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Complex odontoma with superimposed actinomycosis

KEYWORDS
Complex odontoma;
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Odontoma is the most common type of odontogenic tumors.[1–5] There are two types of odontoma: the complex and compound odontomas.[1–5] Here, we reported a case of a complex odontoma with superimposed actinomycosis at the left mandibular second molar region in a 16-year-old female patient.

This 16-year-old female patient was referred to our dental clinic for treatment of an impacted left mandibular second molar with an overlying odontoma. Oral examination showed a sinus tract at the inflamed distal gingiva of the left mandibular first molar. Panoramic radiography revealed a calcified mass with the radiodensity of tooth structure at the eruption pathway of the left mandibular second molar, which caused the impaction of the left mandibular second molar. The clinical diagnosis was a complex odontoma with bacterial infection. The patient had taken antibiotics for a week before visiting us. After discussing with the patient and obtaining the signed informed consent, the calcified mass was removed under local anesthesia and sent for histopathological examination. Moreover, the crown of the left mandibular second molar was exposed to promote its further eruption. Microscopically, the decalcified toothlike mass consisted mainly of tubular dentin that enclosed hollow circular or oval structures containing small amounts of enamel matrix and some small islands of basophilic and eosinophilic epithelial ghost cells (Fig. 1A, B, C, and D). Thus, the calcified mass was diagnosed as a complex odontoma. In addition to the complex odontoma, the most prominent feature was the presence of many actinomycotic colonies on the surface of parts of the complex odontoma and in the superficial hollow spaces of the complex odontoma (Fig. 1A, B, and E). At the high-power view, the actinomycotic colonies consisted of filamentous bacteria that aggregated to form a mass with variations in the color between the center and periphery of the colony. Furthermore, the peripheral area of an actinomycotic colony exhibited deep blue filamentous bacteria arranging in a characteristic sun-ray pattern (Fig. 1F and G). In addition, some of the actinomycotic colonies were surrounded by aggregates of acute and chronic inflammatory cells (Fig. 1H). Therefore, the final histopathological diagnosis was a complex odontoma with superimposed actinomycosis.

Odontomas can be classified into compound and complex odontomas. Complex odontoma is composed of a conglomerate mass of mainly enamel and dentin plus a few cementum and pulp tissues. Compound odontoma consists of multiple small toothlike structures.[1–5] When the odontomas are completely embedded in the deep portion of the jawbones, they often stay in their original positions without getting bacterial infection. However, when the odontomas are located in the superficial portion of the alveolar bone, they may erupt into the oral cavity. In this situation, bacterial infection of the odontoma may occur through its aperture into the oral cavity.[1–5] Actinomycosis is a kind of infection caused by filamentous Gram-positive anaerobic bacteria from the Actinomycetaceae family (genus *Actinomyces*). The actinomycotic bacteria can cause periapical infection through the infected root canal of a tooth, which is called as periapical actinomycosis.3 They may also cause infection of an erupting or an erupted odontoma.[4,5] To the

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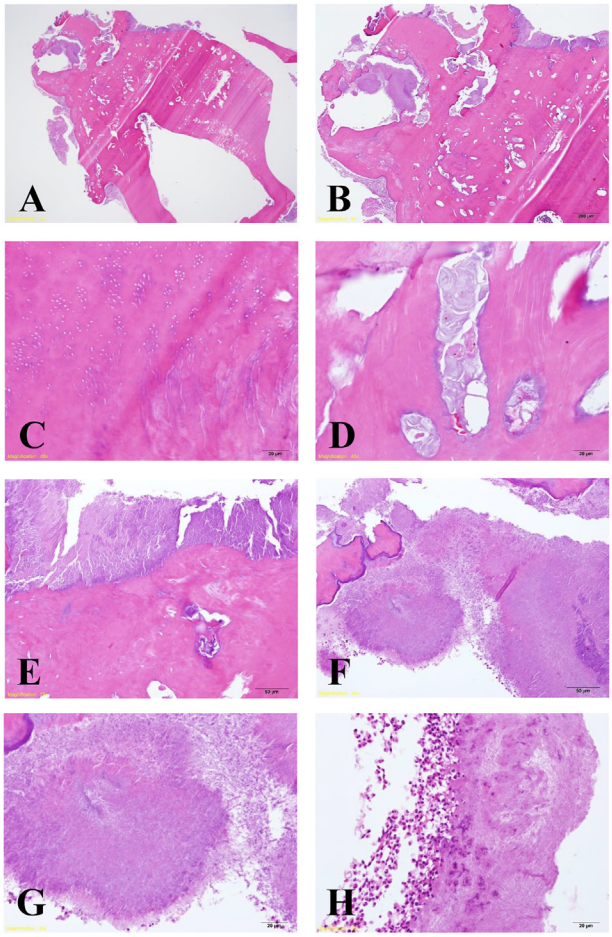

Figure 1 Histopathological microphotographs of our case of complex odontoma with superimposed actinomycosis. (A, B, C and D) Low-power (A and B) and high-power (C and D) microphotographs showing the decalcified toothlike mass consisting mainly of tubular dentin that enclosed hollow circular or oval structures containing small amounts of enamel matrix and some small islands of basophilic and eosinophilic epithelial ghost cells (D). Moreover, many actinomycotic colonies were found on the surface of parts of the complex odontoma and in the superficial hollow spaces of the complex odontoma (A and B). (E) Actinomycotic colonies were observed on the surface of the complex odontoma. (F and G) High-power microphotographs demonstrating the actinomycotic colonies composed of filamentous bacteria that aggregated to form a mass with variations in the color between the center and periphery of the colony. Furthermore, the peripheral area of an actinomycotic colony exhibited deep blue filamentous bacteria arranging in a characteristic sun-ray pattern. (H) A high-power microphotograph showing an actinomycotic colony surrounded by aggregates of acute and chronic inflammatory cells. (Hematoxylin and eosin stain; original magnification; A, 2 × ; B, 4 × ; C, D, G, and H, 40 × ; E and F, 20 ×). (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

best of our knowledge, there are only two cases of the erupting or erupted odontoma associated with actinomycosis in the literature, suggesting that odontoma with superimposed actinomycosis is a very rare condition.[4,5]

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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