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Management of Cutaneous Draining Sinus Tract of Odontogenic Origin

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Abstract

Chronic inflammation of the dental pulp is one of the reasons for cutaneous sinus tract of odontogenic origin. A cutaneous sinus or extra oral sinus from a lesion of endodontic origin is rare as compared to an intra oral sinus and may occur as result of long-standing inflammatory process associated with necrotic pulp. Such patients are usually healthy and are unaware of the underlying asymptomatic dental problem. Thus, the treatment protocol should be elimination of the etiological factors first. A 24-year-old male was presented with a draining sinus tract on his left cheek. In radiographic assessment, periapical lesion was noticed associated with the roots of the affected tooth. Root canal treatment was performed using Calcium hydroxide as an intracanal medicament. The sinus tract disappeared one weeklater. However, longterm clinical and radiological evaluation is necessary.

Keywords: Cutaneous Sinus Tract, Odontogenic Infection, Periapical Lesion, Calcium Hydroxide

Introduction

A sinus tract is defined as a channel leading from an enclosed area of inflammation to an epithelial surface. Cutaneous odontogenic sinus tracts are uncommon. 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 [1-4]. 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 [1-5]. 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, 6, 7]. These tracts tend to occur more frequently from infected mandibular teeth (80%) than from infected maxillary teeth (20%) [8, 9]. However, only 50% of the patients experienced dental pain and the involved teeth are not always tender to percussion [10]. Additionally, the draining sinus tracts may be located at a distance from the origin of infection [11].

Most commonly etiology of odontogenic sinus tract involves endodontically involved teeth with pulpal necrosis and periapical infection [12]. Following egress from the necrotic pulp canal system, microorganisms and their byproducts present in the periradicular area might perforate the cortical plate with the infection draining onto the mucosal or cutaneous surface following the path of least resistance [13].

During the past few years there has been gradual change in the attitude to surgical treatment of periapical lesions [14]. Some authors support the fact that, with the endodontic infection elimination, the endodontic system is able to promote repair and lesion might recede by the mechanism of apoptosis. Caliskan MK reported 73.8% success in non surgicalmanagement of cyst like periapical lesion using calcium hydroxide medicament [15].

The present case report describes the nonsurgical management of odontogenic cutaneous sinus tract, which can be considered as an efficient and feasible alternative that can recover the esthetics and function of the affected tooth.

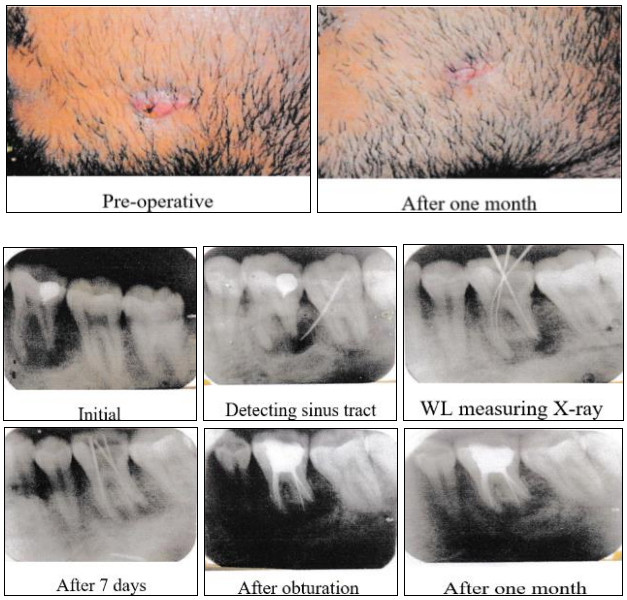
Case report:
A 24 years old male patient reported to the department of Conservative dentistry and endodontics, with the complaint of an extra oral nodulous growth with intermittent pus discharge for one month. Patient gave history of dental treatment 7 months ago. Extra-oral examination revealed an extra-orally draining sinus and an erythematous, smooth, non-tender and slightly stiff nodule with crusting about 1 cm in diameter in the left cheek. Intraoral examination revealed that 36 no tooth had been restored with silver amalgum (Figure 1B), was non-tender to percussion and had grade 1 mobility. Periodontal probing around the tooth revealed pocket depth was found normal. Radiography revealed the close proximity of the restoration to the pulp chamber and the presence of a periapical radiolucency. Tract was confirmed by passing a gutta-percha cone through the sinus that led to the 36 no tooth, which presented negative response in the pulp vitality tests.

Diagnosis:
Considering history, clinical examination and radiological findings it was established a case of chronic periapical peridontitis of 36 no tooth leading to formation of extra oral discharging sinus tract.

Treatment plan:
Root canal treatment of 36 no tooth followed by permanent restoration.

Treatment procedure:
At first consent of the patient was taken after informing the procedure accordingly. After mouth preparation and administration of local anesthetic agent, a straight line access cavity was done on 36 no tooth, Necrotic pulp remnants were removed and canals were irrigated with copious amount of normal saline. Canals werenegotiated with 15 no k-file. Working length measuring X-ray was taken. Working length was established 20mm for both disto-buccal and disto-lingual canal and 18.5 mm for both mesio-buccal and mesio-lingual canal. Then the canals were prepared up to 40 k-file for both distal canals and up to 35 k-file for both mesial canals. Canal preparation was done along with copious irrigation using normal saline and 2.5 percent sodium hypochlorite. Canals were dried with paper points and calcium hydroxide was placed into the canal. Access cavity was restored with zinc oxide eugenol cement and the patient was recalled after one week. After one week swelling was subsided, calcium hydroxide was removed by irrigation with normal saline and sodium hypochlorite. Final irrigation was done with 2% chlorhexidine for one minute and 17% liquid EDTA for 2-3 minute. Master points were tried in the canal until tug back was felt. Then the tooth was obturated with GP points calcium hydroxide based sealer using lateral condensation technique. The access cavity was restored with permanent restoration. After one month recall, sinus tract was almost healed with a minimal scar. Radiographic examination showed continued repair of periapical tissue. Patient was advised for follow up at 3, 6, 9 and 12 months intervals.

Discussion
Odontogenic cutaneous sinus tracts in the face and neck region are rare [18] and present a diagnostic challenge to clinician as they may present a wide variety of diseases [19]. 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 [20], because the primary dental etiology is never correctly diagnosed or addressed.
Misdiagnosis and delay in accurate treatment protocol may often be encountered [21]. Therefore, when diagnosing and treating sinus tracts of unknown etiology 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. Thisis 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 [22]. Patients rarely relate the symptoms to dental infection [23]. 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 [24]. Histologically, the cutaneous sinus usually consists of granulomatous tissue or epithelium [25]. In addition, the insertion of a probe or gutta-percha through the sinus to take radiographs is an effective method for determining the involved tooth [26].
Differential diagnosis of nodulocystic lesions of the chin and mandibular region include local physical trauma, foreign body reaction, pyogenic granuloma, squamous cell carcinoma, basal cell carcinoma, metastatic tumor, actinomycosis, deep mycoses, chronic tuberculosis or atypical mycobacteria, gumma of tertiary syphilis, salivary fistulae, lymphadenitis, as well as developmental defects such as branchial cleft cysts or thyroglossal ducts [27].
As suggested in literature, nonsurgical endodontic therapy is the treatment of choice of such lesions and should be attempted first [28]. In the present case, only nonsurgical endodontic therapy was carried out and the sinus tract was successfully treated with minimal scar formation.
Calcium hydroxide was used as an intracanal medicament in the present case due to its beneficial effects [29]. 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 [30].
An understanding of the draining of cutaneous sinus tracts leads to more appropriate treatment. Most cases respond to conservative, nonsurgical root canal therapy [31]. Endodontic treatment is recommended. Extraction may be required in nonrestorable fractured or carious teeth, or in cases associated with extensive alveolar bone loss [32]. The retention of natural teeth preserves function, arch integrity, and esthetics, and eliminates the need for a costly restorative procedure. After appropriate dental therapy the sinus tract resolves spontaneously within a few weeks, but a retracted dimple or scar may develop. Because odontogenic sinus trace is a localized entity, systemic antibiotic administration is not indicated in healthy patients. The sinus tract will recur unless the source of infection has been eliminated [33].



Conclusion

Due to their rare occurrence, the diagnosis of odontogenic odontogenic cutaneous sinus tracts might become easier when clinicians are aware of the probability of a dental origin. A rigorous and exact diagnosis relies on concerted referrals and cooperation among physicians, dermatologists, surgeons, and dentists. Finally, integrated learning and the guaranteed technique of a dentist are as important as a correct diagnosis, promoting efficient treatment, maximizing patient contentment, and aesthetic appearance and decreasing the likelihood of additional complications.

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