



Treatment of an extraoral cutaneous sinus tract with endodontic intervention: a case report

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In dentistry, one of the most common situations that can result in the loss of teeth is periapical inflammation. The root canal provides a natural way for the spread of inflammation from the pulp into the periapical tissues. Microorganisms causing inflammation can spread very easily into the apical region with this passage. Initiation of acute or chronic inflammatory condition occurring in the apical region depends on the severity of the causative factor, the repetition over time and the host resistance. Chronic apical abscess is the conversion of acute apical abscess to the chronic phase through a periodontal gap and extra-oral sinus tract. This case report describes a patient who admitted to our clinics with complaints of pain upon chewing and extra-oral swelling in the mandible. Healing occurred by endodontic and extra-oral surgical interventions.

Keywords: Endodontic therapy; periapical lesion; sinus tract.

Dental abscess is the accumulation of exudate in the alveolar bone surrounding the root as a result of infection originating from the pulp.^[1] Bacteria, trauma and irritation are among the causative factors. However, the most common etiological factors are bacteria residing in the necrotic pulp tissue. If the infected pulp tissue is untreated, toxic products can spread through the apical foramen into the peri-radicular tissues. The toxic products introduced into periapical tissues may affect the periodontal membrane and the periapical alveolar bone.^[1] The immune system acts in response to the intra-canal microorganisms, necrotic tissues and metabolites originating from pulpal degradation. Moreover, the microbiologically induced inflammation may penetrate the alveolar bone and spread along the path of least resistance. As a result, the inflammatory event can reach and diffuse the surrounding

soft tissue and create a path for drainage.^[2,3] Drainage is affected by the tooth, virulence of the microorganisms and the relation of the tooth with facial muscle attachments.^[2,4] Furthermore, the fistulation and drainage with extra-oral chronic apical abscess reduces the patient's quality of daily life and has a negative impact on esthetic appearance. The following report describes a case of extra-oral fistulation associated with non-vital mandibular first molar teeth and the successful result obtained following endodontic treatment.

Case report

A 17-year-old male was admitted to our clinic with extraoral swelling and complaints of spontaneous pain associated with the mandibular right first molar. Extraoral

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examination showed an extraoral fistula which confirmed the diagnosis of chronic apical abscess and a scab on the skin of the inferior chin border (Fig. 1a). During dental anamnesis, the patient indicated that the sinus tract initially appeared 3 months ago with no painful symptoms related with the inflamed region. Moreover, the involved tooth did not respond to electrical and thermal pulp testing. Diagnosis was made as chronic periapical abscess resulting from pulp necrosis due to caries. Intraoral examination revealed a deep cavity in the compromised tooth, and there was a well-defined periapical radiolucent region in the periapical radiograph (Fig. 1b). The diameter of the wound caused by fistula on the patient's face was measured as 35 mm (Fig 1c). After placing a rubberdam, the root canals were prepared using the Protaper Next (Dentsply Maillefer, Ballaigues, Switzerland) NiTi instrumentation system and irrigated with 5.25% NaOCl

solutions. No exudate was detected in the root canals during preparation. On the other hand, extraoral pathological swelling was detected as fluctuant by finger palpation. Incision was made on the most fluctuant portion of the fistula with a scalpel (Fig. 2a) and purulent discharge was provided (Fig. 2b). A drain was placed in the entrance to the fistula and drainage was provided for 24 hours (Fig. 2c). Root canal dressings and 2% fucidin and Bepanthol cream were applied. The dressing consisted of calcium hydroxide combined with camphorated paramonochlorophenol (Calen-PMCC SS White, Rio de Janeiro, Brazil) The interim dressing was changed monthly for 3 months. Finally, the root canals were filled with gutta-percha and AH Plus (Dentsply De Trey GmbH, Konstanz, Germany) using the lateral compaction method. 5 month follow-up revealed an unproblematic tooth with the extraoral fistula almost entirely closed. During the 10-month follow-up

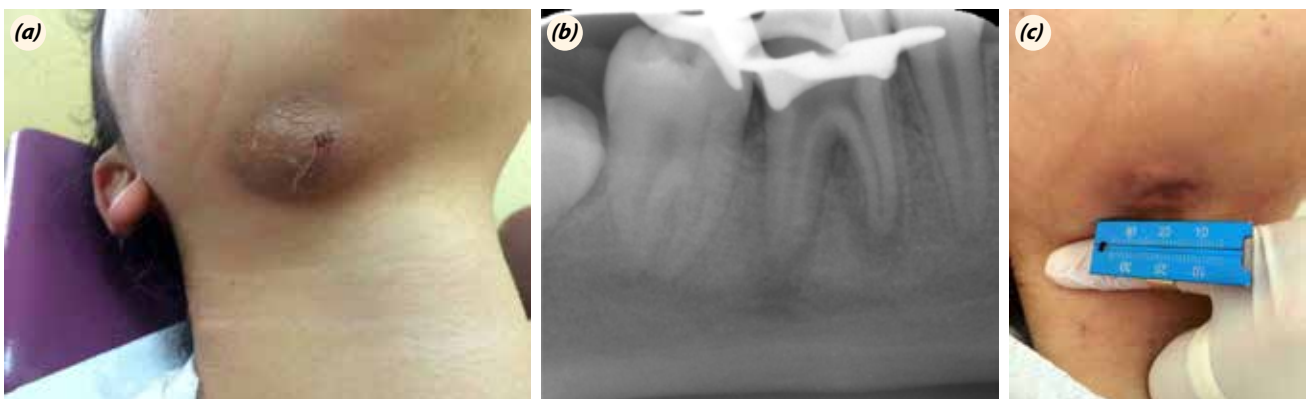


Fig. 1. (a) Image of scab on the skin of the inferior chin border. (b) Diagnostic radiography of chronic apical abscess. (c) The diameter of fistula.

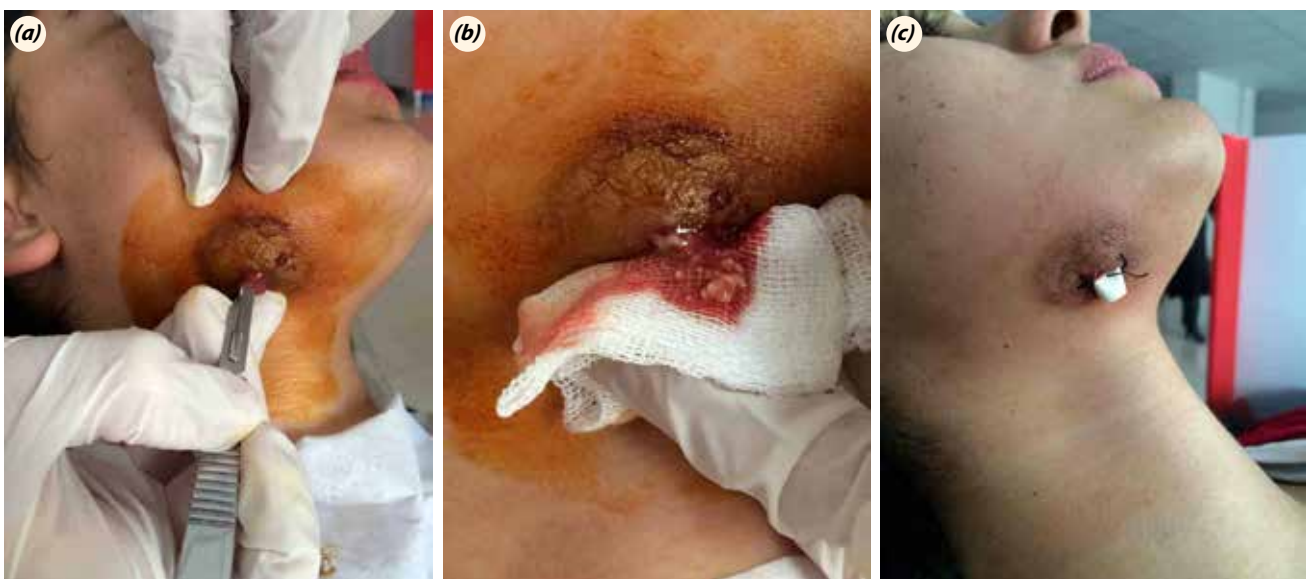


Fig. 2. (a) Incision of the fistula with a scalpel, (b) purulent discharge (c) placing of drain.

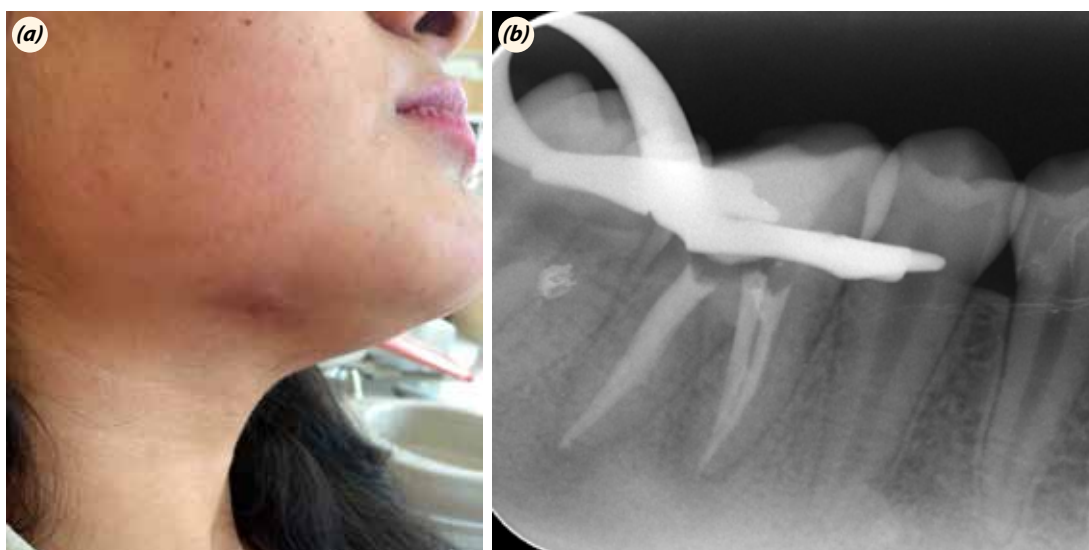


Fig. 3. (a) Healing after 10 months. (b) Complete healing of the periapical lesion.

(Fig. 3a), complete healing of the periapical lesion was observed on radiographic examination (Fig. 3b).

Discussion

The clinician bears an important role in the diagnosis and treatment of patients presenting to the clinics with painful complaints. Detailed extraoral and intraoral examinations are essential to reach a correct diagnosis and draw a reasonable treatment plan. The dental practitioner should specifically be careful about the determination of oral conditions and symptoms such as deep dentine caries, unsuitable restorations, gingival and periodontal problems.^[5] Diagnosis of a necrotic tooth can sometimes be challenging in the early phases as there might be no detectable symptoms except slight alterations in the tooth color. In advanced stages, radiographic analysis may reveal bone resorption.^[5,6] In a clinical study, Gupta & Hasselgren^[7] analyzed teeth in terms of dental periradicular inflammation and sinus tract formation. They indicated that; sinus tracts of endodontic origin are most commonly found in the intraoral region. When they are located extraorally, 80% are caused by mandibular teeth with purulent drainage on the chin or submental area. Mucosal or cutaneous sinus tract drainage depends on the trajectory 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 on the morphology of the affected jaw.^[8] The principle of managing such lesions is to remove the source of dental infection. The treatment procedures applied in the cases aim the elimination of the infection in the root canal system and healing of extraoral fistulation. During root canal shaping, a 5.25% so-

dium hypochlorite solution is used followed by a calcium hydroxide-based root canal dressing. Calcium hydroxide is the preferred intracanal medicament due to its beneficial effects. Usage of calcium hydroxide paste has been advocated for rapid and successful treatment of sinus tracts associated with necrotic teeth.^[9] The root canal dressing is renewed monthly for 3 months; thus, high alkalinity and calcium ion availability were obtained and maintained. While the cause of intraoral sinus tracts can be detected easily, incorrect diagnosis is more common in extraoral sinus tracts. One of the reasons for incorrect diagnosis is the patient's initial presentation to a general surgeon or dermatologist, instead of a dental practitioner. Misdiagnosis, unnecessary antibiotic treatment and surgical interventions are commonly seen due to such conditions.^[10] Therefore, consultation with the dentist before starting any treatment is essential. Detection of the presence of a fistula facilitates the diagnosis of chronic apical abscess. However, if inflammation is drained through the periodontal membrane, diagnosis may be difficult. The presence of a diffuse radiolucency is a common feature of radiological examination in these cases. Chronic apical abscess can be confused with a cystic lesion in a radiographic examination. However, cysts may have a more rounded radiographic appearance with well-defined borders compared to a chronic apical abscess.^[11] On the other hand, a definite conclusion can be drawn only by histopathological analysis. Chronic apical abscesses may recover with root canal treatment. Previously, attempts have been made for the healing of sinus tracts such as incineration of the sinus tract with cautery, fistula wings and insertion of iodinated phenol covered probe in the sinus tract for epithelial shredding. However, root canal treatment by itself has been proven to be successful in ex-

traoral fistula cases as well intraoral ones. Therefore, today, there is no need for any additional therapies for the treatment of sinus tracts.^[10]

Conclusion

This case report is a good example of a successful result obtained in the treatment of an extra-oral sinus tract by non-surgical endodontic treatment without any periapical surgical intervention. Communication between the dentist and the physician is imperative to provide timely recognition and treatment of such rare cases.

Conflicts of Interest: No conflicts declared.

References

1. Bayırlı G. Periapikal dokuların patolojisi ve tedavisi. İstanbul: 1996.
2. Kaban LB. Draining skin lesions of dental origin: the path of spread of chronic odontogenic infection. *Plast Reconstr Surg* 1980;66:711–7.
3. Güleç AT, Seçkin D, Bulut S, Sarfakoğlu E. Cutaneous sinus tract of dental origin. *Int J Dermatol* 2001;40:650–2.
4. Tidwell E, Jenkins JD, Ellis CD, Hutson B, Cederberg RA. Cutaneous odontogenic sinus tract to the chin: a case report. *Int Endod J* 1997;30:352–5.
5. Witherow H, Washan P, Blenkinsopp P. Midline odontogenic infections: a continuing diagnostic problem. *Br J Plast Surg* 2003;56:173–5.
6. Soares JA, de Carvalho FB, Pappen FG, Araújo GS, de Pontes Lima RK, Rodrigues VM, et al. Conservative treatment of patients with periapical lesions associated with extraoral sinus tracts. *Aust Endod J* 2007;33:131–5.
7. Gupta R, Hasselgren G. Prevalence of odontogenic sinus tracts in patients referred for endodontic therapy. *J Endod* 2003;29:798–800.
8. Leonardo RT, Leal JM, Leonardo MR. Urgencias em endodontia: pulpopatias e periapicopatias. In: Leonardo MR, Leal JM, editors. *Endodontia: tratamento de canais radiculares*. Sao Paulo: Panamericana; 1998. p. 885–902.
9. Pasternak-Júnior B, Teixeira CS, Silva-Sousa YT, Sousa-Neto MD. Diagnosis and treatment of odontogenic cutaneous sinus tracts of endodontic origin: three case studies. *Int Endod J* 2009;42:271–6.
10. Salamat K, Rezai RF. Nonsurgical treatment of extraoral lesions caused by necrotic nonvital tooth. *Oral Surg Oral Med Oral Pathol* 1986;61:618–23.
11. Soares JA. Avaliação microbiológica, histopatológica e histomicrobiológica de dentes de caes com reação periapical crônica induzida, após preparo biomecânico automatizado e aplicação de curativos de demora a base de hidróxido de cálcio. Doctor Thesis, UNESP – Faculdade de Odontologia, Araraquara 2003.