Case Report

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DIAGNOSIS AND NON-SURGICAL MANAGEMENT OF A CUTANEOUS FACIAL SINUS TRACT OF ENDODONTIC ORIGIN: A CASE REPORT

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ABSTRACT:

Intermittently draining cutaneous sinus tracts in the area of the face and neck may be sequelae of pulpal necrosis and chronic periapical infection. Such conditions may be misdiagnosed and confused with other non-pulpal pathologies. Diagnosis of the cause may be difficult but is the key to successful treatment. In the present article a case of cutaneous facial sinus tract related to mandibular central incisors and left lateral incisor is reported and discussed that was initially misdiagnosed by a physician as a non-odontogenic lesion. Nonsurgical endodontic treatment was performed. Healing was uneventful and patient was asymptomatic after a follow up period of 6 months.

Keywords: Extraoral sinus tract, nonsurgical endodontic treatment, healing.

INTRODUCTION:

Chronic draining sinus tracts of the face and neck continue to be a diagnostic dilemma. They are often confused with some kind of dermatological problem and even are misdiagnosed by most physicians. The most common reason of the intermittently draining cutaneous sinus tract in the face and neck area is chronic dental infection which may be sequelae of pulpal necrosis and chronic periapical infection.[1]

These patients sometimes undergo extensive as well as expensive medical treatments,multiple surgical excisions and biopsies before it is diagnosed that the origin of the sinus tract is an extension of pulpal disease into the periradicular region.[2] A literature review revealed one case of cutaneous odontogenic sinus tract in which the correct diagnosis was made 32 years after the discharging lesion was first observed.[3]

The sites of dentocutaneous fistula are usually anatomically close to the infected tooth. Chin and the mandible are the most common sites of such sinus tracts . Mandibular incisors and cuspids typically drain to the chin or submental region, and premolar and molar infections typically drain above the inferior border in the submandibular region of the anterior triangle of the neck. [4]

Cutaneous lesion may develop over a long period of time, often distant from the site of primary infection. Hence, successful management of these odontogenic cutaneous sinus tracts of pulpal pathology depend on proper diagnosis. However, these lesions continue to be a diagnostic

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dilemma.[5] As these lesions are often misdiagnosed, they are provided a different line of treatment which remains ineffective. Facial sinus tracts of endodontic origin should be considered as an option in the differential diagnosis procedure.[6] Hence it is very important that interaction occurs between physicians and dentists to avoid exposing patients to insufficient treatment strategies.

In the present article a case of cutaneous facial sinus tract related to mandibular central incisors and left lateral incisor in the submental region is reported and the nonsurgical management of the lesion is discussed.

CASE DETAIL:

A 19-year-old female with a non-contributory medical history visited the department of oral medicine and radiology of SCB Dental College and Hospital,Cuttack,Odisha. During the initial extraoral examination, a purulent cutaneous sinus tract in the submental region was observed. Intraoral examination revealed discoloured mandibular central Incisors and left lateral Incisor. Then the patient was referred to the department of Conservative Dentistry and Endodontics for vitality testing. The vitality testing with cold test, Heat test as well as Electric pulp tester showed that the teeth 41, 31 and 32 were nonvital. Head and neck examination disclosed no abnormalities except for an erythematous area, approximately 2 cm in diameter,in the submental region (Figure-1). A red cutaneous depression, approximately 1 cm in diameter, was visible in the center of this area. Moderate pressure produced discharge of pus and serous fluid. A periapical radiograph was taken which showed a diffuse radiolucency surrounding mandibular central incisors and a big radiolucency around the roots of left lateral incisor (Figure- 2).The OPG was also taken to see the extent of the lesion which confirmed that the lesion involved the roots of teeth 41, 31 and 32(Figure-3). A clinical diagnosis of chronic alveolar abscess of the lower mandibular central incisors and left lateral incisor was made, with a need of root canal treatment.

After local anaesthesia and rubber dam placement, root canal treatment was initiated. Pulp chamber access was made, working length was established (Figure-4) and chemo-mechanical preparation was performed with rotary protaper files (Dentsply malliefer) along with irrigation which was made with 2.25% solution of sodium hypochlorite and saline. After the root canal preparation was complete, a mixture of calcium hydroxide was inserted into the canal, and a temporary restoration was placed. The patient was recalled after two weeks. Upon recall, the draining lesion had become smaller in diameter with no evidence of pus discharge(Figure – 5).The root canal treatment was completed by obturating the canal with gutta-percha (F2 GP point , Dentsply) and sealer (AH-PLUS, Dentsply) using the single cone technique (Figure-6), and the final restoration was

made with a light cured composite filling (Tetric-n-Ceram).

The patient was recalled after 6 months. Clinically the draining lesion had completely healed, (Figure -7). Radiographically, the lesion had healed and a distinct lamina dura was seen surrounding the tooth (Figure -8).

DISCUSSION:

Recognition of a sinus tract origin is the first step in diagnosis.The differential diagnosis is of prime importance. The differential diagnosis should include traumatic lesions, fungal and bacteriologic infections, neoplasms, presence of foreign body, local skin infection, pyogenic granuloma, chronic tuberculosis lesion, osteomyelitis, actinomycosis and gumma of tertiary syphilis. Rare entities to be included in the differential diagnosis are defects of thyroglossal duct origin or branchial cleft, salivary gland and duct fistula and suppurative lymphadenitis.[7]

Whenever we notice a chronic suppurative lesion on the middle or lower portion of the face,we should suspect a possible dental cause behind it. A thorough history may reveal a previous dental problem but patient may not remember any history of acute or painful onset. Key points for extraoral clinical examination are the gross appearance of the lesion and palpation of cord –like tract attached to the underlying bone. Intraoral examination may reveal carious or discolored teeth and tenderness of involved teeth and adjacent alveolar mucosa. Tentative diagnosis is based on history and clinical examination which is further augmented by investigations comprising of periapical radiographs and pulp vitality tests. Involved teeth respond negatively to pulp vitality tests. Periapical radiograph taken by a gutta percha point inserted in the sinus is helpful in tracking the origin of the lesion. The diagnosis would be a chronic alveolar abscess, if the primary infection site is the pulp of the tooth.[8]

A periapical dental abscess may be initiated by caries, periodontal disease, trauma, or thermal or chemical injury. Most dental infections develop acute symptoms and the patient seeks early treatment. In chronic situations, however, the local inflammatory process slowly progresses and develops into an abscess occasionally with extensive necrosis of the surrounding tissue. The infection spreads in a relatively concentric manner and may drain through a cavity in the tooth or extend through alveolar bone and eventually erupt through the nearest alveolar cortical plate to form a subperiosteal abscess. Once through the cancellous alveolar bone, the pathway of decompression progresses along the path of least resistance, limited only by muscular insertions and facial planes.[9]

Approximately 80% of the reported cases are associated with mandibular teeth and 20% with maxillary teeth.[6] Most commonly involved areas are the chin and submental region. The other uncommon locations are cheek, canine space, nasolabial fold, nostrils and inner canthus of eye.[4]

Muscular attachments determine whether an intraoral or extraoral fistula develops.In the mandible, if the osseous opening occurs above the muscle attachment, a sinus tract may open intraorally into the vestibule. If, on the other hand, the osseous opening occurs below muscle attachment, a sinus tract may open extraorally along the mandibular border or the suppurative material may empty into an anatomic space, which may produce cellulitis. In the maxilla, the reverse is true. If the osseous opening occurs below the muscle attachment, a sinus tract may open intraorally into the vestibule. If the osseous opening occurs above the muscle attachment, a sinus tract may open extraorally into the cheek or the suppurative material may empty into an anatomic space, which may produce a cellulitis.[4]

The opening of the fistula usually presents as a granulomatous lesion, or as a papilla surrounded by granulation tissue. The wall of the persistent sinus becomes fibrous with adhesions between the abscess and the skin. The skin can appear to be fixed to the bone and is drawn inward leading to a suspicion of neoplasm. Histologically, these lesions consist of granulation tissue or connective tissue heavily infiltrated with inflammatory cells. Polymorphonuclear leukocytes are the predominant type of cell centrally within the lesion with numerous lymphocytes and plasma cells toward the periphery.[8]

Microorganisms and their products play a major role in the development of periradicular lesions. Most of these microorganisms track their way to the root canal system through carious crown, root, open dentinal tubules or lateral tracts and less commonly through blood-borne infection. These microorganisms consist of cocci, rods and scores of filamentous specious both facultative and obligate anaerobes. Those bacteria have to survive in an inhospitable environment to cause infection and have to escape the action of defense cells and the complement system of the host. [10]

If the tooth is restorable and there is no serious periodontal disease, endodontic therapy should be the treatment of choice, otherwise extraction should be considered.[11]

Calcium hydroxide paste usage was advocated for rapid and successful treatment of necrotic pulp tissue. The advantages of calcium hydroxide treatment are stimulation of bone repair and bactericidal effects due to its high alkalinity. It was found that it alters its lipo-polysaccharide, inactivates enzymatic activity and upsets their transport mechanism. Moreover it creates high pH environment and absorbs CO2 that is required for bacterial growth.[12]

The sinus tract usually disappears in 5-14 days after the root canal system has been thoroughly cleansed. These tracts will heal by granulation after the elimination of the infection in the root canal.[11] Plastic surgical repair may be needed at a later

stage if healing results in cutaneous retraction.

Definitive treatment of the draining sinus tract requires the source of the infection to be eradicated through root canal therapy.[13] According to Spear *et al.* (1988), [11] obtaining a medical history from patients is most important for the differential diagnosis. In the present case report,radiographic findings and clinical examination were suggestive of an odontogenic extra-oral sinus tract.In particular, the examiner should look for dental caries or restorations and periodontal disease.[14]The teeth in this report were restorable; thus, endodontic therapy was performed. In this case, the elimination of infection by conventional endodontic treatment affected the resolution of the sinus tracts and resulted in periapical healing.

CONCLUSION:

Early diagnosis is the key to successful treatment. One of the most common causes of fistulae of the face and neck is chronic, draining dental infection. An understanding of the pathogenesis of cutaneous fistulae arising from dental infections is very important. Clinical and radiographic dental examinations can facilitate localization of the teeth that are involved and avoid unnecessary antibiotic or surgical therapies. Hence it is imperative that interaction occurs between physicians and dentists to avoid exposing patients to insufficient treatment strategies.

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FIGURES:

Figure: 1

Figure: 2

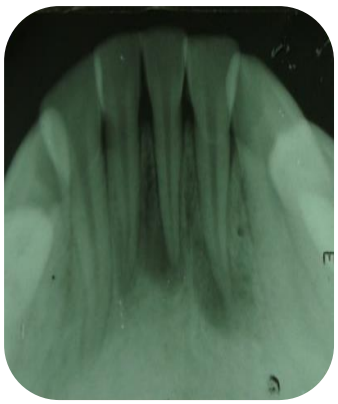

Figure:3

Figure:4

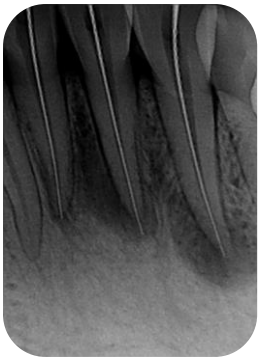

Figure: 5

Figure:6