



Non-Surgical Management of Cutaneous Extra Oral Sinus of Odontogenic Origin

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Abstract

Amongst all odontogenic infection, tooth with extra oral sinus tract and is associated with chronic periapical abscess is a rare occurrence. The infection from the caries of the tooth progresses periapically and involve alveolus, which will result in sinus tract formation. Intra oral sinus tract in relation to chronic infection of tooth is common, but the occurrence of sinus, draining extra orally through skin is rare and is generally misdiagnosed as dermatologic infections. In such situations, patient generally seek opinion of general practitioner, instead of dental clinician. when the tooth is asymptomatic, General practitioner does not consider the tooth as a root cause and treat the patient, without treating the primary dental etiology, so treatment for extra oral sinus fails and shows reoccurrence even after surgical excision of the lesion with repeated antibiotic regime. It is very important to diagnose correct etiology for proper management of the lesion either by non-surgical root canal treatment or root canal treatment with surgical excision/extraction. This will result in complete cure of such cutaneous extra oral sinus tract of dental origin. This case report has described the correct diagnosis with successful management of extra oral sinus associated with long standing infection of lower left central incisor by non-surgical, single visit root canal treatment.

Keywords: Extra Oral Sinus Tract; Single Visit Endodontic Treatment; Chlorhexidine

Introduction

Sinus tract is defined as abnormal passage of communication between enclosed inflamed area and superficial epithelium with drainage of pus and infected inflammatory exudates due to long standing infection. Bender and Selter in 1961 described that sinus tract is lined by granulation tissues instead of epithelium [1]. The formation of sinus tract on the face and neck region is misdiagnosed in most of the cases and treated ineffectively by general practitioners due to its odontogenic origin, which will prolong infected conditions and resulted in scarring of the epithelium at the site of the sinus tract over the skin. The sinus tract formed from dental origin is generally due to chronic infected pulp from caries, trauma or periodontal lesions [2-4]. Most common cause of extra oral sinus is dental infection through chronic periradicular abscess of carious tooth. The bacteria from the infected pulp al-

ways progresses apically and caused inflammatory reaction in apical region and developed chronic periapical periodontitis. When the inflammation increases, destruction of surrounding bone and cortical plate start. According to anatomic arrangement of facial muscles, this chronic infection tends to spread along the least path of resistance over the facial muscles of maxilla and mandible, tend to form extra oral sinus [5]. Occurrence of intra oral sinus due to dental infection is very common, but formation of extra oral sinus tract is rare due to involvement of so many facial tissues and surrounding bone acts as a defense mechanism around the infection, which make tooth asymptomatic for longer period with drainage of inflammatory products through the sinus tract. Extra oral sinus tract occurs most commonly from infected mandibular teeth is 80% whereas from maxillary teeth, it is 20% [6]. Extraoral sinus most commonly emanating from lower anterior or molars, but si-

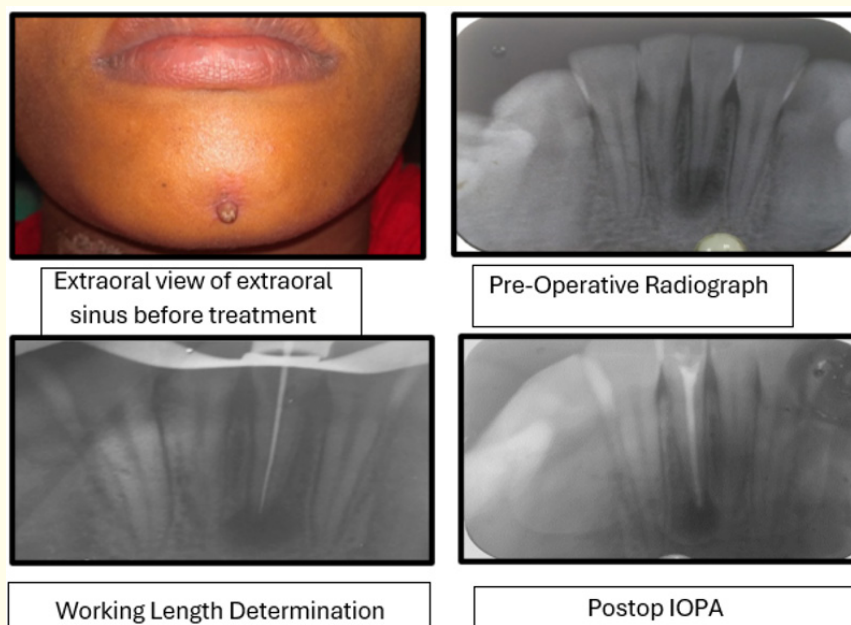
nus draining through submandibular region and associated with premolar tooth is a rare occurrence [7]. It occurs most commonly in pediatric patients. In mandible, the most common site of involvement is angle and chin region. Occurrence of extra oral sinus or intra oral sinus depends on virulence nature of microorganisms, host immune response and resistance factor. Usually sinus tract acts as a safety valve through which draining of infected materials occurs and the tooth become asymptomatic for longer period. So, patient generally neglect dental infection and seeks medical care. If this condition is not diagnosed correctly, it will lead to improper treatment such as multiple antibiotic regimen and surgical excision, which resulted in treatment failure and scarring [8]. So, for correctly diagnosed proper history and thorough radiologic evaluation of dental structures is very important before initiation of treatment. In this case study, the young patient was diagnosed with extra oral sinus in relation to infected mandibular central incisor and managed successfully by non-surgical root canal treatment with complete healing of periradicular lesion and cutaneous extra oral sinus.

Case Report

A 17-year-old girl was referred by a dermatologist, to the Department of Conservative Dentistry and endodontics for an identification of possibility of extra oral sinus due to odontogenic infection in the lower front side of face. History of patient revealed about 1.5 cm erythematous lesion appeared just above the inferior border of mandible along incisal region since last one and a half years. Initially patient had consulted dermatologist and underwent multiple antibiotic therapies, but lesion did not heal completely rather showing recurrent pus discharge and sign of healing

alternately. Finally, patient was referred to dental clinician for opinion and management. On clinical examination, a large erythematous lesion around 2cm was observed on the central mandibular inferior border corresponding to incisal region and no drainage was observed at the time of investigations and intra oral examination. On intra oral examination the mandibular central 31 of third quadrant Her medical history was noncontributory. The tooth 31 showed negative response to thermal and electric pulp test and non-tender to percussion. Radiographic examination revealed that periapical pathology is associated with apex of 31. Based on history, clinical and radiographic evaluation, final diagnosis was confirmed that the unhealed extra oral sinus is in relation to chronic periradicular abscess associated with 31, So initially non-surgical endodontic treatment of 31 was planned and discussed with the patient and took the consent.

After application of rubber dam isolation, caries was excavated thoroughly from and filling was done on proximal wall, then straight line access cavity was prepared using No 4 round endo access and Endo-Z bur. The working length was determined by the electronic apex locator [coltene canal pro] and confirmed with radiograph . The cleaning and shaping were done with the help of protaper gold rotatory file system till file F3. The canal was irrigated with 3% Naocl and normal saline. Final irrigation was done with 2% chlorhexidine and canal was dried with paper points. The obturation was done with protaper gutta-percha with sealapex sealer. Then final restoration was done. Six months' follow-up examination both clinical and radiographic revealed disappearance of extra oral sinus with complete healing of periapical pathology in relation to 31



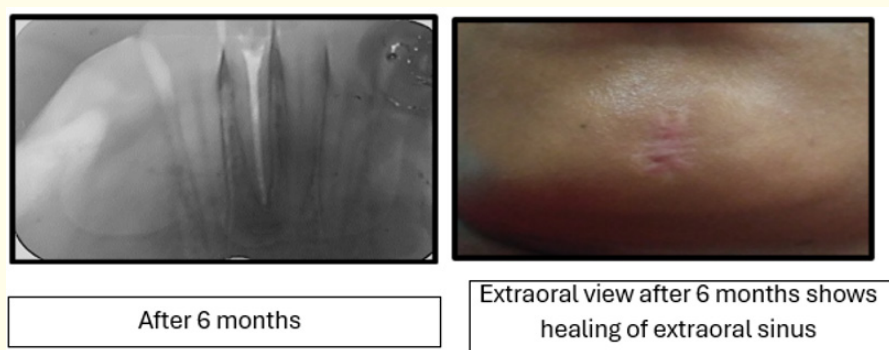


Figure 1

Discussion

Whenever a sinus tract drains through the skin around the face and neck, a differential diagnosis of dental origin is also considered. The treatment of primary etiology, if odontogenic, will have a permanent cure for the lesion. Misdiagnosis and inaccurate treatment will result in prolonged and chronic infection leading to chronicity of extra oral sinus and scarring, so fair chances of delay in healing and facial esthetics will be compromised badly. So, it is important to diagnose such cases accurately through proper knowledge of extraoral sinus occurrences by taking proper history, conducting clinical and radiological investigations, and having knowledge about involved oral structures to give a good prognosis with complete healing of the sinus tract. The extraoral sinus most commonly occurs on the chin and the angle of the mandible, apart from this, it also occurs in the canine space, cheek, nostrils, nasolabial fold, and canthus of the eye [9]. After taking proper history and thorough investigations, tracing of the sinus tract can be done by putting gutta-percha to confirm the exact path through the radiographs [10]. The extraoral sinus is normally associated with chronic infected pulp. It follows the sequel such as necrosed pulp, inflammation of the periapical region, destruction of alveolar bone and cortical plate, spreading through the facial plane of muscles and finally draining through the skin. Generally associated microorganisms are polymicrobial mainly facultative anaerobes such as streptococcus groups are present. But specifically lesions with sinus tract are associated with microorganisms are *F.nucleatum* and *P. gingivalis* [11]. The key factor in diagnosis is dental origin. Most of the time, the patient is asymptomatic due to the safety valve mechanism of sinus tract due to draining of inflammatory products. Culture sensitivity tests can be helpful for accurate diagnosis [12]. After tracing the sinus tract through a radiograph, the next most important step is eradication and elimination of the source of infection. The dental infection can be removed with non-surgical endodontic therapy through which necrosed pulp can be eliminated, otherwise, surgical management or extraction can be

planned, if the tooth is non-restorable. Root canal therapy involves proper cleaning, shaping, and disinfection of the root canal which eliminates the source of infection, debris, and bacteria and results in complex healing of periapical lesions as well as extra-oral cutaneous sinus tract. Earlier studies indicate RCT should be done with multiple visits as it needs the elimination of bacteria by calcium hydroxide as intra-canal medication. In this case report, the extra-oral sinus tract associated with the lower incisor was treated in a single visit by following proper treatment and disinfection guidelines results in complete healing of periapical abscess and sinus tract within 3 weeks. It seems sodium hypochlorite and Chlorhexidine play key roles in eliminating both gram-positive and gram-negative bacteria in an effective way [13,14]. Single-visit treatment has more advantages such as avoiding intra-appointment microleakage and bacterial contamination, reducing patient visiting time, and is cost-effective, but treating all extra-oral sinuses by single visit needs long-term studies [15]. It is evident that the key point is early accurate diagnosis, proper treatment protocol assisted procedure, and eliminating the primary source of infection will result in success and excellent prognosis.

Conclusion

This case report emphasized conservative treatment of extra oral sinuses by proper diagnosis and treatment planning. Necessary communication and diagnostic relationship between general/medical practitioner and dental surgeon allowed early and accurate treatment of such type of cutaneous extraoral sinus lesions. Later on, this case was successfully treated for extraoral sinus by non-surgical endodontic therapy but the patient suffered a lot because there was a delay in diagnosis. Now a days better modalities of treatment are available for effective treatment by removing the primary etiology without the need for intra-canal medication and can be successfully managed in a single visit procedure by proper diagnosis, radiographic interpretation, and appropriate use of materials, armamentarium, and techniques.

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