

Non-Surgical Management of Mandibular Molar with Multiple Intra-oral Sinus Tracts: A Case Report

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ABSTRACT

Multiple intra-oral sinus tracts of dental origin are an uncommon condition. Patients with this condition may undergo surgical extraction, biopsies and antibiotic regimens, but all of them fail with the recurrence of the sinus tract. A proper diagnosis and management are important, to avoid any complications. This case report has described the conventional root canal treatment of a patient who had three distant intra-oral sinuses which had occurred due to an intact tooth with pulp necrosis, who had a history of accidentally biting on a hard food object and having a periapical radiolucency which indicated a chronic periradicular abscess. At follow up examination, the tooth was found to be asymptomatic and radiographically, it showed repair of the lesion.

Key words: Sinus tract, Periapical abscess, Root canal treatment, Mandibular molar

CASE PRESENTATION

A 40-year-old female was referred with the complaint of pain and a continuous purulent discharge from gums in right mandibular region since the past three months. Her medical and family histories were non-contributory. She gave a history of accidentally biting a hard object during mastication six months back. The patient had taken antibiotics for a period of one month, without any response. She was anaemic and malnourished and she had a low socio-economic status. A review of the systems showed unremarkable results. The extra-oral examination revealed no significant findings. Intra-orally, all the teeth were intact, with no caries. The three intraoral sinuses with sizes 15mm, 5mm and 5mm were located next to # 42, # 44 and # 45 teeth in the buccal mucosa of right mandibular region. [Table/Fig-1]. The buccal mucosa was tender on palpation and it elicited a purulent discharge from the sinus tract. There was no associated swelling. The tooth # 46 was sensitive to percussion and it failed to respond to heat and electric pulp sensitivity testing. The adjacent teeth responded within normal limits to percussion and sensitivity testing. The teeth were firm, with no detectable mobility. A periodontal probing which was done revealed no attachment loss. An intra-oral periapical radiograph showed a localized radiolucency which surrounded the roots of #46 [Table/Fig-2 and 3]. The sinus tract was traced with three gutta percha points [Table/Fig-4]. All gutta percha points pointed towards the apex of #46 [Table/Fig-5]. The panoramic radiographic examination revealed a continuous sinus tract which connected all the sinuses together and which pointed towards the lesion. Thus, a diagnosis of pulpal necrosis with chronic

suppurative periradicular periodontitis was made. A treatment plan was formulated, that included non-surgical endodontic treatment of # 46 under the cover of antibiotics. Following isolation of the tooth with a rubber dam, the pulp chamber was opened. The root canal system was cleaned and it was shaped by using combined hand and mechanical instrumentation, with a copious irrigation of 5.25% NaOCl and 17% EDTA. Calcium hydroxide was used as an intracanal medicament. The sinuses healed two weeks after the initial presentation [Table/Fig-6]. The root canals were obturated with gutta-percha by using lateral condensation technique. At recall visits, periapical radiographs showed healing of the lesion [Table/Fig-7].

DISCUSSION

A periapical dental abscess may be initiated by caries, periodontal disease, trauma, or thermal and chemical injuries. An intra-oral or extra-oral sinus can develop, depending on the path of the inflammation, which is dictated by surrounding muscular attachment and fascial planes [1,2]. The site of dental sinuses is usually anatomically close to the causative tooth. Occasionally, the opening of the sinus tract may be found at a far distance from the dental infection, which makes the diagnosis challenging, especially with respect to intact teeth. If the sinus tract is patent, an intraoral periapical radiograph should be exposed with a lacrimal probe or a gutta-percha cone into the sinus opening and it should be passed through the sinus until it meets the area of the tooth. It is usually a non-vital tooth,



[Table/Fig-1]: Pre-operative photograph showing three intra-oral sinuses

[Table/Fig-2]: Radiograph showing gutta percha cones placed through the opening of the Sinuses

[Table/Fig-3]: Radiograph showing a continuous sinus tract traced with rolled gutta percha



[Table/Fig-4]: Post-operative intra-oral periapical radiograph

[Table/Fig-5]: Radiograph showing a continuous sinus tract traced with rolled gutta percha

[Table/Fig-6]: Post-operative photograph showing intact mucosa after healing of sinuses

[Table/Fig-7]: Post-operative intraoral periapical radiograph

but in edentulous patients, it could be a retained tooth fragment, an impacted tooth, or an odontogenic cyst. Dental computerized tomography software may be superior to panoramic or intra-oral radiographs [3]. Pulp testing, culture and sensitivity testing of the fluid which is drained i.e., saliva, pus, or cystic fluid, should also be performed, to rule out fungal and syphilitic infections [4].

On the basis of clinical appearance, the differential diagnosis includes pustules, actinomycosis, osteomyelitis, hypophosphatemic Vitamin D resistant rickets, pyogenic granulomas, furuncles, neoplasms; squamous cell carcinomas, epidermal cysts, chronic tuberculosis and gumma of tertiary syphilis [4,5]. If a sinus tract does not close after an appropriate removal of the primary cause, the most common alternative cause is actinomycosis.

In the present case, the apparent cause of sinus formation was pulp necrosis in #46. Although the tooth was intact, with no carious lesion and with no periodontal attachment loss, the pulp necrosis might have occurred as a consequence of an accidental trauma which had occurred due to biting on some hard object during chewing. These hard objects are often present as impurities, like stones in the cereals and pulses. As a result of a severe impact injury which may have been caused by a small hard object, the forces may have got concentrated at small points, resulting in excessive pressure in the apical vessels, leading to an ischaemic infarction. Further, the compromised general health of patient could have contributed the chronic, severe and distant spread of the infection.

The major management guidelines for the treatment of a sinus include draining the pus and removing the source of infection. Antibiotics may be used as an adjunct to conventional treatment; when a

drainage cannot be established immediately, if the pus has spread to the superficial soft tissues or when the patient is in the setting of diabetes, immunosuppression, or systemic signs of infections such as fever. An antibiotic therapy alone will not be effective in these cases, because of the absence of adequate circulation in a necrotic pulp system and abscess. If antibiotics are to be used, penicillin V potassium is the first choice. Clindamycin or amoxicillin-clavulanate may be used if the infection is unresponsive [6]. In penicillin-hypersensitive patients, erythromycin and metronidazole can be given, as most of the infections are caused by obligate anaerobes. Recognition of the true nature of the lesion facilitates a prompt treatment, it minimizes patient discomfort and aesthetic problems, and it reduces the possibilities of developing further complications greatly.

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