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Management of extraoral draining sinus of odontogenic origin: A case report

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Abstract

Extraoral draining sinus of odontogenic origin often lacks intraoral symptoms, and are commonly misdiagnosed as a cutaneous lesion. This is a case report of a patient complaining of extra oral sinus tract since 5 months. Chronic apical periodontitis of tooth can drain through sinus tract, which may be intra oral or extra oral. Proper diagnosis is the key of success in such cases and timely dental treatment can resolve the condition.

Keywords: Elastic modulus, flexural strength, provisional restorative materials

Introduction

A cutaneous sinus tract of odontogenic origin usually presents as an erythematous, smooth and non-tender nodule with repeated pus drainage mixed with blood [1]. Misdiagnosis often leads to inappropriate management of the lesion, such as antibiotic therapy, surgical excision and even radiotherapy [2]. However, thorough and proper understanding of the patient history and a clinical examination could aid in the accurate diagnosis of extraoral sinus tract. As a part of differential diagnosis, endodontic origin should be considered when a draining lesion is noticed on the facial skin [3]. Precise diagnosis can be achieved with correct intraoral examinations, such as visual inspection, percussion, palpation, probing, mobility, pulp sensibility test and radiographic examination. Radiographic tests, such as periapical and panoramic radiographs, can aid in assessing bone loss in the periapical area and help in proper diagnosis. If the radiograph is not able to locate the tooth affected, the sinus tract could be traced with a size 30 gutta-percha to locate the source of infection [4]. The purulent discharge resulting from the odontogenic infection will move towards the path of the least resistance from the periapical area. Once the cortical plate has been penetrated, the sinus tract exits as an intraoral or extraoral sinus depending on the relationship among the apices of teeth, muscle attachments and fascial sheaths [2]. Virulence of the microorganisms and the resistance by the patient's body are other factors. The most frequent extraoral sinus tract presentation of dental origin is caused by mandibular teeth with drainage in mental area, submental area or at angle of the mandible. The management of an extraoral draining sinus tract involves eliminating the source of infection either by endodontic treatment or tooth extraction if the tooth is not restorable. Sinus tract heal progressively within 2 weeks. Endodontic treatment of the affected tooth has been effectively proven successful as these types of extraoral tracts are lined with granulation tissue; hence, surgical intervention is not necessary.

Case report

A 26-year old male patient reported to the Department of Conservative Dentistry and Endodontics, Government Dental College, Thiruvananthapuram with a chief complaint of pain in relation to lower front region of face since 2 weeks. He had no relevant medical or allergy history. Extraoral examination showed a single well-circumscribed erythematous nodule at the submental region, indicative of a submental extraoral draining sinus tract. Intraoral examination revealed tooth 41 had deep caries which was tender on percussion. Moreover, tooth 41 and 31 has no response to electrical and thermal pulp testing. Origin of the sinus tract was confirmed by passing a gutta percha cone through the sinus which lead to 31.

Radiographic examination revealed well-defined periapical radiolucency in the occlusal radiograph with discontinuity of the lamina dura in the periapical area of teeth 31 & 41. Diagnosis was chronic periapical abscess resulting from pulp necrosis due to caries and root canal treatment was planned for 31 and 41.



Fig 1: Pre-operative image showing caries irt 41



Fig 2: Pre-operative radiograph showing radiolucency irt 41 & 31



Fig 3: Initial presentation of extra oral draining sinus



Fig 4: Sinus tracing using size 30 gutta-percha cone

Local anesthesia (2% lidocaine hydrochloride with 1:20,000 epinephrine) (Nandani Medical Laboratories PVT. LTD, Kanadia Road, Indore, India) was administered. All procedures were performed under $\times 3.2$ magnification loupe (Admetec, Israel). After placing rubber dam root canals, biomechanical preparation was done using rotary nickel-

titanium files (Neoendo and Orizam Healthcare India Private Limited) till 25/04. Irrigation was done with 5.25% sodium hypochlorite and normal saline. No exudate was detected in the root canals during preparation. However, purulent discharge was drained through the fistula. Canal was dried with sterile paper points. Calcium hydroxide powder mixed with distilled water was placed as intracanal medicament. The access cavity was temporarily filled using CavitTM G. After 2 weeks, the temporary filling was removed, calcium hydroxide was flushed out. Ultrasonic activation of irritant was done using Ultra X (Eighteeth, Sifary Medical Tech. Co. Ltd) mastercone radiograph was taken and obturation was completed gutta-percha cones and AH Plus sealer (Dentsply, York, PA, USA) using the lateral compaction technique. Following pulpectomy, which is the first-line treatment in non-surgical endodontics, the extraoral draining sinus was resolved. During 1month follow-up, tooth was asymptomatic and the extraoral fistula was healed. During 10-month follow-up, complete healing of the periapical lesion was observed on radiographic examination. Thus, a successful non-surgical root canal treatment was done to treat the extraoral draining sinus.



Fig 5: Rubber dam isolation & Access opening



Fig 6: Post operative image



Fig 7: Obturation



Fig 8: Healing after 10 months

Discussions

Long – term inflammation is frequently the cause of odontogenic sinus tract. Extraoral draining sinus caused by an odontogenic infection is relatively rare [5]. However, odontogenic causes accounts for approximately 80% of the reported cases of cutaneous sinuses in the cervicofacial region [6]. Tracing the sinus tract with a gutta percha point can aid in determining the diagnosis of the extraoral draining sinus. Early diagnosis of necrotic tooth can sometimes be challenging as there might be no detectable symptoms except slight alterations in the tooth colour in the early phases. The clinicians tend to get confused because dental symptoms do not occur regularly. Improper treatment and failure of the sinus to heal could attribute to the misdiagnosis of an odontogenic cause. Therefore, accurate diagnosis, appropriate treatment, and eradication of the source of infection are of great importance.

According to the clinical study conducted by Gupta & Hasselgren [7], the results concluded that; sinus tracts of endodontic origin are most commonly found in the intraoral region. If located extra orally, 80% are caused by mandibular teeth with exudate on the chin or submental area. Mucosal or cutaneous sinus tract drainage depends on the path that is less resistant to the progression of the exudation produced, the proximity of the dental apex to the external bony cortex, the length and slope of the root involved, and morphology of the affected jaw [8]. The principle of managing such lesions is the removal of source of dental infection. The treatment procedures applied in the case aim at the elimination of infection in the root canal system followed by healing of extraoral fistula. Successful treatment depends on the proper diagnosis, identification of the tooth correctly and eradicating the source of infection. Non-surgical root canal treatment is the first-line treatment and is the most conservative approach. This method is sometimes complemented with endodontic surgery or, as the last option, dental extraction [9]. In the discussed case, the obvious reduction in the abscess after nonsurgical root canal treatment proved that odontogenic infection was the cause for the skin lesion. One month after the commencement of non-surgical root canal treatment, spontaneous closure of sinus tract was noted. One of the reasons for misdiagnosis is the patient's initial consultation to a general surgeon or dermatologist, instead of a dental practitioner. Misdiagnosis, unnecessary antibiotic treatment

and surgical interventions are commonly seen in such cases [10]. During root canal shaping, 5.25% sodium hypochlorite solution is used followed by a calcium hydroxide-based root canal dressing. Calcium hydroxide is preferred as the intracanal medicament. Use of calcium hydroxide paste has been advocated for rapid and successful treatment of sinus tracts associated with necrotic teeth [11]. Our treatment could be deemed successful as there were no signs or symptoms at the 1-year follow-up and improvement in the lesion was noted radiographically.

Conclusion

Odontogenic causes of a cutaneous sinus are rare and often misdiagnosed and inappropriately treated. Therefore, proper diagnosis, which is the necrotic tooth, is crucial in treating these cases.

Conflict of Interest

Not available

Financial Support

Not available

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