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Case Report

Extraoral cutaneous sinus tracts of dental origin - A report of two pedodontic cases.

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Abstract
*Background:*Odontogenic extra oral cutaneous sinus are discussed in literature aspath leading from an enclosed area of inflammation to an epithelial surface. Patients visit a physician first for evaluation and treatment and do not give consideration to the dental etiology.
*Case report:*Two cases of 11 and 13 year old female patients with extraoral sinus tract, which were cutaneous in nature have been discussed in this article. They were referred to the govt dental hospital,Shimla and treated.Both showed good results due to proper diagnosis and treatment.
*Conclusion:*Successful management of the odontogenic cutaneous sinus tracts of pulpal pathology depend onproper diagnosis. However, these lesions continue to be a diagnostic dilemma. A review of several reportedcases reveal that patients have had inappropriate treatments for the same,with recurrence of the cutaneous sinus tract, as the primaryetiology was dental that was never correctly diagnosed.

Key Words
Extraoral sinus, odontogenic sinus,cutaneous pedodontic sinus

Introduction
Sinus tract is defined as a path leading from an enclosed area of inflammation to an epithelial surface. Patients visit a physician first for evaluation and treatment and do not give consideration to the dental etiology. Odontogenic cutaneous sinus tract is a rare but well discussed in the dental literature.[1]
Odontogenic infections are commonly caused bydental caries (primarily),pericoronitis, periodontitis, or complications from dental procedures. The second and third molars are often the etiological tooth for these odontogenic infections.[2]
A decayed tooth with an exposed pulp causes pulpitis, which, if untreated, develops into periodontitis which can progress to alveolar ostitis and laterabscess formation in the orofacial region.[3]
Abscess formation in the orofacial region is relatively rare.[4,5]
Clinically, a cutaneous sinus tract may resemble a nodule, ulcer, or an infected cyst on the skin. Differential diagnosis of a cutaneous draining sinus tract should include infected sebaceous, epidermoid or thyroglossal cystssuppurative apical periodontitis, osteomyelitis, actinomycosispyogenic granuloma, congenital fistula, salivary gland fistula, furuncle and deep mycotic infection.[21]

Case Report I
A 11-year-old female was referred to us with a chief complaint of purulent discharge from extraoral sinus on her right lower jaw region. She had history of irreversible pulpitis in relation to lower right back tooth region few months back. Then a few days after the pain subsided. But since two months she reported of an extra oral pus accumulation wrt lower jaw on right side. Patient was given antibiotics for the swelling at local health centre, but it did not subside so she was referred to Indra Gandhi Medical College(IGMC), Shimla, from where she was referred to Himachal Pradesh Govt dental college and hospital(HPGDC), Shimla.

On clinical examination:.
Extra orally, a draining sinus tract on the right cheek, 1 cm below the inferior border of the mandible was detected. On palpation, a walnut-sized soft swelling around the fistula was found . Intra orally, there was grossly decayed mandibular right first molar tooth The tooth was tender under percussion. Oral hygiene was poor. Radiographic examination revealed periapical radiolucent lesion associated with the roots of manbibular right first molar. The diagnosis was established as chronic apical periodontitis resulting from pulp necrosis due to caries.

Treatment:
During the first visit, after placing a rubber dam, the necrotic content of pulp chamber and root canal was removed. Working length was established and biomechanical preparation was done. Root canals were irrigated using 5.25% sodium hypochlorite and normal saline.
Calcium hydroxide mixed in chlorhexidine was used as intracanal medicament. Extra oral dressing was placed.
The sinus tract disappeared in about twenty days. After two months root canals were obturated using lateral condensation technique. Oral prophylaxis was also done.
Complete healing of the extra oral fistula was observed with minimal scar formation within two months and the radiographic examination revealed complete disappearance of the radiolucent lesion.

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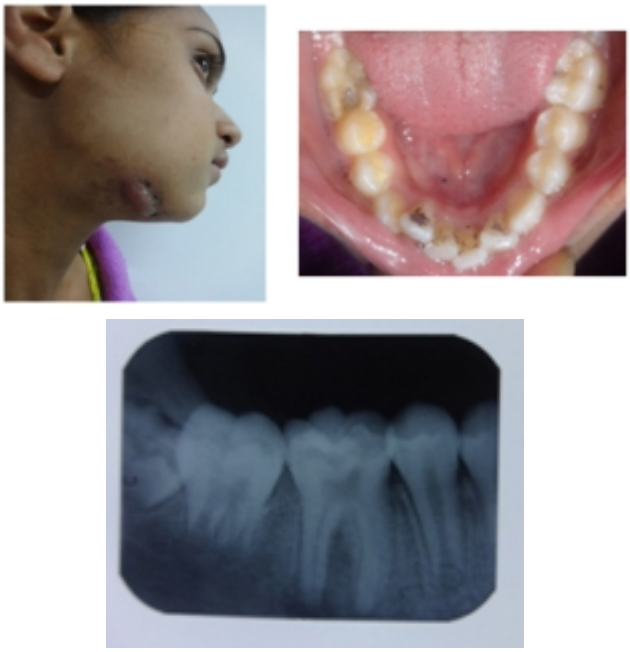
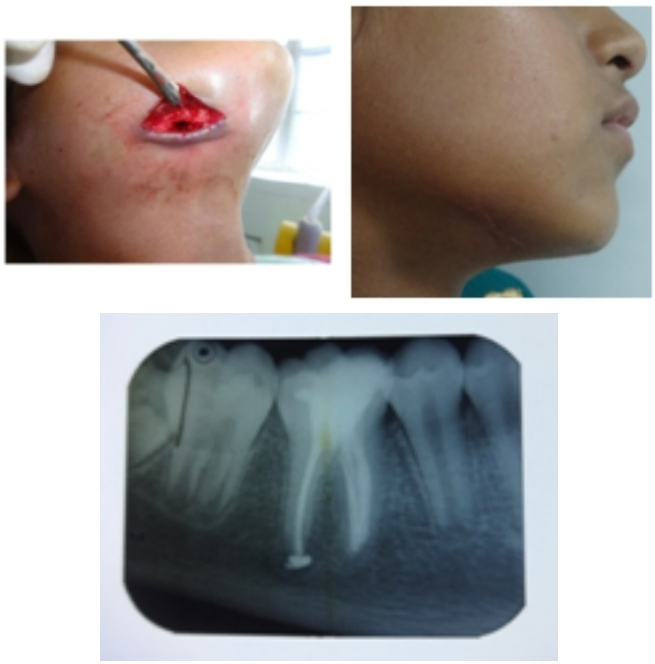
The advantages of calcium hydroxide treatment are stimulation of bone repair and bactericidal effects due to its high alkalinity. Usage of calcium hydroxide paste was advocated for rapid and successful treatment of sinus tract associated with necrotic teeth[7].



[FIG 1]Pre operativephotographs showing the Extra oral sinus ; Intra orally grossly decayed 46 ; IOPA with periapical radiolucency wrt 46



[Fig 2] Sinus tract opening visible extra orally; Healed scar tissue after 2 months ; Post operative IOPA showing healed periapical pathology

Case Report II

A 12-year-old patient reported to the Department of Pediatric and Preventive Dentistry, HPGDC, Shimla with the chief complaint of pus discharge from the right lower jaw region.

She had pain in lower right back tooth region one year back. Painwas sharp , shooting, throbbing, radiating in nature, increased during night and on lying down. After few days pain subsided and occurred intermittently for few months .Later after few months, an extra oral pus accumulation was evident wrt lower jaw on right side. For the treatment of extra oral abscess , the patient came to IGMC, where I and D was done 1 year back . Patient was not referred to Dental hospital for the needful.

Now after one year she had again come to IGMC for the same problem and this second time she was referred for dental opinion to HPGDC.

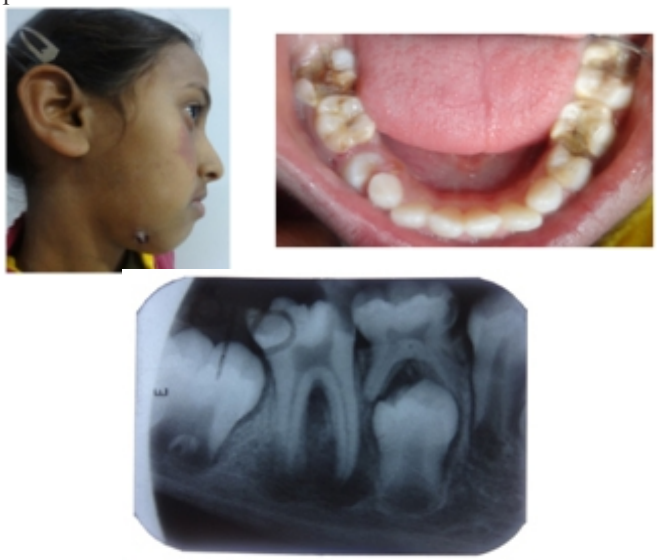
Clinical presentation

Extra orally pale,crusted,raised about 8mm diameter area was seen which was not tender.

On intraoral examination carious exposure was seen in the right permanent mandibular first molar and carious right mandibular second primary molar. The tooth was not tender under percussion and not painful on biting.

An intraoral periapical radiograph revealed associated periapical infection with grossly decayed right mandibular molars .

Treatment included extraction of both molars and the sinus tract was treated with to and fro movement of gauze soaked in povidine-iodine. H2O2 irrigation was done to remove the dead necrotic tissue of the tract and facilitate healing. Coe pack was given wrt extraction sockets. Extra oral dressing was also placed.



[Fig 3] Pre operative- Extra oral sinus; Intra orally non- restorable 46 ; IOPA showing big periapical radiolucency wrt 46

[Fig. 4] Post operatively Extracted teeth ;Cleaning the sinus tract with gauze soaked in povidone iodine ; Coe-pack in place

Discussion

The evaluation of a cutaneous sinus tract must begin with a thorough patient history and physician should be aware that any cutaneous lesion of the face and neck could be of dental origin. Proper diagnosis and treatment minimize patient discomfort and esthetic problems, reducing the possibility of further complications such as sepsis and osteomyelitis.[8]

Acute periapical abscess drains along a path of least resistance via an intraoral or extraoral opening in the form of a sinus tract or spread to deeper tissues causing fascial space infection. Intraoral or extraoral sinus tract opening depends on the location of the perforationin the cortical plate by the inflammatory process and its relationship to facial muscle attachments. If the apices of the teeth are above the maxillary muscle attachments and below the mandibular muscle attachments the spread of infection may be extraoral .Afterformation of a sinus tract, the inflammation at the apex of the root may persist for a long period of timebecause of the drainage through the sinus tract, a chronic abscess can remain asymptomatic for extended periods of time.[9]

The majority of dental sinus tracts develop intraorally. When an extraoral dental sinus tract occurs, it most often develops in close proximity to the offending tooth.[10]

These sinus tracts most commonly are found on the chin or in the submandibular area If there is a closure of the sinus tract, then the chronic abscess may become symptomatic.[11]

Cutaneous sinus tracts typically present as fixed, nontender, erythematous, nodulo cystic lesions on the skin of the lower face. Cutaneous lesion may develop over a long period of timedue to chronic infection, often distant from the site of primary infection.The patient is not able to recall an acute or painful onset and the lesion is seldom accompanied by symptoms in the oral cavity.[12]

Once, the infection from the offending tooth has perforated the periosteum, the tooth may become asymptomatic. Digital palpation of the involved area frequently reveals a 'cord' of tissue connecting the painless skin lesion to the involved maxilla or mandible. During palpation, production of a purulent discharge confirms the presence of a tract.[13]

Inappropriate treatments that have been reported for a cutaneous extraoral draining sinus include surgical excision, biopsy or surgical revisions, radiotherapy and the inappropriate administration of topical and oral antibiotics.[21]

The treatment of such teeth in children will depend on clinical and radiographic findings, tooth position, orthodontic considerations to some extent, and the general health of the child.[21]

There are surgical and non-surgical methods to treat such cases. Ideally, a nonsurgical method should initially be done. The success of the non-surgical endodontic treatment method is based on appropriate cleaning, shaping, asepsis and filling of the root canal. It has been reported that the sterilization of the root canal and periradicular region results in good healing of periapical diseases.[14]

Calcium hydroxide-based paste would be the medicament of choice for intracanal placement both for primary molars and as an interim procedure for permanentteeth. When the pathology resolves, conventional endodontic treatment using gutta-percha(conventional or thermoplastic) with or without apexification and root-end closure techniques can be implemented. If endodontic therapy is not feasible or the tooth is not restorable then extraction of the tooth is recommended.[21]

A patent pathway is made for drainage of pus.

Many methods have been propagated,which range from periapically perforating the root of tooth during root canal treatment thus draining the pusthrough orthograde approach, to creating an extraoral pathway for providing rapid relief to the patient in caseof large sinuses. Shoe lace technique is one such method, where the sinus is managed extraorally by inserting agauge piece soaked in povidone iodine to make a path for pus drainage.[16]

Kaban[17] elaborated the path ofspread of chronic dental infections.

Approximately 80% of the reported cases are associated with mandibularteeth and 20% with maxillary teeth.[18]

If thesinus tract is patent, a lacrimal probe or a gutta-percha cone can be used to trace its track from the cutaneousorifice to the point of origin, which is usually a nonvital tooth.[19]

The healing of periradicular tissues after root canal treatment is often associated with formation and organization of a fibrin clot, granulation tissue formation, maturation, subsidence of inflammation and finally restoration of normal architecture of periodontal ligament. The draining sinus tract maintains a localized condition and prevents systemic involvement. Hence, treatment must be focused on elimination of the source of the infection.

Conclusion

Successful management of the odontogenic cutaneous sinus tracts of pulpal pathology depend on

proper diagnosis. However, these lesions continue to be a diagnostic dilemma. A review of several reportedcases reveal that patients have had inappropriate treatments for the same, with recurrence of the cutaneous sinus tract, as the primaryetiology was dental that was never correctly diagnosed or addressed.[20]

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