

# Actinomycosis involving the periapical region and mimicking a dentoalveolar abscess: An unusual presentation

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## ABSTRACT

Actinomycosis in the oral region is usually seen following surgery or odontogenic infection. It is a chronic suppurative and granulomatous infection which usually spreads into adjacent soft tissues without regard to tissue planes. These infections have decreased in number in the present days and are uncommon. The diagnosis is often missed or delayed because of general unfamiliarity with the disease. We hereby report a case of actinomycosis near angle of the mandible mimicking dento-alveolar abscess following extraction of third molar.

**Keywords:** Actinomycosis, dento-alveolar abscess, polymicrobial infection

## INTRODUCTION

Actinomycosis is a chronic suppurative and granulomatous infection most commonly caused by the gram-positive bacterium *Actinomyces israelii* and may be rarely caused by *A. odontolyticus*, *A. naeslundii*, *A. meyeri*, *A. viscosus*, and *Propionibacterium propionicus* (1, 2). *A. radidentis* is a new species that has been isolated from apical periodontitis (3). Actinomycosis is a torpid, slowly progressive type of infection caused by microaerophilic or anaerobic bacteria that usually colonize the mouth, colon, and vagina (4). Usually actinomycosis presents with four clinical forms among humans, namely cervicofacial, thoracic, abdominopelvic, and cerebral forms. Our focus of interest is the cervicofacial form that presents as a slowly evolving chronic form with an induration of the orofacial area along with fistular tracts to the skin, which discharge typical yellowish sulfur granules (5). In the oral cavity, *Actinomyces* spp. are present as normal inhabitants, and thus, are frequently reported in teeth presenting with primary pulpal and periapical infections and also in unhealed periapical lesions (6, 7). They are also reported to occur in persistent, secondary intraradicular infections and could be the original cause of extraradicular infection, also known as periapical actinomycosis (8). The diagnosis is typically made on the basis of the presence of the actinomycotic colonies during surgical procedures and/or after histopathological examinations (9). The case presented

in this study had clinical features of an acute dentoalveolar abscess, which was eventually diagnosed as actinomycosis after histopathological examinations.

## CASE PRESENTATION

A 30-year-old female patient with complaints of pain in the lower right back tooth area of the mandible visited the Department of Oral Medicine and Radiology. She also complained of swelling near the mandibular angle region of the same side. The patient was febrile for 2 days and had a history of extraction of decayed tooth 2 weeks back. She complained of continuous dull pain in that region since 4 days. Extraoral examination revealed a well-defined swelling of approximately 1 inch in diameter at 1 cm anterior to the right mandibular angle region. The skin over the swelling was reddish, and peeling of the surface skin was noticed (Figure 1). The area was tender on palpation. Intraoral examination revealed a healing extraction socket (Figure 2). There was no history of bleeding or discharge. On the basis of history and clinical examination, a provisional diagnosis of infected retained root stump was made. After obtaining informed consent from the patient, intraoral periapical radiographs and orthopantomographs of the area were made which did not reveal any abnormalities. Incision and abscess drainage was performed extraorally in the area where blood-tinged discharge was observed (Figure 3a). Tissue samples from the area were sent for histopatholog-

ical examination. A surgical drain was placed in the site, and the incision was sutured in place (Figure 3b). The patient was put on the following medications: antibiotic therapy of 500 mg amoxicillin capsule thrice daily for 5 days, 400 mg metronidazole tablet thrice daily for 5 days, and an anti-inflammatory and analgesic combination of diclofenac sodium 50 mgs and serratiopeptidase 10 mgs twice daily for 5 days. Histopathological examination revealed granulomatous inflammation along with a mixed-type inflammatory cell infiltration. An actinomycotic colony (sulfur granules) was noted in the center of this granulomatous structure. It had a radial pattern with typical palisade organization and peripheral inflamma-

tory reaction (Figure 4). The lesion was histopathologically diagnosed as periapical actinomycosis of the post-extraction periapical area of the third molar. The patient was followed up on a weekly basis (Figure 5). The patient reported uneventful healing. Because the histopathological report confirmed an actinomycotic colony (sulfur granules) and healing was uneventful, microbiological diagnosis was not performed, which was a limitation of the study.

Figure 1. Clinical image of the patient showing swelling in the mandibular angle region



Figure 2. Intraoral image of the patient showing post-extraction area with respect to right third molar



Figure 3. a, b. Clinical image of the patient showing incision and drainage of the abscess (a) with a surgical drain sutured in place (b)

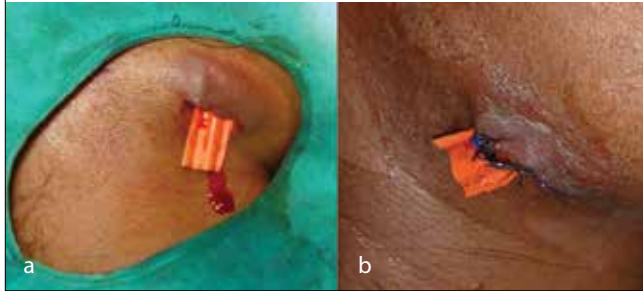


Figure 4. Histopathological image of the tissue bits showing a granulomatous inflammation with a mixed-type inflammatory cell infiltration and an actinomycotic colony (sulfur granules) at the center (x40)

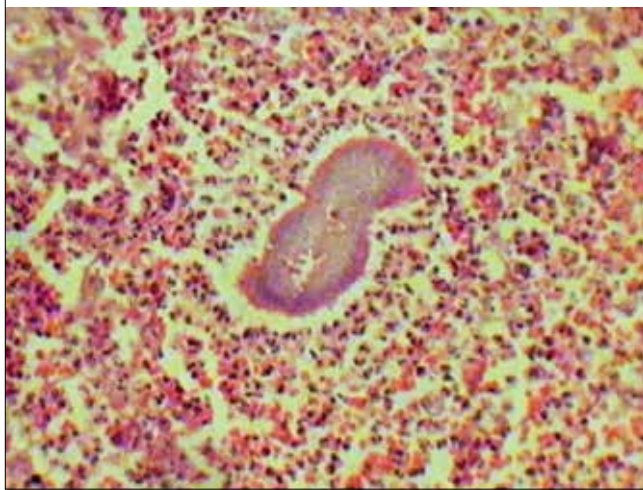
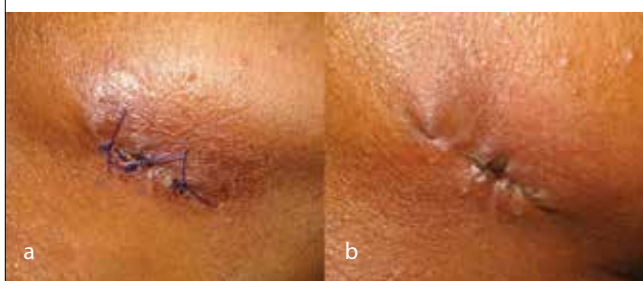


Figure 5. a, b. Follow-up images at the first (a) and second weeks (b)



## DISCUSSION

Actinomycosis is a subacute-to-chronic bacterial infection caused by non-acid fast, gram-positive, filamentous, microaerophilic-to-anaerobic bacteria. It clinically manifests as suppuration, contiguous spread, granulomatous inflammation, and multiple abscess formation, as well as sinus tracts that discharge sulfur granules (9). Our patient did not present with these above features but presented with a marked well-defined swelling that was inflamed. Although actinomycosis is not commonly encountered in daily dental practice, its manifestation in the oral cavity is highly significant owing to its aggressive and locally destructive nature (10). The most common triggering factors are dental caries, patients with poor oral hygiene, dental manipulations/surgical procedures, recent dental treatments, and orofacial trauma (11, 12). Our patient presented only with history of previous extraction. Most cases of cervical actinomycosis of odontogenic origin predominantly occur in individuals who lack immunocompetency (13). A slight male predilection among young adults has also been reported (14, 15). However, our female patient was immunologically competent. The common initial clinical presentations of the infection, such as sudden onset of fever, cervicofacial pain, erythema, swelling, suppuration, and edema, may not be present (16). These symptoms were clinically present in our patient with the absence of suppuration. The most common clinical presentation of this infection is a chronic mass, which may be a suppurative or indurated mass associated with discharging sinuses. The lesion may present intra- or extraorally as a floating mass that is often located near the lower border of the mandible in association with or without cervical lymphadenopathy (17, 18). A not so similar presentation was noted in our patient, i.e., swelling near the angle of the mandible, which was erythematous, soft, and tender. Prolonged systemic antibiotic therapy is the accepted treatment of choice for all other forms of actinomycosis, except the periapical form (19). Surgical treatment is often advocated for the resection of necrotic tissue, bone curettage, drainage of soft tissue abscesses, and excision of sinus tracts (20, 21). Most reported cases of periapical actinomycosis have been successfully managed by apical surgery and/or the extraction of the affected tooth (6). Extraoral incision and drainage of the abscess was performed in the reported case, and the lesion healed after the administration of oral antibiotics. Our patient developed swelling after the extraction of the infected right third molar and was definitely diagnosed with actinomycosis only after histopathological examination. Very little data regarding the frequency of occurrence of periapical actinomycosis with respect to periapical lesions and the correlation between periapical variant and cervicofacial actinomycosis are available. Periapical actinomycosis is considered to be rare (22). The case reported here is a rare clinical presentation of actinomycosis infection, which otherwise is mistaken for a periapical abscess.

## CONCLUSION

Data regarding the frequency of occurrence of periapical actinomycosis in periapical lesions is limited because most periapical actinomycosis cases have been individually reported. Owing to the chronicity and the low-grade nature of the disease and its resistance to routine antibiotic ther-

apy, early diagnosis and management of actinomycosis is often difficult. Our case did not present with usual findings of extraoral fistula or sulfur granules, which also led to a delay in diagnosis. Hence, this condition is clinically important because of the delay and difficulty in its diagnosis and long-term treatment and follow-up, which are required for its cure.

**Informed Consent:** Written informed consent was obtained from patient who participated in this study.

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