

# Management of Cutaneous Sinus Tract of Endodontic Origin: - Two Case Reports

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## ABSTRACT

Cutaneous sinus tracts of endodontic origin represents one among the many types of sinus tracts that may form on the face and neck region. They are usually present on the chin and cheek region. They are uncommon, and often misdiagnosed. A sinus tract of endodontic origin is caused by pulp necrosis followed by invasion of microorganisms causing an inflammatory lesion in the periapical area of the affected tooth. Treatment is directed towards elimination of source of infection. This article reports two cases of facial sinus tracts which were managed by endodontic treatment of the affected teeth.

**Keywords:** cutaneous sinus tracts, endodontic, extraoral

## INTRODUCTION

Cutaneous sinus tracts of dental origin have been well documented in medical dermatological and dental literature.<sup>1,4</sup> They are relatively uncommon and may easily be misdiagnosed, owing to its uncommon occurrence and absence of dental symptoms. They are formed by many conditions that occur inside and outside the oral cavity. A sinus tract of endodontic origin is caused by pulp necrosis followed by invasion of microorganisms causing an inflammatory lesion in the periapical area of the affected tooth.<sup>5</sup> The microbiologically induced inflammation may penetrate the alveolar bone and spread along the path of least resistance. Eventually, the inflammatory process can reach the surrounding soft tissue and form a path for drainage.<sup>2,6</sup> The site of extraoral drainage depends on which tooth is diseased, and on specific factors such as the virulence of the microorganism and the relation between anatomy and facial muscle

attachments to determine the trajectory of the fistula (Kaban<sup>2</sup> 1980, Al-Kandari et al.<sup>7</sup> 1993). Proper diagnosis, treatment, and the elimination of the source of infection are a must; otherwise, it can result in ineffective and inappropriate outcome of treatment. Extraoral fistula of odontogenic origin can be misdiagnosed and confused with traumatic injuries, furuncles, bacterial infections, carcinomas, osteomyelitis, pyogenic granulomas, foreign objects and congenital fistula. Due to this array of diagnostic possibilities unsuccessful therapies are used commonly before the correct differential diagnosis is defined. The paper gives an insight of two cases of cutaneous sinus tract which after effective endodontic treatment lead to resolution of the sinus tract.

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## CASE REPORTS

### Case Report 1

A 28 year old healthy female patient reported to Department of Conservative Dentistry and Endodontics with chief complaint of intermittent pus discharge from an opening located on the right cheek that had been present for the past 15 days. The medical history was non-contributory. The intraoral examination revealed that tooth 16 had a deep carious lesion on the distal side with exposed pulp. Extraoral examination revealed a cutaneous opening on the cheek with a purulent discharge. (Fig 1a & b). Pulp testing with an electric pulp tester and thermal test elicited non-responsiveness from the suspect tooth. An intraoral periapical radiograph revealed a periradicular radiolucency associated with tooth 16 (Fig 2). Thus, the diagnosis of pulpal necrosis with asymptomatic suppurative periradicular periodontitis with extraoral cutaneous tract was made.

A size 25 gutta-percha cone was used to trace the sinus tract from the cutaneous opening (Fig 3). It was confirmed radiographically that the lesion was odontogenic in origin. The tract led to the root apex of distobuccal root of tooth 16 (Fig 4). Endodontic therapy in tooth 16 was started; Following Rubber Dam application, access opening was done, working length was determined, the canals were enlarged and made infection free with sodium hypochlorite and hydrogen peroxide and root canal filling was done with lateral condensation technique with gutta-percha cones. (Fig 5) Subsequently curettage of the extraoral lesion (Fig 6) was done and the extraoral opening was sutured. (Fig 7)

The patient was recalled after one week and the sutures were removed. The extraoral sinus tract was healed (Fig 8). Fig 9 shows 8 months follow up radiograph.

### Case Report 2

A 48 years old male patient reported to Department of Conservative Dentistry and Endodontics with chief complaint of swelling in

the mental region for past 6 months.(Fig 10) Patient was prescribed antibiotic therapy multiple times but the lesion did not heal. An intraoral periapical radiograph revealed a periradicular radiolucency associated with tooth 32, 43 and pulpal involvement of tooth 31, 41, 42. (Fig 11) Thus, the diagnosis of pulpal necrosis with asymptomatic suppurative periradicular periodontitis with extraoral cutaneous tract was made.

Following Rubber Dam application, access opening was done i.r.t tooth 32, 31,41,42,43. Working length was determined, the canals were enlarged and made infection free with sodium hypochlorite and hydrogen peroxide and root canal filling was done with lateral condensation technique with gutta-percha cones. (Fig 12) Calcium Hydroxide was used as intracanal medicament.

Patient was recalled after one week and non surgical root canal therapy lead to resolution of the swelling. (Fig 13) Figure 14 shows 8 months follow up radiograph depicting successful healing.



Fig 1a & b: - preoperative photographs

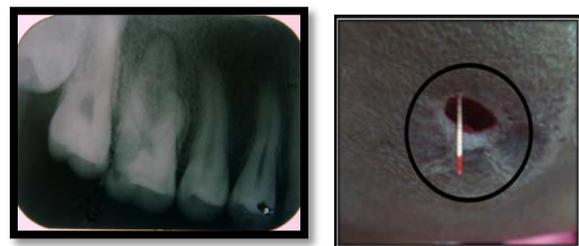


Fig 2: preoperative radiograph

Fig 3: insertion of gutta percha into sinus tract



Fig 4: tracing sinus tract with gutta percha



Fig 2: Post obturation radioiograph 16



Fig 6 :- Curettage of the lesion



Fig 7: Suturing



Fig 8 : post operative photograph:- healed sinus



Figs 9: 8 months follow up radiograph



Fig 10: preoperative photograph



Figs 11: preoperative radiograph



Figs 12: post obturation radiograph up radiograph



Figs 13: post operative radiograph



Figs 14: 8 month follow up radiograph

### DISCUSSION

A cutaneous sinus may develop in as early as a few weeks or as late as 30 years.<sup>8</sup> Approximately 80% of reported cases are associated with mandibular teeth and 20% with maxillary teeth. The most common areas of involvement are the mental and submental regions. Other sites of drainage are the cheek, canine space, nasolabial fold, nose, upper lip and inner canthus of the eye.<sup>9</sup> The evaluation of a cutaneous sinus tract must begin with a thorough medical history and awareness that any cutaneous lesion of the face and neck could be of dental origin. A sinus tract prevents swelling or pain from pressure build-up, because it provides drainage from the primary odontogenic site.<sup>10</sup> Palpation of the involved area often reveals a cordlike tract attached to the underlying alveolar bone (maxilla or mandible) in the area of the suspected tooth. If the sinus tract is patent, a lacrimal probe or gutta-percha cone can be introduced into the sinus opening and passed through the sinus until it meets the area of the tooth. An intraoral periapical radiograph should then be exposed with the probe in situ pointing to the origin of the pathosis, which is usually a nonvital tooth, but in edentulous patients could be a retained tooth fragment, an impacted tooth, or an odontogenic cyst. Pulp tests should then be performed on the suspect tooth and the adjacent teeth, because more than one tooth may be pulpally involved and associated with the cutaneous odontogenic sinus tract. Laskin<sup>11</sup> has elaborated on the physiologic and anatomic factors that influence the spread and ultimate localization of dental infections. Stoll and Solomon<sup>4</sup> also emphasized that the ultimate path of the sinus (irrespective of the source) depends on several factors, most

## Case Report

importantly the anatomy of tooth involved, muscular attachments to the jaw, fascial planes of the neck, and involvement of permanent or deciduous teeth. Cutaneous rather than intraoral lesions are likely to occur if the apices of teeth are superior to maxillary muscle attachments or inferior to mandibular muscle attachments. The clinical differential diagnosis includes pustule, actinomycoses, osteomyelitis, orocutaneous fistula, neoplasms, local skin infections (carbuncle and infected epidermoid cyst), pyogenic granuloma, chronic tuberculosis, and gumma of tertiary syphilis.<sup>12</sup> Nonsurgical endodontic therapy is the treatment of choice if the tooth is restorable. Extraction is indicated for nonrestorable teeth. Winstock<sup>13</sup> recommends excision of the cutaneous lesion and sinus in continuity at the time of treatment of the dental pathology with immediate plastic repair of the cutaneous site. Kwapis and Baker<sup>14</sup> believe that because a sinus tract heals by scar formation, its effects on skin depression are most noticeable during facial movements like mastication or speaking; thus, it should be removed concomitantly at the time of treatment. But most authors believe that once the primary odontogenic cause is removed, the sinus tract and cutaneous lesion heal without treatment. Healing occurs by secondary intention in most cases. Cosmetic surgical treatment may be required at a later date if the healing results in cutaneous retraction or dimpling.

### CONCLUSION

Cutaneous facial sinus tracts of odontogenic origin are often initially misdiagnosed and inappropriately treated. Correct diagnosis and treatment will result in predictable and rapid healing of these lesions.

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