

Management of extraoral sinus with non-surgical endodontic treatment – A case report

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ABSTRACT

Sinus tracts of endodontic origin are a common manifestation of pulpal necrosis that requires conventional -or rarely surgical- endodontic treatment in order to heal. They are commonly present intraorally and in rare cases they manifest extraorally, depending on the causative tooth, root location, bone thickness and muscle inserts. Such conditions may be misdiagnosed. This case reported a successful management of an extra-oral submental sinus tract that was initially misdiagnosed as a skin disease and was treated with antibiotics for the same. But since the sinus did not resolve, a dental opinion deemed necessary. Sinus tract was traced and offending tooth was identified. Endodontic treatment was performed and the 1 year follow up showed healing of the lesion and sinus tract. A careful diagnosis and management is necessary for such conditions.

Keywords: extraoral sinus tract, submental, non-surgical endodontic treatment.

INTRODUCTION

A sinus tract (ST) of endodontic origin is a pathway from an enclosed area of infection (eg, a root canal) to an epithelial surface through an opening (or stoma). When pressure within the abscess builds up, it tends to perforate and form a drainage duct, which is commonly referred to as a sinus tract. The occurrence of sinus tract may be either intraoral or extraoral.

Presence of apical periodontitis (AP) associated with a sinus tract is classified as a chronic apical abscess and the prevalence of this condition ranges from 7.4%–30.75% ⁽¹⁾.

The identification of the tooth responsible for the sinus tract can be complicated by its opening at a distant site or by the presence of multiple stomas, and when sinus tracts open in the skin of the face and neck, they can be easily misdiagnosed as dermatologic diseases. These tracts tend to occur more frequently from infected mandibular teeth (80%) than from infected maxillary teeth (20%) ⁽²⁾. The possible etiology for development of odontogenic extraoral sinus tract includes trauma to the tooth, retained roots, residual chronic infection of the jaw, and pulpal pathologies ⁽³⁾.

This report involves the non-surgical management of a case of cutaneous sinus tract of dental origin in the submental region.

CASE REPORT

A 35 years old patient reported to the Department of Conservative Dentistry and Endodontics, with the chief complaint of unaesthetic pus discharge extraorally in the chin area since 3 months. History dated back to an year when patient had trauma in lower front region of jaw. After a few months, she developed a pus draining sinus in chin area. Patient consulted a dermatologist for the same. However, after a course of antibiotics, there was re-occurrence of the sinus and the patient came for a dental opinion. On intraoral clinical examination, it was seen that 41 was attrited and

extraorally, a pus draining sinus tract was observed [Figure 1]. On radiographic examination, a periapical lesion was seen in relation to 41 [Figure 2]. Sinus tract was traced using guttapercha point to confirm the offending tooth [Figure 3]. Radiograph was done to see the guttapercha tracing sinus [Figure 4]. Therefore, a non-surgical endodontic treatment was planned.

After discussing with the patient the risks and benefits, the procedure, the cost involved, and the prognosis of the aforementioned treatment options, an informed consent was obtained from the patient. An access opening was made under local anaesthesia (Lignocaine with 1:200000 adrenaline) in relation to 41 with the round bur under rubber dam isolation [Figure 5]. The pulp chamber of the tooth was irrigated using 5.25% NaOCl solution and normal saline solution. The apical patency was obtained with 2% 10 no. K-file. Working length was determined using an apex locator and confirmed with a periapical radiograph [Figure 6]. Biomechanical preparation was done using K-files; apical third was prepared till 40 no. K-file and recapitulation was done with 10 no. K-file after each file used. Copious Irrigation was done with 5.25% NaOCl and 17% EDTA using 30 gauge endodontic irrigating needle followed by agitation with an ultrasonic device. Then, intracanal medicament of calcium hydroxide mixed with 2% chlorhexidine was placed in the canal for 1 week and temporary restoration was placed. Patient was recalled after one week. At the second visit, the extraoral tract showed slight improvement with no pus discharge. Master cone radiograph was taken [Figure 7] and obturation was done using cold lateral compaction technique and AH Plus root canal sealer. Post-obturation radiograph was taken [Figure 8] and the post-operative composite restoration was done.

The follow up of the patient was done after 1 year of the treatment. Periapical radiograph showed considerable healing [Figure 9] and the extraoral tract healed with the formation of scar tissue [Figure 10].

DISCUSSION

Sinus tracts are a common manifestation of pulpal necrosis. They are mainly identified intraorally and in rare cases they manifest extraorally. As the sinus tract provides drainage of exudate from the odontogenic primary site, it prevents swelling or pain from pressure build-up. Thus, the draining sinus tract maintains a localized condition and systemic involvement is a rare occurrence⁽⁴⁾.

A sinus tract of endodontic origin is caused by pulp necrosis followed by bacterial invasion that causes an inflammatory lesion in the periapical area of the affected tooth. The purulent exudate of 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 location of the muscle attachments and the facial sheaths. The spread of the infection may be extraoral when the apices of the maxillary teeth are above the maxillary muscle attachments, and for the mandibular teeth below the mandibular muscle attachments. When they are extraorally, 80% are caused by mandibular teeth with purulent drainage on chin or submental area⁽⁵⁾.

Such cutaneous lesions do not always reveal the origin of the infection, and only few patients report toothaches and other symptoms, complicating definitive diagnosis. A correct diagnosis of an odontogenic extraoral sinus tract is of prime importance for its effective management. It has been estimated that half of the patients with extraoral sinus are submitted to multiple dermatological surgical operations and long term antibiotic therapy before the correct diagnosis is established⁽⁶⁾. Because a tooth with a necrotic pulp can appear normal or have slightly altered

colour, a periapical radiograph is necessary to demonstrate bone loss in the apex of the infected tooth, facilitating the diagnosis.

The location of the tooth that is involved with the sinus tract can be identified by thorough clinical examination, tracing of the sinus, dental radiography, and sometimes cone beam computed tomography (CBCT), avoiding unnecessary antibiotic and surgical therapies. Although odontogenic cutaneous sinus tracts most frequently arise in close proximity to the cause of the underlying infection, the possibility of a distant dental cause must also be considered. In a case report by Bai J et al. ⁽⁷⁾, the offending tooth was left mandibular 2nd molar whereas the sinus was formed in submental region. Computed radiography and OPG was done to confirm the diagnosis. In a study ⁽¹⁾, tracking of sinus tract with the ultrasound was seen to be a promising tool to detect and trace them noninvasively.

Depending on the restorability of the tooth, nonsurgical endodontic therapy (sometimes complemented by a surgery or dental extraction) is the preferred treatment for extraoral sinus tracts of endodontic origin ⁽⁸⁾. As the tooth in this report was restorable, a non-surgical endodontic therapy was initiated. Definitive treatment of the draining sinus tract requires the source of the infection to be completely removed through root canal therapy. A spontaneous closure of the tract should be expected in 5–14 days after root canal therapy. In this case, we observed healing of the sinus tract after one week of initiation of root canal treatment as calcium hydroxide was given as an intracanal medicament. As there were signs of healing of the sinus tract with the absence of purulent discharge, obturation was done.

In the current case report, extra oral sinus was managed effectively by non-surgical endodontic treatment. The follow up after 1 year demonstrated asymptomatic and functional tooth. Extraoral sinus showed considerable healing with a noticeable skin color change and formation of scar tissue.

CONCLUSION

A dental cause must be considered for any cutaneous sinus tract involving the face or neck. Clinical and radiographic dental examinations can contribute to the localization of the teeth involved and avoid unnecessary antibiotic or surgical therapies. In the case reported here, the elimination of infection through nonsurgical root canal treatment led to the resolution of the sinus tract and promoted periapical healing of the teeth involved.

HIGHLIGHTS:

1. This case report signifies the importance of correct diagnosis of extraoral pus discharge.
2. It also reports that such cases can be successfully treated by non-surgical endodontic treatment.
3. Resolution of both clinical and radiographic symptoms was seen.

Disclosures

1. **Informed consent:** Patient's written informed consent was obtained.
2. **Conflict of interest:** The author declares no conflict of interest.
3. **Ethics Committee Approval:** All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008. Informed consent was obtained from the patient for being included in the study.
4. **Peer-review:** Externally peer-reviewed. Financial

- 5. Disclosure:** The author denied any form of financial supports from any institution or manufacturer company.

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Fig 1: Extraoral pre-op photograph

Fig 2: Pre-op radiograph

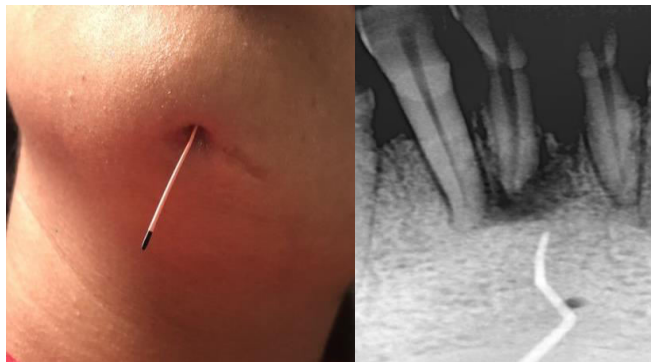


Fig 3: Tracing the sinus Fig 4: Tracing the sinus confirmed with a radiograph



Fig 5: Access opening

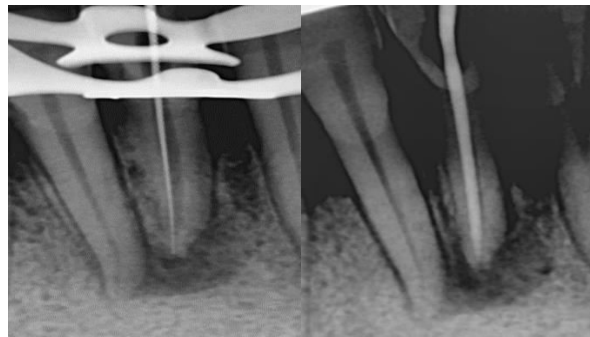


Fig 6: Working length radiograph Fig 7: Master cone radiograph



Fig 8: Obturation radiograph Fig 9: Follow-up after 1 year showing healing with scar formation



Fig 10: Follow-up after 1 year showing healing of lesion