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.\(^6\) 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.

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,
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.
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 curvaceous 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.[15,23] 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 unpleasant.\(^{[22,26]}\)

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.

**References**

1. Cohenca N, Karni S, Rotstein I. Extraoral sinus tract misdiagnosed as an endodontic lesion. J Endod 2003;29:841-3.
2. Johnson BR, Remeikis NA, Van Cura JE. Diagnosis and treatment of cutaneous facial sinus tracts of dental origin. J Am Dent Assoc 1999;130:832-6.
3. Gupta M, Das D, Kapur R, Sibal N. A clinical predicament – Diagnosis and differential diagnosis of cutaneous facial sinus tracts of dental origin: A series of case reports. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2011;112:e132-6.
4. Pasternak-Júnior B, Teixeira CS, Silva-Sousa YT, Sousa-Neto MD. Diagnosis and treatment of odontogenic cutaneous sinus tracts of endodontic origin: Three case studies. Int Endod J 2009;42:271-6.
5. Mittal N, Gupta P. Management of extra oral sinus cases: A clinical dilemma. J Endod 2004;30:541-7.
6. Yoshitake J, Adachi H. Fistula odontogena externa. Geka Chiryo 1971;24:445-6.
7. Andrade-Junior CV, Souza KH, Gomes AC, Silva EJ. Odontogenic cutaneous sinus tract: Case report. Dent Press Endod 2013;3:70-4.
8. Sheehan DJ, Potter BJ, Davis LS. Cutaneous draining sinus tract of odontogenic origin: Unusual presentation of a challenging diagnosis. South Med J 2005;98:250-2.
9. Mishra R, Khan TS. Cutaneous sinus tract in association with traumatic injury to the teeth. Int J Clin Pediatr Dent 2013;6:205-7.
10. Barrowman RA, Rahimi M, Evans MD, Chandu A, Parashos P. Cutaneous sinus tracts of dental origin. Med J Aust 2007;186:264-5.
11. Chkoura A, Elwady W, Taleb B. Surgical management of a cutaneous sinus tract: A case report and review of the literature. J Contemp Dent Pract 2010;11:049-55.
12. Kaban LB. Draining skin lesions of dental origin: The path of spread of chronic odontogenic infection. Plast Reconstr Surg 1980;66:711-7.
13. Karp MP, Bernat JE, Cooney DR, Jewett TC Jr. Dental disease masquerading as suppurrative lesions of the neck. J Pediatr Surg 1982;17:532-6.
14. Chowdri NA, Sheikh S, Gagloo MA, Parray FQ, Sheikh MA, Khan FA, et al. Clinicopathological profile and surgical results of nonhealing sinuses and fistulous tracts of the head and neck region. J Oral Maxillofac Surg 2009;67:2332-6.
15. Slutzky-Goldberg I, Tsesis I, Slutzky H, Heling I. Odontogenic sinus tracts: A cohort study. Quintessence Int 2009;40:13-8.
16. Gupta R, Hasselgren G. Prevalence of odontogenic sinus tracts in patients referred for endodontic therapy. J Endod 2003;29:798-800.
17. Miri SS, Atashbar O, Atashbar F. Prevalence of sinus tract in the patients visiting department of endodontics, Kermanshah school of dentistry. Glob J Health Sci 2015;7:271-5.
18. Sadeghi S, Dibaei M. Prevalence of odontogenic sinus tracts in 728 endodontically treated teeth. Med Oral Patol Oral Cir Bucal 2011;16:e296-9.
19. Lee EY, Kang JY, Kim KW, Choi KH, Yoon TY, Lee JY, et al. Clinical characteristics of odontogenic cutaneous fistulas. Ann Dermatol 2016;28:417-21.
20. Cantatore JL, Klein PA, Lieblich LM. Cutaneous dental sinus tract, a common misdiagnosis: A case report and review of the literature. Cutis 2002;70:264-7.
21. Giménez-Garcia R, Martinez-Vera F, Fuentes-Vera L. Cutaneous sinus tracts of odontogenic origin: Two case reports. J Am Board Fam Med 2015;28:838-40.
22. Bouguezzi A, Hentati H, Chokri A, Selmi J. Cutaneous draining sinus tract of odontogenic origin. Global J Surg 2014;2:21-4.
23. Tavee W, Blair M, Graham B. An unusual presentation of a cutaneous odontogenic sinus. Arch Dermatol 2003;139:1659-60.
24. Tidwell E, Jenkins JD, Ellis CD, Hutson B, Cederberg RA. Cutaneous odontogenic sinus tract to the chin: A case report. Int Endod J 1997;30:352-5.
25. Swift JQ, Gulden WS. Antibiotic therapy – Managing odontogenic infections. Dent Clin North Am 2002;46:623-33, vii.
26. Güleç AT, Seçkin D, Bulut S, Sarfakoğlu E. Cutaneous sinus tract of dental origin. Int J Dermatol 2001;40:650-2.