

Sinus Tract Mimicry: A Case Report

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ABSTRACT

Sinus tract adjacent to teeth, or near the apex of any particular tooth, is usually considered to be of endodontic origin and root canal therapy is the primary treatment to achieve its healing; however, at times, it may be associated with periodontal lesion and then requires combined endodontic periodontal treatment. The present case had a sinus tract of combined orthodontic-periodontal origin, mimicking pulpal etiology. Such cases can possibly be diagnosed and treated only after careful evaluation of clinical features and radiographic findings.

Keywords: Diagnosis, Orthodontic treatment, Sinus tract, Chronic periodontal abscess.

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INTRODUCTION

Among one of the difficult problems to understand and manage in dentistry is an odontogenic infection. These may range from low-grade, well localized infection requiring only minimal treatment, to severe life threatening facial space infections. Pulp necrosis, periodontal infections, pericoronitis, trauma are among various possible sources of odontogenic infections (1). The infection may spread through the cancellous bone until it encounters a cortical bone and if the cortical plate is thin; it may erode it and enter the soft tissues. Once the infection erodes the bone, the precise location of the soft tissue infection will be determined by the position of the perforation relative to the muscle attachments (2).

Sinus is a tract leading from an enclosed area of inflammation to an epithelial surface (3), and is one of the sequelae of inflammatory disease. Sinus tract adjacent to teeth or near the apex of the tooth is usually considered to be of endodontic origin and root canal therapy is the primary treatment to achieve its healing. However, stoma of a sinus tract may not always exit opposite the lesion (4-6); and at times, it may have associated periodontal lesion and then requires combined endodontic periodontal treatment (7, 8). Rarely, the etiologic factor may be involving or aggravated by orthodontic reasons.

A case of sinus tract is presented here to insist the importance and significance of precise diagnosis making, clubbed with history taking. Correct treatment begins with accurate diagnosis and it is mandatory to make the right and specific diagnosis to treat a case effectively and successfully (9).

CASE REPORT

A 39 years old, otherwise systemically healthy male, was referred for an endodontic consultation from orthodontic department for a recurrent sinus tract with purulent discharge emerging from it in the right mandibular buccal-vestibule, near the apices of right mandibular first molar i.e. 46. History of present illness showed that the problem existed for the past 10 months (Fig. 1). Past dental history revealed extraction of impacted tooth viz. right mandibular third molar i.e. 48 eleven years ago, which was followed by dry socket, for which repeated ZnOE, iodoform and eugenol dressings were given. Patient had undergone orthodontic therapy elsewhere, for partially erupted right mandibular canine. The partially erupted tooth 43, had an orthodontic bracket and lingual arch wire still present after its surgical exposure, which was an inappropriate treatment planning (Fig. 2).

On oral examination, a sinus tract with the signs of purulent discharge near the apices of tooth 46 was present. There was neither a swelling, nor pain in and around that

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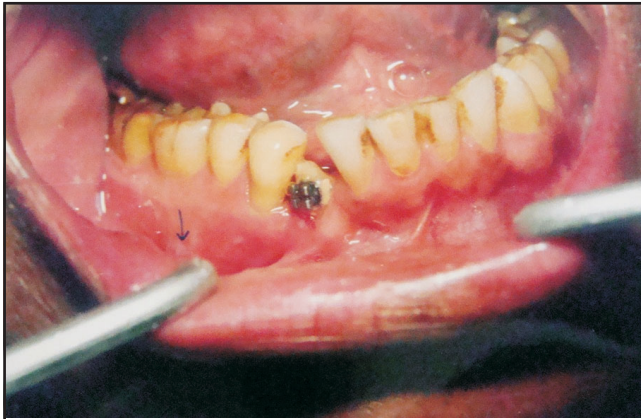


Figure 1: Arrow showing recurrent sinus tract with purulent discharge emerging from it in the right lower buccal-vestibule near the apices of tooth 46



Figure 2: Buccal orthodontic bracket on 43 and lingual arch wire after its surgical exposure. Arrow showing sinus tract

region. No mobility of teeth was present. On radiographic examination, radiolucency with ragged margins was present, involving the root apices of teeth 43, 44 (right mandibular first premolar), 45 (right mandibular second premolar) and 46 (Fig. 3). However, the radiological findings were inconsistent with the clinical findings. Hence, vitality test of all the mandibular right side teeth were planned. On electric pulp testing, all the teeth in question responded positively, within the normal range thus indicating and revealing that all the teeth were vital. The same teeth were also examined with fiberoptic illumination to rule out any vertical fracture. On considering this, another radiograph was taken by introducing gutta percha point through the sinus opening to establish and ascertain the proper diagnosis. The passage of gutta percha ended at the distal aspect

of partially erupted 43 (Fig. 4). In addition deep periodontal pocket was present in the distal aspect of partially erupted 43 and mesial of 44, with gingival recession of 44. Thus, the diagnosis of chronic periodontal abscess in relation to 43 was made. On considering real cause of the present problem, non-surgical periodontal therapy including scaling, root planing followed by irrigation using sterile saline at the distal pocket of partially erupted 43 was done. Proper oral hygiene methods were taught and patient was instructed to rinse with 0.2% chlorhexidine gluconate mouthwash for a week. Orthodontic consultation and review was also sought and they were requested, to manage the case, by far possible, to facilitate the eruption so as to improve the results clinically. Patient responded well to the therapy and sinus

tract resolved within two weeks of the planned interdisciplinary clinical treatment.

DISCUSSION

While determining the prevalence, location, and distribution of sinus tracts in patients referred for endodontic consultation, Slutzky-Goldberg *et al.* (10) found chronic periapical abscess as the most prevalent diagnosed cause for the origin and existence of the sinus (71.0%) followed by broken restoration (53.0%). The most frequent site of orifices was buccal (82.4%), followed by lingual or palatal (12.0%). According to them, lesions mainly originated from maxillary teeth (63.1%) while mandibular teeth were found responsible for only 38.9% cases (10). The presence of a sinus tract in the oral cavity is usually considered



Figure 3: Radiolucency with ragged margins was present, involving the root apices of teeth 43, 44, 45 and 46

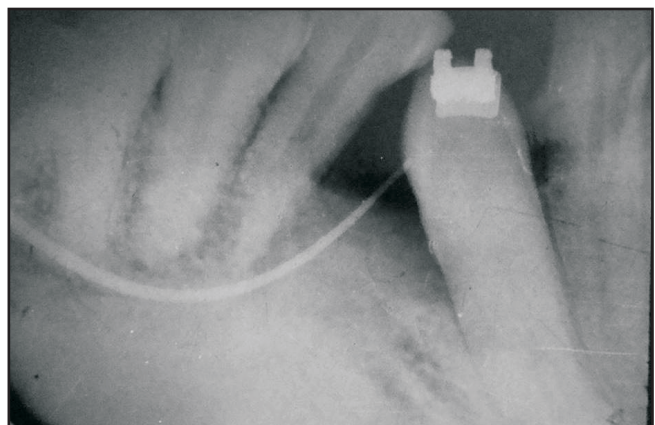


Figure 4: Radiograph after passage of gutta percha that ended at the distal aspect of partially erupted 43

of pulpal origin, but it can also be caused by periodontal disease (3), however, the prevalence and incidence of periodontal abscess is lesser than periapical abscess (11).

In the present case, the etiologic factor was the partially erupted tooth. Incompletely encased in bone, a partially erupted tooth lies somewhat in soft tissue, and thus communication with oral cavity may exist through periodontal pocket that creates an ideal situation for infection (12). The infection may be acute and produce extensive swelling of the face, or it may be chronic and merely produce a draining sinus tract (13). Extension of infection from a deep periodontal pocket is sufficient to cause an abscess and when the locally collected purulent mass is not able to drain through the sulcus due to any reason, it has a tendency to spread along the weaker areas of cortical bone and drain out wherever it is possible. So it is not necessary that it should drain only in vicinity of the affected tooth itself. In this case, the above such scenario is confirmed radiographically by tracing the sinus tract using gutta percha (14, 15). Deep periodontal pocket present at distal aspect of 43 and mesial of 44 establishes continuity of the lesion with the gingival margin and was in conformity to the clinical evidence of periodontal lesion (16). It was additionally ascertained by the other diagnostic procedures such as pulp vitality tests, and fiberoptic illumination, that the cause for the presence of the sinus opening was of periodontal origin and not pulpal origin or due to any other factor like cracked tooth syndrome or vertical root fracture. Laser doppler flowmetry as an indicator for pulp vitality can be employed for an accurate, reliable and reproducible method of assessing pulpal blood flow (8, 17-19).

The primary etiologic agent in periodontal disease is bacterial plaque, although a number of secondary factors such as calculus, anatomic anomalies, including enamel projections, root grooves and concavities; overhanging restorations; complications associated with orthodontic therapy; self inflicted injuries; use of tobacco; radiation therapy and host

response may influence its course (20). Ashley *et al.* (21) evaluated the relationship between the irregularity of teeth and the incidence of periodontal disease. Even a splendidly accomplished orthodontic treatment may be destroyed by failure to recognise periodontal susceptibility (22). Orthodontic appliances not only tend to retain bacterial plaque and food debris, but also are capable of modifying the gingival ecosystem and surgical exposure of impacted teeth and orthodontic-assisted eruption may compromise the periodontal attachment on adjacent teeth. Risk of bone loss is higher in the presence of inflamed connective tissue (23); in addition, similar to trauma from occlusion, orthodontic forces may aggravate the progression of inflammatory periodontal diseases (24), resulting in increased rate of destruction of connective tissue attachment (25). Lupi *et al.* (26) advocated that the degree of bone loss during adult orthodontics is higher than that observed in adolescents. Disturbance of microbial homeostasis, destruction of epithelial barrier or random events may increase bacterial activity resulting in multiplication and invasion by one or a group of subgingival species that constitute the starting point of abscess formation (27).

In the presented clinical report, sinus tract opening at a distance from the actual place of involvement, creating a false alarm of some problem in the 46, posing a diagnostic challenge for the endodontists involved in the treatment; led to interdisciplinary management. The tract provided the drainage to the chronic periodontal abscess which somehow was unable to make its opening near the etiologic tooth i.e. 43. The clear involvement and existence of narrow, deep periodontal pocket along the periodontal space of partially erupting 43 was so camouflaged that the existing sinus, appeared to be of pulpal origin. The sinus resolved in two weeks successfully by periodontal therapy (3) that consisted of scaling, root planing, followed by irrigation using sterile saline and maintaining meticulous oral hygiene in conjunction with 0.2% chlorhexidine gluconate for one week.

CONCLUSION

This clinical report thus emphasises on the importance of establishing a precise diagnosis. It further strengthens the view that a consistent and logical protocol should be followed, leaving no lacunae, before arriving at a conclusion. The clinician should have keenness and knowledge in the art of distinguishing one disease from another, and procedures should include review of medical and dental histories, radiographic and clinical examination with various diagnostic tests along with essential assessment and re-evaluation of patient's chief complaint, so as to avoid any embarrassment to the clinician at later stage and help the patient in conservative, judicious management.

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