

## Actinomyces of the hard palate – A rare presentation

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**Introduction:** Actinomyces is a slowly progressive infection Gram-positive, non-spore forming, non-acid-fast, anaerobic, or microaerophilic endogenous bacterium of genus *Actinomyces*. They are commonly found in the saliva and dental plaque. *Actinomyces israelii* is the most frequently isolated species.

**Case Report:** A 60-year-old male patient presented in the head-and-neck oncology clinic with a history of non-healing lesion in oral cavity for the past 1 month. On examination, he was partially edentulous and an ulcerative lesion was present on the hard palate. On digital palpation, the hard palate detached itself and came out of the oral cavity spontaneously. Histopathological examination of the specimen showed filament-like structures which were positive with periodic acid-Schiff and pointed to a diagnosis of actinomyces.

**Discussion:** It is very rare to find actinomyces involving hard palate and limited number of literature is available. The bacteria are a common commensal of the oral cavity and seldom known to cause any active infection. Antibiotic of penicillin group is the main line of the treatment of actinomyces.

**Conclusion:** In clinical practice, one should always propose a differential diagnosis in any case and final diagnosis should be made only after histopathological report. The treatment of actinomyces is long-term antibiotic with regular follow-up.


**KEY WORDS:** Actinomyces, hard palate, microaerophilic bacteria

### INTRODUCTION

Actinomyces is a slowly progressive infection Gram-positive, anaerobic, or microaerophilic endogenous bacterium of genus *Actinomyces*, these are non-spore forming as well as non-acid-fast bacteria, most commonly present in oropharynx, and also they are commonly found in the saliva and dental plaque. *Actinomyces israelii* is the most frequently isolated species and mostly they all exhibit a low degree of virulence, becoming pathologic only when there is a breach in anatomic barriers

and/or compromise of host immunity. Three distinct clinical forms mostly described in the literature are cervicofacial, abdominopelvic, and thoracopulmonary, and among these forms, cervicofacial is being the most common found in clinical practice.<sup>[1]</sup> These saprophytic bacteria commonly cause infections by gaining access to tissues through mucous membrane breakdown associated with invasive dental procedures, trauma, and there are increase chances of infection in immunosuppressed condition such as uncontrolled blood sugar in diabetes mellitus and cancer patients on chemotherapy.

Mostly, there is dilemma in diagnosis of actinomyces, as on gross morphology, it mimics malignancy or granulomatous pathology along with its slow course of disease which makes the clinician to think in the line of tuberculosis because it can affect any part of body and its incidence is relatively high in India. Rarity of actinomyces in the northern part of India makes the condition out of the list of differential diagnosis.

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As a result of its rarity and low degree of suspicion, it is the pathologist who attracts the clinician and asks for reviewing the patient when the pathology is established on histopathology.

Involvement of hard palate by actinomycosis is again extremely rare and only few cases are reported in literature and unlike cervicofacial type, they present as a localized intraoral infection. It is also very difficult to culture the organism as they are very delicate organism and very sensitive to oxygen as well as they have a narrow set of temperature. Hence, the presence of Actinomycosis in sample for histopathology is considered as diagnostic.<sup>[2]</sup>

We present an interesting case who presented to our head-and-neck oncology clinic with ulcerative lesion and the palate fell spontaneously in front of clinician.

## CASE REPORT

A 60-year-old male patient presented in the head-and-neck oncology clinic with a history of non-healing lesion in oral cavity for the past 1 month. The patient was newly diagnosed case of diabetes mellitus with grossly derange fasting and postprandial blood sugar and glycated hemoglobin showed a poor control of blood sugar in the past 3 months. These all indicated that he must be a neglected case of chronic diabetes mellitus. The patient is a chronic smoker and also used to chew tobacco. There was no history of purulent discharge, heaviness of the cheeks, cough, bleeding from nose or mouth, anorexia, fever, and fatigue. Examination of the neck was normal. There was neither history of travel nor any history of trauma to oral cavity. There is no history contact with tuberculosis.

On examination, he was partially edentulous and an ulcerative lesion was present on the hard palate with signs of bone destruction and was covered by yellow-white slough. On digital palpation, the hard palate detached itself and came out of the oral cavity spontaneously [Figures 1 and 2]. Underlying mucosa of nose and nasopharynx was found to be normal. The specimen was then sent for histopathological examination. However,



**Figure 1:** Photograph of the patient with open mouth showing palatal defect; (a) inset showing magnified intraoral view of defect and (b) necrosed piece of palatal bone which fell off spontaneously

a differential diagnosis of malignancy, osteomyelitis, and tuberculosis was also kept in mind.

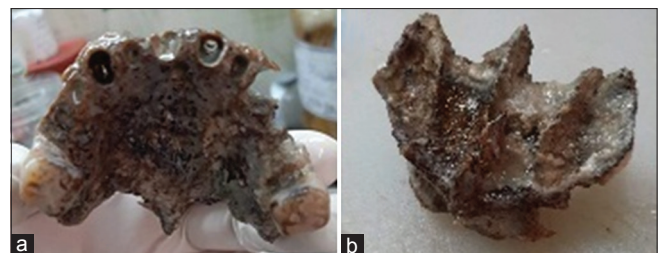
Histopathological examination of the palatal specimen showed filament-like structures which were positive to periodic acid-Schiff and this pointed to the diagnosis of actinomycosis infection [Figure 3].

In the mean time, when the histopathological report was pending, the patient's blood sugar was controlled with diet modification and oral hypoglycemic drugs. After the report, the patient was started on oral amoxicillin with clavulanic acid in a dosage of 625 mg thrice a day for 1 month. He underwent debridement and curettage of the lesion after 7 days of starting treatment. Complete regression of the disease was noted at the end of 1 month. However, the patient was still continued on the same line of treatment along with control of blood sugar for another 15 days. A dental prosthesis was also made for the palatal defect by the dental department.

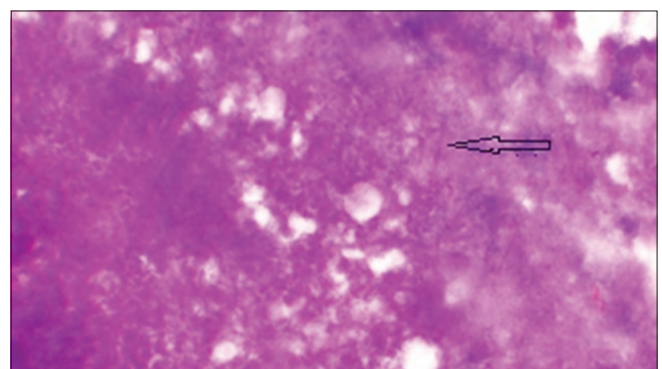
## DISCUSSION

It is very rare to find actinomycosis involving hard palate and limited number of literature is available. *Actinomyces israelii* is frequently isolated from the lesion and is never found free in nature, as it requires temperature greater than 86°F for its growth.

The bacteria are a common commensal of the oral cavity and seldom known to cause any active infection. These have been



**Figure 2:** Picture showing necrosed, infected palatal bone; (a) ventral aspect and (b) dorsal aspect



**Figure 3:** Photograph of histopathology showing periodic acid-Schiff-positive filament (marked with hollow black arrow)

isolated from various sites of oral cavity and oropharynx such as tonsillar crypts, gingival crevices, and caries teeth. Hard palate and soft tissue of the face and neck are very less common site of involvement by the disease and are a rare entity to see in the clinical practice.<sup>[2]</sup> The pre-requisites for it to become virulent include certain circumstances that compromise anatomic barriers and host susceptibility, such as, malignancy, immunosuppressive drugs, and diabetes.<sup>[3]</sup> Uncontrolled diabetes mellitus results in increased bacterial growth attributed to the high concentration of glucose in the blood favoring growth and proliferation of bacteria. Some literatures do not consider actinomycosis as an opportunistic infection and its increased incidence has not been consistently reported in immunosuppressed groups. Further, it has also been proposed that as a result of mucosal injury, *Actinomyces* is inoculated in the submucosal space and things become favorable for growth on when synergistic bacteria are able to create microaerophilic environment.<sup>[4]</sup> It has also been proposed that polymicrobial environment of the oral cavity also destroys the local vascularized granulation tissue and further adds to the development of local anaerobic environment, which is considered as one of the key factors for the flourish growth of the *Actinomyces*. According to some studies, peak incidence of the disease is in the 4–6<sup>th</sup> decade of life with a slight male predominance.<sup>[5]</sup>

Antibiotic of penicillin group is the main line of the treatment of actinomycosis. Furthermore, the organism is readily susceptible to the  $\beta$ -lactam antibiotics. The recommendation is prolong use of antibiotic that may be up to a year depending on the disease activity. Furthermore, long-term treatment with antibiotics eradicates all signs of activity of the disease as well as precludes the reactivation. Wherever possible, antibiotic therapy is supplemented with surgical debridement of infected

and necrosed tissue. In certain condition of advanced disease and patients not responding to penicillin, sulfa drugs such as sulfamethoxazole are an alternative.<sup>[6]</sup>

## CONCLUSION

Actinomycosis is a rare condition and in that involvement of the hard palate makes this case as one of the rarest entities. In clinical practice, one should always propose a differential diagnosis and final diagnosis should be after giving due consideration to histopathological report, which is the gold standard tool. The treatment of actinomycosis is very long and may go up to a year so a proper counseling of the patient is very essential.

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