics due to unnecessary treatments resulting in cutaneous scarring and dimpling (3, 5-7, 10). For this reason, the differential diagnosis of this entity is of utmost importance.

In the present article, the diagnosis and treatment of six cases of cutaneous sinus tracts of odontogenic origin are described.

Case series

Case 1

A healthy 40-year-old man was referred to our clinic with a complaint of a persistently secreting lesion on his face, adjacent to the left nasolabial sulcus. He stated that the lesion was first noticed 9 months ago after the upper left lateral, first premolar and second molar teeth were fixed by a partial denture. The patient had no complaints of dental pain or other dental symptoms. The path of the sinus tract was confirmed by passing a gutta-percha cone through the sinus which led to the upper left first premolar tooth, which presented a negative response in the pulp vitality tests (Figure 1 and 2). The clinical diagnosis was established as chronic periapical abscess with an extraoral sinus tract.

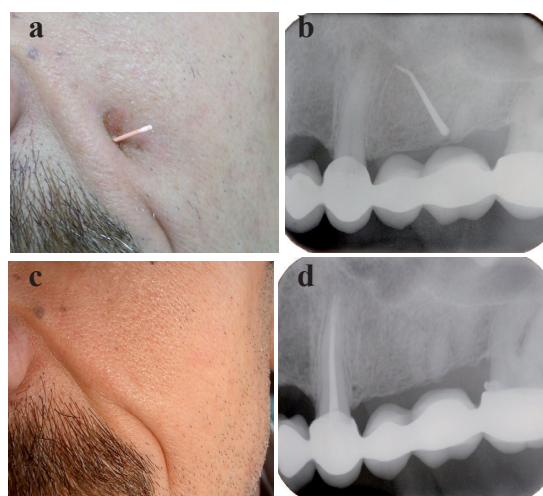


Figure 1. Gutta-percha cone is used to trace the origin of the sinus tract (a). Radiographic view shows gutta-percha cone pointing to the apical region of the maxillary first premolar (b). Completely healed skin lesion (c). Radiographic appearance after 12 months (d).

After placing a rubber-dam, the root canals were prepared with hand K-files (Kerr Co., Romulus, MI, USA) and irrigated with 5.25% sodium hypochlorite solution. Calcium hydroxide with glycerine (Kalsin, Aktu Co., İzmir, Turkey) was given as the intracanal medicament. The root canals were obturated 2 weeks after the initial appointment with gutta-percha points and resin based AH-26 root canal sealer (Dentsply De Trey, Konstanz, Germany) using the lateral condensation technique. At the 1-year recall, complete healing of the extraoral fistula was observed (Figure 1c). Postoperative radiologic control showed the repair of periapical tissues (Figure 1d).

Case 2

A healthy 38-year-old female patient was referred to our department with a cauliflower like cutaneous lesion in the submental region present for one year (Figure 2a). She reported intermittent pain and drainage through the lesion. Both the left and right central and lateral incisors failed to respond to electrical and thermal pulp vitality tests. Radiographic examination revealed circular radiolucent lesions associated with the lower left and right lateral incisors and a broad radiolucency associated with the lower right and left central incisors (Figure 2b). Based on these examinations, a diagnosis of chronic periapical abscess with a cutaneous sinus caused by the pulpal necrosis of both the right and left central and lateral incisors was made. A non-surgical endodontic treatment of these incisor teeth

was started. The root canal systems were cleaned and shaped using the step-back technique and irrigated with 5.25% sodium hypochloride solution. Calcium hydroxide paste was used as the intracanal medication. One month after when the drainage had ceased, the root canal obturations were performed as described in case 1. At one and a half year-recall, healing of the skin lesion had occurred (Figure 2c). Orthopantomographic examination showed the complete repair of the periapical tissues (Figure 2d).

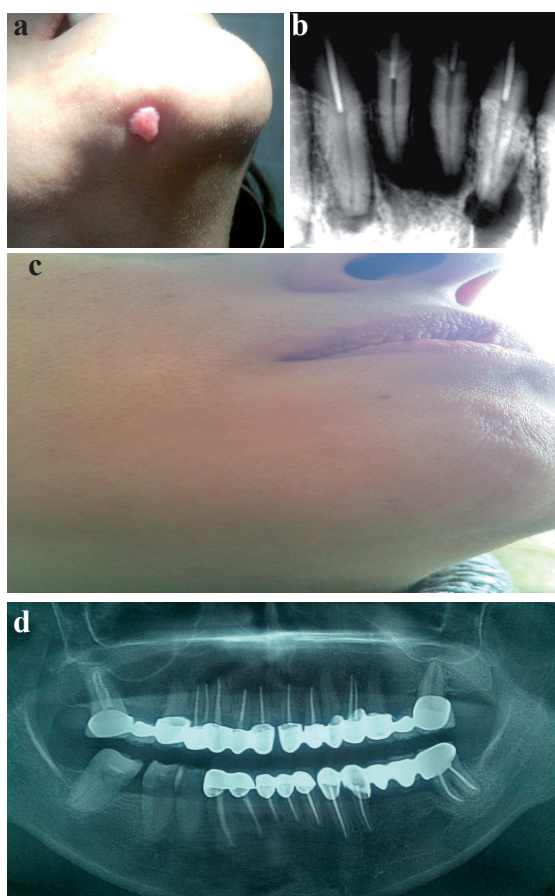


Figure 2. Periapical radiolucencies in relation with the apices of anterior incisors (a). Cauliflower like skin lesion on the chin of the patient (b). 18 months post treatment photograph showing completely healed sinus tract (c). Orthopantomographic radiograph showing complete disappearance of the radiolucent lesions after non-surgical endodontic treatments (d).

Case 3

A healthy 17-year-old man sought treatment with a chief complaint of purulent and hemorrhagic discharge from the left submandibular region for the last 15 months (Figure 3a). The patient reported repeated administrations of various antibiotics. Radiologic

examination with a gutta-percha cone introduced through the sinus opening, revealed the relation of the periapical radiolucency of the lower left first molar tooth (Figure 3b). This tooth was nonresponsive to electric pulp and heat tests. The diagnosis was established as chronic periapical abscess resulting from pulp necrosis due to caries. Biomechanical preparation of the lower right first molar tooth was performed using rotary ProTaper (Dentsply-Maillefer, Ballaigues, Switzerland) files in a crown-down manner and 5.25% sodium hypochloride solution. Apical preparation was done to size F3. Then, the root canals were obturated with gutta-percha points and AH-26 sealer, using the lateral condensation technique. Five months later, the cutaneous lesion had completely healed with a linear scar formation (Figure 3c). A marked reduction in the size of the periapical lesion was noticed in the radiographic examination, which is an indication of satisfactory healing (Figure 3d).

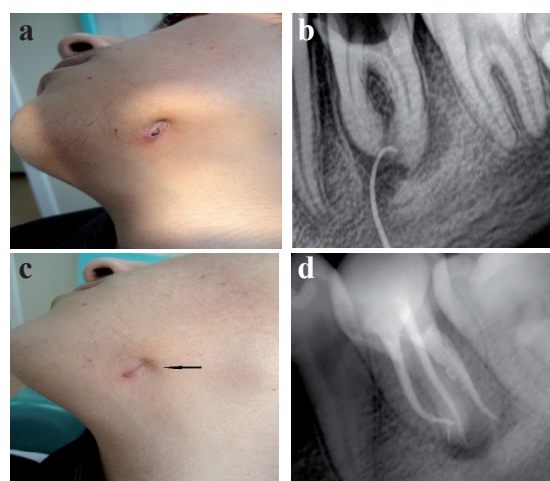


Figure 3. Extraoral appearance of the patient presenting a sinus tract on the left submandibular region (a). Confirmatory radiograph showing origin of the sinus in relation with the periapical lesion (b). Postoperative photograph of the patient. Arrow indicates scarring after endodontic treatment (c). Radiographic appearance after 5 months showed a limited healing of the periapical radiolucency (d).

Case 4

A healthy 18-year-old female patient was referred to our department to verify a possible dental cause for the skin lesion on her right cheek. Like the aforementioned case, this patient had also been treated for several weeks with antibiotics. Even so, she reported intermittent pain and drainage through the lesion. Path of the sinus tract was confirmed by passing a gutta-percha cone through the sinus which

led to the lower right first molar tooth (Figure 4a and 4b). This suspected molar tooth was unresponsive to thermal and electric pulp vitality tests. A diagnosis of chronic periapical abscess with a cutaneous sinus associated with the lower right first molar tooth was made. Root canal treatment was performed in the similar way as described in case 3. At the 8-month recall, healing of the extraoral fistula had occurred with only a minimal scar (Figure 4c). Radiographic examination showed the complete repair of the periapical tissues (Figure 4d).

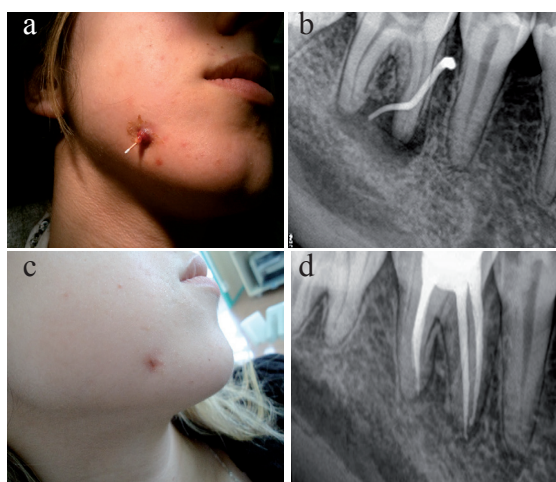


Figure 4. Draining lesion on the right side of the mandible (a). Tracing with gutta-percha cone indicates the origin of the fistula as the apices of the first molar tooth (b). Healing of the skin lesion with minimal scarring formation (c). Complete resolution of the periapical rarefaction (d).

Case 5

A healthy 25-year-old woman referred with a complaint of nonhealing pus discharge from a skin lesion on her chin of 7 months duration. A drug history of repeated antibiotic administration was reported. Radiologic examination with a gutta-percha cone introduced through the sinus opening revealed a periapical radiolucent area in relation with the lower left central and lateral incisors (Figure 5a and 5b).

These incisors failed to respond to electrical and thermal pulp tests. The diagnosis was established as chronic periapical abscess resulting from pulp necrosis due to occlusal trauma. Root canal treatment was performed in the similar way as described in cases 3 and 4 (Figure 5c). After 1 month, the skin lesion had completely healed with minimal cicatrization (Figure 5d). As the skin lesion had healed, the patient did not turn up for further recall appointments.

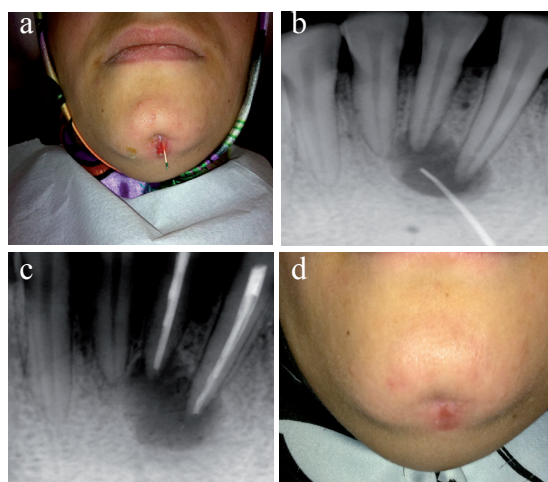


Figure 5. Extraoral sinus tract with gutta-percha cone (a). Gutta-percha cone traces the periapical lesion associated with the apices of the left incisors (b). Periapical radiograph after obturation with gutta-percha (c). The lesion has healed satisfactorily leaving a noticeable scar (d).

Case 6

A healthy 15-year-old female patient sought treatment with the chief complaint of hemorrhagic discharge from the left submandibular region for the last 4 months. Radiologic examination with a gutta-percha cone introduced through the sinus opening revealed a periapical radiolucent area in relation to the mesial root of the lower left first molar tooth (Figure 6a and 6b). This tooth did not respond to electrical and thermal pulp tests. The diagnosis was established as chronic periapical abscess resulting from pulp necrosis due to caries.

Biomechanical preparation of the lower left first molar tooth was performed in the same manner as described in cases 3, 4 and 5. The canals were initially filled with calcium hydroxide paste for a period of two weeks. When the drainage had ceased, canals were obturated with gutta-percha points and resin based AH-Plus (Dentsply De Trey, Konstanz, Germany) root canal sealer using the lateral condensation technique (Figure 6c). After 20 days, healed sinus tract with marked cicatrization was observed (Figure 6d).

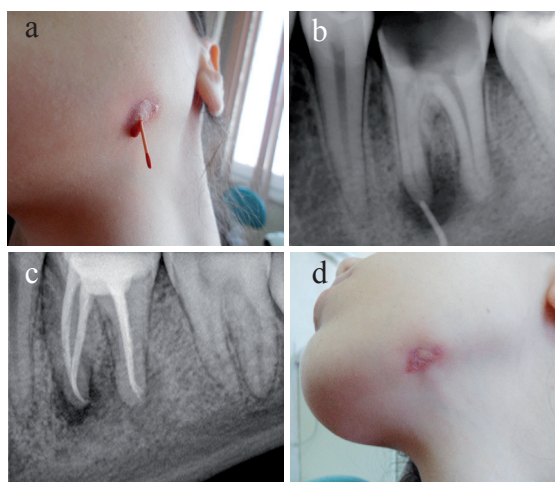


Figure 6. Preoperative view showing gutta-percha inserted into the draining sinus tract (a). Gutta-percha cone inserted into sinus tract shown on the periapical radiograph reaching the lesion associated with the mesial root apex (b). Periapical radiograph after obturation with gutta-percha (c). Note the complete healing of the fistula with scar formation (d).

Discussion

Differential diagnosis of cutaneous draining sinus tract should include suppurative apical periodontitis, osteomyelitis, traumatic lesions, congenital fistula, salivary gland fistulas and infected cysts, deep mycotic infections and gumma of tertiary syphilis. In addition, skin lesions such as pustules and furuncles, foreign-body lesions, squamous cell carcinoma and granulomatous disorders may all be similar superficially in appearance to draining sinus tracts of dental origin, but they are not true sinus tracts (1, 2, 4, 6, 7, 12, 14, 18). The principle of managing such lesions is to remove the source of dental infection (9, 14, 16). Unless the dental focal infection is treated, recurrence is likely (5, 10). Diagnosis is challenging for many reasons. This can be due to the fact that these lesions do not always arise in close proximity to the underlying dental infection and only about half of the patients ever mention having had a toothache (2, 11, 14, 17, 18). Clinically, these lesions appear as a papule or nodule, 1 mm to 20 mm in diameter with purulent discharge, usually on the chin or in the submental region (1, 3, 4, 7, 16, 18). The other uncommon locations are cheek, canine space, nasolabial fold, nostrils, neck and inner canthus of eye (5, 7, 9, 17, 18). Palpation of the involved area often reveals a cordlike tract attached to the underlying alveolar bone in the area of suspected tooth. Intraoral examination may reveal carious or discolored teeth. The involved teeth respond negatively

to pulp vitality tests (4-8, 10, 12). If the sinus tract is patent, a gutta-percha point or a sharp-tipped wire can be introduced into the sinus opening and passed through the sinus until it meets the involved area of the tooth. An intraoral periapical radiograph should then be exposed with the cone in situ pointing to the origin of the pathosis (5-8, 10-12, 14, 16, 17, 19). This method was utilized in five of our six cases. Only in the second case, the radiographs clearly revealed the periapical lesion associated with the suspected teeth that did not respond the pulp vitality tests. As suggested in the literature, conventional endodontic therapy is the treatment of choice of such lesions and should be attempted first (2, 3, 6, 7, 9-11, 16, 19). If correctly diagnosed and treated, the sinus tract is expected to disappear within 7 to 14 days (3, 4, 6, 8, 9, 12). In fact, the sinus tracts in our cases healed following the initial treatment session. Calcium hydroxide is the preferred intracanal medicament due to its beneficial effects. Usage of calcium hydroxide paste was advocated for rapid and successful treatment of sinus tracts associated with necrotic teeth (5, 16, 18). This medication was utilized in the first, second and sixth cases. Apart from these, in the first case, calcium hydroxide with glycerine was chosen as the intracanal medicament as glycerine has hygroscopic property and is very useful as a moistening substance and non-toxic (20). Usually, there is no need for systemic antibiotics as the lesion is a localised entity. It has been observed that systemic antibiotic therapy will result only in a temporary reduction of the drainage and pseudo-healing (1, 5, 10, 11, 17, 21)

Johnson *et al.* (17) reported a possible correlation between the application of heat to the face to relieve pain and cutaneous sinus tracts of odontogenic origin (22). This contention is supported by the findings of Javid and Barkhordar (13). They reported that of 59 patients treated for cutaneous sinus tracts of odontogenic origin, 34 reported using home poultices of hot fomentation to reduce pain and swelling and to draw out the pus. Two of the six patients in our study had reported previous heat therapy to ameliorate their pain, which probably worsened the course of the disease. Verification of pain relief with heat application should be a part of the anamnesis.

Conclusion

The cases presented herein highlight the fact that dental etiology should be considered as a part of a differential diagnosis for any orofacial skin lesion. In the cases reported here, the elimination of infection

through nonsurgical root canal treatment led to the resolution of the sinus tracts and promoted periapical healing of the teeth involved. Communication between the dentist and the physician is imperative to provide timely recognition and treatment of such rare cases.

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None declared

Conflict of interest

None declared

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