

Esthetic Improvement of a Nasolabial Cutaneous Sinus Tract

Abstract

A cutaneous sinus tract of dental origin is relatively uncommon and may easily be misdiagnosed, owing to its uncommon occurrence and absence of dental symptoms. Such a lesion continues to be a diagnostic dilemma. The case described here presented a nasolabial cutaneous sinus tract of dental origin that was treated by a surgical approach with an excellent esthetic improvement.

Keywords: *Esthetic improvement, cutaneous sinus tract, diagnostic dilemma, odontogenic infection*

Introduction

The sinus tract is defined as a channel leading from an infectious area to an epithelial surface. Sinus tract apertures can be located either intraorally or extraorally. Intraorally, the aperture is visible on the buccal gingiva or in the vestibule. Extraorally, the sinus tract may open anywhere on the face and neck.^[1]

A cutaneous sinus tract of dental origin is relatively uncommon and may easily be misdiagnosed because of its unusual occurrence and absence of dental symptoms. Such a lesion continues to be a diagnostic dilemma.^[2,3] Extraoral drainage depends on the location of the affected tooth as well as on specific factors such as the virulence of the microorganism, resistance of the patient's body, and the relationship between anatomy and muscle facial attachments.^[1,4,5] The dental elements mostly associated with cutaneous sinus tract are the third molars, followed by maxillary third molars and maxillary canines.^[4,6] The areas most commonly affected are the chin and the submental region, and other areas include the cheeks, nasolabial folds, and the inner corner of the eyes.^[7,8]

The purpose of this paper is to present a case of an odontogenic cutaneous sinus tract in the nasolabial fold, showing the etiology, the surgical management, and a literature review. Healing and esthetic improvement occurred only after surgery and removal of the causal tooth and the affected tissue.

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Case Report

A healthy 32-year-old female patient presented herself to the dental hospital of the Faculty of Rabat complaining of discomfort and nonesthetic appearance of her face. The patient presented an extraoral sinus tract in the right region of her face, with an approximate size of 5 mm × 5 mm, near the bridge of the nose, and positioned over the nasolabial groove [Figure 1]. The nodule was soft with minimal purulent discharge. During the interview, the patient reported that the sinus tract had appeared 3 months before and several treatment attempts based on antibiotics and dermatologic ointment had been made after visiting a dermatologist without any improvement.

No intraoral vestibular swelling was present, but a stalk-like communication was palpable and continuous from the apical area of tooth 13 to the cutaneous lesion. Periapical radiograph shows the presence of an apical radiolucency of an approximate 0.5 mm diameter, more or less round, badly limited, of inhomogeneous color, surrounding the apex of 13 [Figure 2].

These findings led to a diagnosis of chronic apical periodontitis caused by pulpal necrosis, which led to the development of a cutaneous sinus tract on the right side of the face.

We started the surgical procedure with the reflection of a full-thickness flap which allowed to observing that one of the fistulous tract extremities stuck to the bone around the apical region of 13, and then, the root of the 13 was extracted. Consequently,

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**Akram Belmehdi,
Karima El Harti¹,
Wafaa El Wady¹**

*Department of Oral Surgery,
Dental Center of Treatment and
Diagnosis, IBN Sina Hospital,
¹Department of Oral Surgery,
Faculty of Dentistry of Rabat,
Mohammed V University, Rabat,
Morocco*

Address for correspondence:

*Dr. Akram Belmehdi,
1069, El Menzah, CYM,
Rabat, Morocco.
E-mail: akram.belmehdi@gmail.
com*

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the area was dissected to surgically remove the cord-like tract [Figure 3].

After the excision, the right cheek immediately found back its normal appearance with the relaxation of the retracted skin.

The patient was controlled 10 days after surgery; a relaxation was noted in the cheek with a beginning of the cutaneous sinus tract healing [Figure 4].

After 5 months, there was an esthetic appearance improvement of the former lesion [Figure 5].

Discussion

Frequently as an extraoral manifestation of pulpal-periradicular pathosis, cutaneous sinus tract of the facial skin might have other etiologies related to osteomyelitis, infected cysts, and tubercular or fungal infections. Like our patient, affected patients usually search help from surgeons or dermatologists rather than dentists and often undergo multiple inappropriate treatments.

In a positive diagnosis of cutaneous dental fistula, although the examiner usually first looks for dental caries or periodontal diseases, he should bear in mind the possibility of dental traumatic injuries.^[9]

Furthermore, this lesion can present a diagnostic challenge because these tracts often have a clinical appearance similar to other uncommon facial lesions.^[10,11]

Referring to the literature, the most common origin of nonhealing sinus tracts in the head-and-neck region is dental infections. Fifty percent of these patients undergo repeated topical treatment or surgical interventions and are given multiple courses of antibiotics, with the resultant development of bacterial resistance and recurrence.^[12,13] Despite advances in the medical sciences, case reports of mismanaged sinus tracts of dental origin continue to appear in the literature.

In a study of 117 patients over 7 years, Chowdri *et al.*^[14] showed that 64 patients (55%) had sinus tracts related to dental pathology.



Figure 1: Exobuccal view showing a cutaneous sinus tract in the nasolabial area of the right cheek



Figure 2: Periapical radiograph showing an apical radiolucency, surrounding the apex of 13

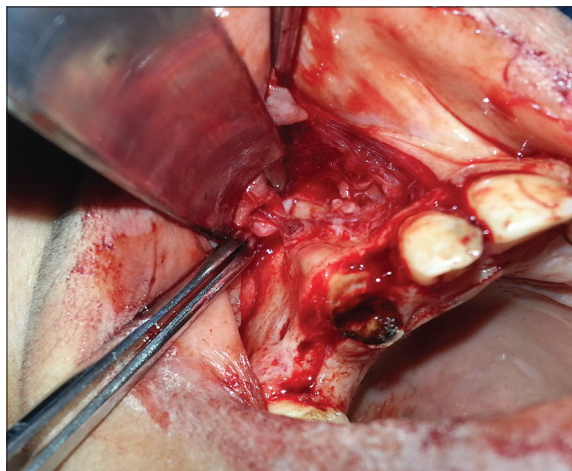


Figure 3: Detachment of the cord-like tract from its alveolar origin



Figure 4: Clinical appearance of the cutaneous sinus tract after 10 days. We note the relaxation of the skin



Figure 5: Clinical appearance of the cutaneous sinus tract after 10 days. We note the relaxation of the skin

In a cohort study of 108 odontogenic sinus tracts, Slutzky-Goldberg *et al.*^[15] found just 1 case with cutaneous sinus tract. In the report of Gupta and Hasselgren,^[16] all odontogenic sinus tracts (29 cases) had intraoral openings.

A frequency of 9.9% of sinus tract without any cutaneous opening was found in a study of Miri *et al.*^[17] which was realized in Iran in 1527 patients with a personal history of endodontic treatment, another study reported by Sadeghi and Dibaei^[18] in 2011 in a very similar population with the same precedence and under canalicular therapy which found a prevalence of 14.7% sinus tract without an extraoral expression in 728 patients. All these studies that have focused on the prevalence of the sinus tract have proved the relative rare occurrence of their cutaneous expression. Significantly, previous misdiagnosis or inappropriate medical treatment and repeated recurrence have been shown in a retrospective study of Lee *et al.*^[19] where 27 of 33 patients were transferred from general clinicians and had experience of one or more recurrence. All these authors have reported how important is the interaction between physicians and dentists to avoid submitting patients to multiple biopsies, antibiotic regimens, and unnecessary surgery, before correct diagnosis and endodontic therapy are in course. The cutaneous sinus tracts are a sequel to pathosis, and the clinician should be able to recognize its primary cause.^[9,18,19] They may appear months or even years after the dental pathology and are often not related to it.^[1]

An injury or disease of the tooth may result in degeneration of the pulp and periapical abscess. The local destructive process progresses slowly through the alveolar bone and may spread into the surrounding soft tissues and erupt through the skin. Findings consistent with dental sinus tracts are palpable and painless facial nodule or pustule with or without drainage.

Retraction or dimpling is caused by fixation with the underlying tissues and may be associated with a palpable intraoral cord. Only half of the patients have reported a history of toothache.^[21]

Cutaneous lesions of odontogenic sinus tracts are typically nontender, erythematous, nodulocystic lesions. They are usually fixed with retracted perilesional skin and present in the lower part of the face. On palpation, the sinus tract can be felt as a cord-like structure connecting the skin lesion to the jaw. Regional lymphadenopathy is usually not evident in odontogenic sinus tracts.^[14]

The sinus tract's exit is determined by the location of muscle attachments and fascial planes.^[21] Of the reported cases, 80% arise from mandibular teeth. Mandibular incisors and cuspids typically drain to the chin or submental region. Mandibular premolar and molar infections drain to the posterior mandible or below the inferior border in the submandibular region. Dental fistulas may arise from infection of the maxillary teeth, resulting in sinus tracts erupting intranasally.^[2,21]

Intraoral and dental examinations are critical for making the diagnosis. In particular, the examiner should look for dental caries or restorations and periodontal disease. He should keep in mind that the involved tooth can even appear asymptomatic.^[22]

A panoramic or periapical radiograph of the involved area often reveals a carious tooth or retained roots along with the associated radiolucency periapical lesion, which may be a granuloma or a cyst. Early radiographs can prevent unnecessary surgeries when the teeth appear clinically asymptomatic. A gutta-percha cone can be used to trace the sinus tract to its origin, which is usually a nonvital tooth. It has been suggested that some dental computerized tomography software may be superior to panoramic or intraoral radiographs.^[21,22]

Histologically, the cutaneous sinus usually consists of granulomatous tissue or epithelium.^[11,23] Diagnostic errors can result in multiple surgical excisions and biopsies, antibiotic therapy, and even radiation therapy.^[21]

The differential diagnosis should include traumatic lesions, fungal and bacterial infections, neoplasms, presence of a foreign body, local skin infections (carbuncle and infected epidermoid cyst), pyogenic granuloma, chronic tuberculosis lesion, osteomyelitis, actinomycosis, and gumma of tertiary syphilis. Rare entities to be included in the differential diagnosis are developmental defects of thyroglossal duct origin or branchial cleft, salivary gland and duct fistula, dacryocystitis, and suppurative lymphadenitis.^[11,24]

An understanding of the draining of cutaneous sinus tracts leads to more appropriate treatment.

Most cases respond to conservative, nonsurgical root canal therapy. Endodontic treatment is recommended. Extraction may be required in nonrestorable fractured or carious teeth or in cases associated with extensive alveolar bone loss.^[5,23] In this case report, extraction of the canine was made in agreement with the patient and her poor financial state.

The presence of a cutaneous sinus tract indicates a more serious lesion that requires special intervention, such as surgical incision and excision of the entire cord-like tract, in addition to extraction of the diseased tooth. The reason why some authors believe in the need for surgical removal of the fistulous tract lies in the mistaken conviction that it is lined by epithelium.^[22,25]

In our case report, the tooth was nonrestorable and it was extracted and followed by the removal of the cord from its origin to the point of skin attachment, which allowed relaxation of the facial skin, elimination of the skin dimpling in the affected area, and restoration of normal facial contours.

Therefore, if surgery was performed, the cutaneous lesion usually resolves in 1–2 weeks. The patient may be left with a residual umbilication of the skin that can be surgically revised if it is cosmetically unappealing.^[22,26]

The complete healing of the cutaneous sinus tract of this case was spectacular after 5 months with no evidence of recurrence or late infection and which allowed obtaining a normal esthetic appearance of the facial skin and a great satisfaction from the patient.

Conclusion

The cutaneous sinus tract is an uncommon but well-documented condition. Its diagnosis is not always easy unless the treating clinician bears in mind the possibility of its dental origin and makes a precise diagnosis because the opening of the sinus tract is far away from where it originates. The symptoms and signs are usually not significant and it costs a thorough history taking and physical examination to make a proper diagnosis for treatment.

Early correct diagnosis, based on radiologic evidence of a periapical root infection, and treatment of these lesions can help prevent unnecessary and ineffective antibiotic therapy or surgical treatment, reducing the possibility of further complications such as sepsis and osteomyelitis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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