

# Cutaneous Dental Sinus Tract, a Common Misdiagnosis: A Case Report and Review of the Literature

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## GOAL

To recognize the clinical presentation of dental sinus tract

## OBJECTIVES

Upon completion of this activity, dermatologists and general practitioners should be able to:

1. Explain the presentation of dental sinus tract.
2. Recognize the differential diagnosis of dental sinus tract.
3. Recommend appropriate treatment for dental sinus tract.

**CME** Test on page 276.

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*Cutaneous sinus tracts of dental origin are often initially misdiagnosed and inappropriately treated because of their uncommon occurrence and the absence of symptoms in approximately half the individuals affected. Patients are often referred with a recurrent or chronic cyst, a furuncle, or an ulcer*

*on the face or neck. Correct diagnosis is based on a high index of suspicion and on radiologic evidence of a periapical root infection. Appropriate treatment results in predictable and rapid healing of these lesions. We present a case report of this common misdiagnosis and a review of the literature with regard to diagnosis and treatment.*

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**T**he initiating factor in the development of a dental abscess is periapical inflammation associated with severe pulpal suppuration or pulpal death secondary to dental caries or trauma.



**Figure 1.** Cutaneous draining sinus on the left chin.

The pathologic process may take either of 2 pathways—an intraoral sinus that develops or a sinus tract that dissects subcutaneously and exits externally through the face or neck.<sup>1</sup> The patient, usually unaware of the underlying dental etiology, often sees a physician for treatment of the cutaneous lesion. Clinically, the cutaneous tract may resemble a cyst, furuncle, or ulcer. Approximately 80% of these tracts arise from mandibular teeth, with almost half these lesions involving anterior mandibular teeth.<sup>2</sup> Consequently, cutaneous drainage sinus tracts of dental origin most commonly arise on the chin or lower jaw but also are found in the cheek, perinasal, or neck region.

As a cutaneous sinus tract is an uncommon manifestation of dental infection, frequently the diagnosis is overlooked, and misdiagnosis leads to inappropriate therapy and surgical revision.<sup>3</sup> Contributing to the high frequency of misdiagnoses are the remoteness of the cutaneous sinus tract from its site of origin within the oral cavity and the typical lack of symptoms in an involved area in a healthy patient.<sup>4,5</sup> In the medical literature, approximately half the patients reported as having a cutaneous sinus tract of dental origin have undergone multiple unsuccessful attempts at incision and drainage and numerous lengthy trials of antibiotics.<sup>6</sup> When the lesion is recognized early and diagnosed properly, and appropriate dental therapy or extraction of the infected tooth is performed, the cutaneous sinus resolves rapidly.

### Case Report

A 54-year-old white man with mental retardation from a group home was referred to our dermatology clinic for an “ingrown hair” on the left chin. The lesion was painful and bled occasionally, according to the patient. It consisted of an indentation, 1 cm in diameter, which contained a 4-mm friable papule with yellow crust (Figure 1). Intraoral examination was remarkable for poor dentition with diffuse periodontitis and gingivitis but without a palpable abscess or palpable cord. Bacterial and fungal cultures were negative. The cutaneous lesion was suspected to be of dental origin. To rule out a dental sinus, we referred the patient to his dentist for a panoramic radiograph.

Results of the panoramic radiographic examination were normal. The patient was reconsulted to our clinic for the same complaint. Apical radiographs were requested, which showed an abscess under tooth 22, the left lateral mandibular canine (Figure 2). The patient underwent root canal therapy and was treated with oral antibiotics. Seventeen days after surgery, the friable papule had resolved, and there was no pain on palpation. A small indentation remained visible on the chin.

### Comment

Evaluation of a cutaneous sinus tract must begin with a thorough history and the awareness that a cutaneous lesion of the face and neck could be of dental origin.<sup>4</sup> Patients, unaware that the



**Figure 2.** Black void represents periapical abscess under tooth 22.

cutaneous sinus could be related to dental infection, often seek treatment from a dermatologist or family physician. Patients may not remember an acute or painful onset, and only half recall having a toothache.<sup>2</sup> In addition, many patients with dental sinuses have a history of diffuse periodontal disease and gingivitis. Therefore, careful questioning of the patient about past symptoms (including dental caries, oral trauma, and periodontal disease) and oral hygiene regimens may help physicians identify a dental etiology.

Cutaneous retraction or dimpling may be visible because of the fixation of underlying tissues through a sinus tract. Palpation of the tissues surrounding the sinus may reveal a cordlike tract attached to the underlying alveolar bone in the area of the suspect tooth. During palpation, production of a purulent discharge confirms the presence of a sinus tract.<sup>4</sup> In addition, finding any discharging cutaneous lesion

on the face or neck calls for an intraoral examination, which may lead to discovery of one or more severely decayed teeth or a healthy-looking tooth with an intact crown.<sup>4</sup>

Dental etiology can be confirmed by tracing the sinus tract to its origin with the help of radiographic techniques. If the sinus tract is patent, a lacrimal probe or gutta-percha cone can be used to trace its path from the cutaneous orifice to the point of origin. This origin is usually a nonvital tooth; in edentulous patients, the origin could be a retained tooth fragment or an impacted tooth.<sup>4</sup> An apical radiograph may determine the origin of the cutaneous sinus tract; a radiolucency is seen at the apex of the infected tooth.<sup>7</sup>

The differential diagnosis should include trauma, foreign body reaction, pyogenic granuloma, furuncle, and inflamed pilar or epidermal cysts. Consideration should also be given to neoplastic

processes (eg, basal and squamous cell carcinomas) and infectious causes (eg, osteomyelitis, actinomycosis, tuberculosis, gummata of tertiary syphilis).<sup>2,8</sup> Rarely, developmental defects (eg, brachial cleft and thyroglossal duct cysts) may cause a cutaneous sinus tract to develop.<sup>9</sup>

The treatment of choice for cutaneous sinus tracts of dental origin is root canal therapy (for a restorable tooth) or extraction (for a nonrestorable tooth). After the dental origin of the cutaneous sinus has been eliminated or removed, the sinus tract and cutaneous lesion usually resolve within 5 to 14 days.<sup>3</sup> The area usually heals with slight dimpling and hyperpigmentation, which frequently diminish with time.<sup>3</sup> Cosmetic surgical revision may be required if there is significant cutaneous retraction or dimpling from a residual tract.<sup>4</sup> If a sinus tract does not close after treatment, further evaluation, including microbiological sampling and biopsy, may be required. The most common alternative cause of a patent cutaneous fistula of dental origin is actinomycosis.<sup>4</sup>

Dental lesions are the most common cause of cutaneous sinus tracts on the face. As a result, physicians investigating such a tract should have a dentist perform a thorough dental examination. Routine dental radiographs are insufficient as a means of diagnosis; therefore, in a suspected case of dental sinus, apical radiographs and appropriate referrals should be ordered. In this way, every effort

is made to save the patient from unnecessary treatment or surgery.

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