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Case Report

Conservative Endodontic Management of Extraoral Cutaneous Sinus Tracts - A Clinical Dilemma

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ABSTRACT:
Cutaneous lesion of odontogenic origin is a rare entity but well documented in dental, medical, and dermatological literature. Cases with such lesions pose aesthetic and functional problems to the patient. The treatment here should include the elimination of the source of infection for satisfactory healing. Conventional endodontic therapy to resolve these problems provides less traumatic solutions with higher cost-effectivity.
Key words: Extraoral sinus tract, non-surgical endodontic treatment.

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INTRODUCTION

The cutaneous sinus tract of odontogenic origin is a pathological channel that drains from a longstanding dental abscess associated with a necrotic tooth. (1) They are often misdiagnosed in nearly half of the individuals affected since no dental symptoms are present and further the location of the sinus is uncommon and cannot be related to dental infection. Patients usually seek medical care first in such cases due to the extraoral location of the sinus. (2) The lesion may persist for long periods before the correct diagnosis is made and the odontogenic source treated appropriately. Due to unnecessary treatments, facial esthetics is compromised that results in cutaneous scarring and dimpling. (3,4)

The formation of an extraoral sinus tract utilizes a sequence of events wherein a carious or traumatically injured tooth undergoes pulpal necrosis which is then followed by the invasion of microorganisms into the periapical tissue resulting in an inflammatory periapical lesion of the affected tooth. The infection then slowly spreads into the cancellous bone resorbing it and then spreading towards the cortical bone along the path of least resistance. If the infection perforates the periosteum it becomes asymptomatic and after perforating the cortical plate there are chances that infection may spread into facial space or develop into cellulitis or localize into an abscess, or open either intraorally or extraorally. (5)

Here we described two case reports of cutaneous sinus tracts of odontogenic origin.

CASE REPORT 1

A medically fit 41-year-old female came to the Department of Conservative Dentistry and Endodontics, Dr. Harvansh Singh Judge Institute of Dental Sciences and Hospital, Panjab University, Chandigarh, India with

a chief complaint of persistent pus and hemorrhagic discharge on right side of the face adjacent to the nasolabial sulcus. She stated that the lesion was first noticed two months ago, which was alternatively appearing and disappearing. On extraoral examination, an erythematous asymmetrical nodule less than 1cm in diameter on the right side of the face adjacent to nasolabial fold was seen (Figure 1) and on palpation, it was not tender. Intraorally, the right maxillary second premolar was grossly carious and there was no vestibular swelling present adjacent to that region. The right maxillary second premolar didn't respond to electric pulp testing, was not tender on percussion, no detectable mobility was seen and the concerned tooth did not reveal any gross periodontal defects. However, the patient had a high caries index and poor oral hygiene. An immediate digital periapical radiograph was taken which showed caries involving the pulp and widening of the periodontal ligament space in the apical third of the maxillary right second premolar whereas mesio-occlusal caries in maxillary first molar. (Figure 2). There was no definitive periapical radiolucency in that tooth. In this case, gutta-percha tracing was not done radiographically because the offending tooth was easily identified. A diagnosis of pulp necrosis with apical periodontitis with an extraoral sinus was made. Non-surgical endodontic treatment was initiated immediately under rubber dam isolation.

Complete caries excavation was done using a sterile round carbide bur followed by access cavity preparation. After pulp chamber debridement and canal orifice identification, the coronal third was prepared. The working length was determined by an electronic apex locator, and then confirmed radiographically. Chemo-mechanical preparation was done with respect to buccal and palatal canals with hand k-files up to size 40# using step-back technique to the established working length and irrigated with 3% sodium hypochlorite followed by normal saline. Calcium hydroxide dressing was then placed into the canal for two weeks and intermediate restorative material (IRM) was placed as a temporary restoration. After two weeks the patient was recalled and the extraoral lesion showed healing (Figure 4). The canals were then reopened, calcium hydroxide paste was removed using H- files and again irrigated with 3% sodium hypochlorite followed by saline, dried by paper points, and obturated using lateral compaction technique with zinc-oxide eugenol sealer. The access cavity was closed by placing composite restoration and a radiograph was taken (Figure 3). The patient was recalled for follow up after one week and satisfactory healing of the cutaneous lesion was seen with scarring (Figure 5). After a follow up of two months complete healing of the cutaneous lesion was seen (Figure 6)

Figure 1.Clinical examination revealed erythematous asymmetrical nodule less than 1cm in diameter on the right side of the face adjacent to nasolabial fold.

Figure 2. Pre-operative periapical radiographs with the widening of the periodontal ligament space in the apical third with respect to second premolar.

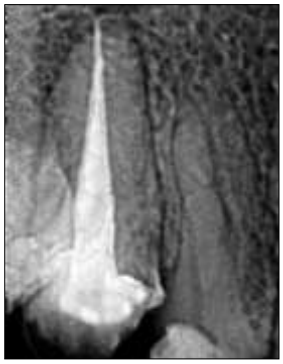

Figure 3. Post obturation radiograph.

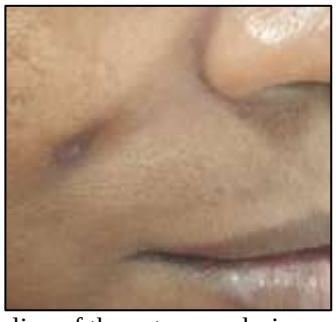

Figure 4. Healing of the cutaneous lesion on the second visit (after 2 weeks).

Figure 5. Follow up after one week of obturation. The lesion has decreased in size and healed leaving a noticeable scar

Figure 6. Follow up after two months. Note the complete healing of the lesion with the disappearance of the scar.

CASE REPORT 2

A 36-year-old female came to the Department of Conservative Dentistry and Endodontics, Dr. Harvansh Singh Judge Institute of Dental Sciences and Hospital, Panjab University, Chandigarh, India, with a chief complaint of a cutaneous lesion on the chin that had persisted for a long time with intermittent pain and drainage through the lesion The duration of the lesion was 2 months. Medical history was non-contributory. Extraoral examination revealed an erythematous symmetrical lesion (size less than 1cm) on the submental region of the face (Figure 1). On palpation, there was no pain and no pus discharge from the lesion. On intraoral examination, the lower anteriors were severely attrited and no swelling or tenderness was seen. The right lower central incisor failed to respond to electric pulp testing, was not tender on percussion and no detectable mobility was seen. Radiographically, a diffuse periapical radiolucency measuring approximately 1cm in diameter was seen on the lateral aspect of the right mandibular central incisor, approaching towards adjacent central incisor (Figure 2). A diagnosis of pulp necrosis with chronic periapical abscess having an extraoral sinus with respect to the right mandibular central incisor was made. Under rubber dam isolation non-surgical root canal treatment was performed with respect to the right mandibular central incisor. The access cavity was prepared, working length recorded using an apex locator and then confirmed radiographically. Cleaning and shaping of the canal were done, apex prepared using step-back technique up to 35k file and the canals were irrigated with 3% sodium hypochlorite followed by normal saline. Calcium hydroxide dressing was placed for 2 weeks. In between the appointments, the tooth was temporarily restored with IRM. After two weeks the patient was recalled, extra orally the sinus showed healing with scarring. (Figure 4) The calcium hydroxide dressing was removed by H-file and the canals were irrigated using sodium hypochlorite followed by saline, dried by paper points, and finally obturated using lateral condensation technique with zinc-oxide eugenol sealer. The composite restoration was placed on the same day after obturation. After a follow up of one month, complete healing of the cutaneous sinus observed. (Figure 5)

Figure 1. Extraoral cutaneous lesion on the submental region of the face.

Figure 2. Pre-operative radiograph with periapical radiolucency.

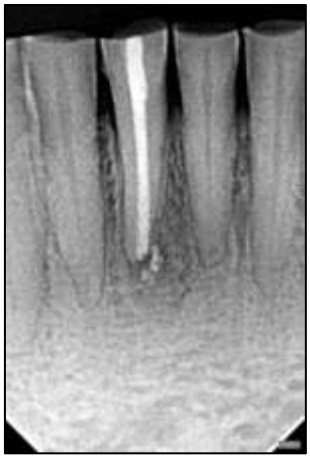

Figure 3. Radiograph with the resolution of the periapical lesion after one month.

Figure 4. Healing of the sinus with scar formation.

Figure 5. Follow up after one month. Note the complete healing of the sinus.

DISCUSSION

Drainage of a mucosal or cutaneous sinus tract depends on the path of least resistance, proximity of the tooth apex to the external bony cortex, and relationship to fascial muscle attachment. (6) The infection may spread to extraoral regions if the apices of the teeth are below the mandibular muscle attachments and above the maxillary muscle attachments. These sinus tracts are seen most commonly on the chin and submental regions. (7) However other sites include cheek, nasolabial fold, nose, canine space, upper lip, and inner canthus of the eye. Whenever an extraoral cutaneous sinus tract is observed, an endodontic origin should always be considered. Differential diagnosis of a cutaneous draining sinus tract should include osteomyelitis, actinomycosis, pyogenic granuloma, congenital fistula, chronic tuberculosis, gumma of tertiary syphilis, salivary gland fistula, infected epidermoid cyst, and deep mycotic infection. (8) They are often misdiagnosed and usually thought to be lesions of non-odontogenic origin by dermatologists, general surgeons, and physicians. This can be due to the fact that these lesions are not always present in close proximity to the original site of infection and nearly half of the cases the patients usually remain asymptomatic. The principal management of such lesions is to treat the underlying dental infection. There are high chances of recurrence if the dental focal infection is left untreated. It is well documented in the literature that the first choice of treatment in such lesions is conventional endodontic therapy and the sinus is expected to heal within 1- 2 weeks if the correct diagnosis is made and necessary treatment is done. (3,4,8,9) The same was seen in our case where the sinus tract healed following initial treatment within 14 days. Calcium hydroxide was used here for 14 days as an intracanal medicament because of its beneficial effects. Calcium hydroxide is a strong alkaline substance, which has a pH of approximately 12.5. (10) It neutralizes the biological activity of bacterial lipopolysaccharide and kills the bacteria. The usage of calcium hydroxide paste was advocated for the rapid and successful treatment of sinus tracts associated with necrotic teeth. (11) Antibiotics are not indicated for these lesions as the lesion is a localized entity and it may stop the drainage temporarily. (12) In fact, the development of the sinus tract prevents swelling and pain caused by pressure build-up by providing drainage. Thus, proper diagnosis of cutaneous sinus tract is very necessary to eradicate the source of infection with complete healing of the lesion through adequate disinfection regimes. (13,14)

CONCLUSION

The present case report demonstrated a non- surgical root canal treatment which resulted in the healing of the extraoral sinus tract with minimal scarring and good host response.

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