

Periapical Infection Masquerading as a Nasal Pustule

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Abstract

Periapical infections may give rise to intraoral and extraoral complications. Extraoral manifestation of periapical infection without an accompanying dental symptom may lead to presentation first to Medical doctor. This is a case of pulpal necrosis of right maxillary central incisor (tooth #11) with a discharging sinus, in the floor of the right nostril. Failure to associate the discolored tooth #11 and a discharging sinus in the floor of the right nostril, lead to the initial presentation of the patient to the Otorhinolaryngologist. The recurrent discharge from the sinus continued despite prolonged antibiotics administration. This case report showed that extraoral sinus tract of dental origin in the nostril poses a diagnostic challenge. It is expected to raise awareness of clinicians about the unusual presentations of periapical infection. There is a need for examination of the maxillary incisors in patients presenting with nasal pustule.

Keywords: Endodontic treatment, Maxillary central incisor, Nasal pustule, Periapical infection, Root length

Introduction

Periapical infections may follow either an acute or chronic course resulting in periapical abscess, granuloma, cyst, sinus formation or osteomyelitis.^[1,2] These complications usually manifest intraorally but sometimes may manifest extraorally on adjacent structures like facial skin, maxillary sinus, orbit, nostril and distance structures like cavernous sinus and blood.^[3] The principal factors that determine whether manifestation is going to be intraoral or extraoral are the root length of implicated tooth and the path of least resistance in the alveolar bone.^[2] With the combined host and bacterial factors activities, the inflammatory and immunological processes will induce bone resorption, resulting in the formation of an intraoral or extraoral sinus.^[4] When extraoral manifestation occurs without an accompanying dental symptom, the affected individual would most likely consult a medical doctor. The type of extraoral manifestation determines the medical specialty consulted. For example, extraoral manifestation in the nose and maxillary sinus will present to otorhinolaryngologist while

manifestation on the facial skin will present to the family physician, dermatologist, plastic surgeon or general surgeon. Unless there exist a high index of suspicion, misdiagnosis and diagnostic error is eminent. With misdiagnosis, patient will undergo unnecessary treatment like multiple surgical excisions and biopsies, long-term antibiotic therapy, radiation therapy, electrodesiccation, intralesional injection of steroid, oral steroid and laser therapy.^[3,5-7] Dental examination and radiographs are recommended to rule out dental origin of cutaneous sinuses on the face or neck.^[8]

However, when properly diagnosed, the treatment is simple and effective, consisting of removal of infected pulp tissue, root filling of the canal with biocompatible material or extraction of the offending tooth with resultant favorable outcome.^[4,9]

We report a case of periapical infection masquerading as a nasal pustule which was successfully treated with non-surgical endodontic treatment.

Case Report

A 28-year-old male presented at the Restorative dental clinic, University of Benin Teaching Hospital, Benin City, Nigeria with a discolored maxillary left central incisor (tooth #11) of 4 years duration [Figure 1], patient could not remember what happened to the tooth, examination of the tooth revealed Ellis class I fracture on the mesial incisial edge of the tooth. However, there was no carious lesion on the

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tooth. Pulp sensibility test with electric pulp tester was not responsive, and periapical radiolucency was evident in the periapical radiograph. Root canal treatment was commenced on tooth #11 immediately, through an access cavity on the palatal surface of the tooth. The canal was irrigated with 0.9% saline and 2.5% sodium hypochlorite solution. Intracanal medicament (calcium hydroxide) was placed in the canal, and the access cavity was temporarily sealed with zinc oxide eugenol. Patient was given a 2 day appointment for determination of working length of the tooth since the working length was not determined during the initial visit because of time constraints and continuation of the root canal treatment. Patient showed up for his appointment, examination revealed that the tooth was asymptomatic, but there was a discharging sinus in the floor of the right nostril [Figure 2].

A further history revealed that the patient had been under the care of an Otorhinolaryngologist for about 2 years for the treatment of the discharging sinus that he had been on several antibiotics, which he could not remember their

names. The temporary seal and intracanal medicament were removed and the canal was checked using paper points, pus was revealed in the canal. Canal was irrigated with 2.5% sodium hypochlorite and 0.9% saline alternatively. The working length was established at 29 mm using radiographic method [Figure 3].

Biomechanical preparation of the canal was done using the step back under copious irrigation. Non-setting calcium hydroxide dressing was placed in the canal as inter-appointment medicament and the patient was given a 4 week appointment. Patient returned 4 weeks later symptom free and complete healing of the sinus in the floor of the right nostril. Canal was obturated with guttapercha using the cold lateral condensation technique [Figure 4]. Access was sealed with glass ionomer cement and the patient was given a 1 month review appointment. Review after 1 month showed that the patient was asymptomatic, and there was no sinus in the floor of the nose, Subsequent reviews at the 3 months and 6 months revealed no symptoms.



Figure 1: Discolored maxillary right central incisor



Figure 2: Nasal pustule related to the discolored maxillary right central incisor



Figure 3: Radiographic determination of working length



Figure 4: Obturated root canal of maxillary right central incisor

Discussion

The periapical infection of maxillary teeth may present as a nasal lesion because of proximity between the maxillary teeth and nasal floor. It is difficult to distinguish between a pustule arising from an infection in the floor of the nasal cavity and that from a periapical infection of maxillary incisor in the absence of toothache and other dental symptoms.^[10] The dental sinus tract is a channel which leads from a dental focus of infection to drain onto the orofacial region and usually results from localized infections such as an infected tooth, periodontal disease, actinomycosis or osteomyelitis.^[11] As extraoral sinus tracts of dental origin are often initially misdiagnosed and inappropriately treated because of their uncommon occurrence and their absence of symptoms in approximately half of the affected individuals.^[12] Misdiagnosis can often result in prolonged antibiotic therapy with unfavorable outcome. It is therefore crucial to raise clinician's awareness of uncommon presentation of periapical infection.

The presenting complaint of the patient was discolored tooth without pain. The absence of pain was due to the fact sinus tract provided an outlet for inflammatory exudates, allowing decompression. The absence of dental pain precluded the patients' ability to associate the lesion on the floor of the nose to the teeth guiding his presentation first to general medical practitioner rather than to the dentist. In this report, the patient's otorhinolaryngologist did not link the nasal lesion with the discolored tooth.

History taking is necessary for proper diagnosis; however, incomplete history given by the patient may misguide an unsuspecting dentist especially in an extremely busy practice. In this report, nasal lesion was missed in the initial assessment of the patient in the dental clinic as the patient did not mention the nasal lesion during the history taking process. This also calls for examination of nostril in patients presenting with discolored maxillary central incisor.

Sinus tracts occur more frequently from infected mandibular teeth than maxillary teeth.^[13] In this report, maxillary tooth was the implicated tooth which is rare making this case report uncommon and useful contribution to the literature.

Dental assessment and intraoral radiography usually confirm the dental focus of infection. Elimination of the source of infection by endodontic treatment or tooth extraction results in resolution of the sinus tract.^[12] In this report, non-surgical endodontic treatment resulted in complete resolution of the sinus tract. This confirms conservative, nonsurgical root canal

therapy as the first choice of treatment of extraoral sinus of dental origin.^[3,5]

Conclusion

This case report showed that extraoral sinus tract of dental origin in the nostril poses a diagnostic challenge. It is expected to raise awareness of clinicians about the unusual presentations of periapical infection. This also calls for examination of maxillary incisors in patients with nasal fistula with unclear origin.

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