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Surgical endodontic treatment for odontogenic maxillary sinusitis caused by radicular cyst of maxillary anterior teeth: A case report



KEYWORDS

Apicoectomy;
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Odontogenic maxillary sinusitis accounts for 4–13% of maxillary sinusitis.¹ In general, the maxillary sinus floor descends at the second premolar to molars and is close to the roots of the teeth. Therefore, the frequency of odontogenic maxillary sinusitis caused by periapical lesions and periodontitis from premolars to molars is high. Alternatively, recent study has reported that the frequency of maxillary sinus dilation in the maxillary anterior teeth is 2.5%.²

This 18-year-old male patient came to our hospital with a chief complaint of a fistula at the labial gingiva of tooth 22 (Fig. 1A). At the age of 10, he was hit at the left maxillary anterior region with a baseball bat and the teeth 21 and 22 received interrupted root canal treatments because of the absence of pain. Periapical radiography and computed tomography scanning revealed a periapical cystic lesion extending from the left maxillary central incisor to the first premolar, which also extended into the maxillary sinus, causing the partial loss of the labial and palatal cortical plates (Fig. 1B, C, D, and E). Electric pulp tests revealed that the teeth 21 and 22 were non-vital, whereas the teeth 23, 24, and 25 were vital. The patient was

diagnosed as having a radicular cyst of the left maxillary central and lateral incisors. The cystic lesion enucleation and apicoectomy were planned after the root canal treatment of teeth 21 and 22. To reduce the size of the lesion, an obturator was placed at the root apex area of the left maxillary incisors. After the root canal filling was performed, bone resorption tended to shrink (Fig. 1F). Subsequently, under general anesthesia, the cystic lesion was removed and it was found that the cyst involved the maxillary sinus at the periapical region near the tooth 22 (Fig. 1G). Apicoectomy of the left maxillary central and lateral incisors was performed under the microscope (Fig. 1H). After creating a root-end cavity with an ultrasonic retro tip, a root-end filling was performed with super ethoxybenzoic acid (super EBA) (Fig. 1I and J). The lesion size was more than 20 mm, and histopathological examination revealed a radicular cyst lined by non-keratinized stratified squamous epithelium (Fig. 1K and L). Three months after the operation, a marked reduction and closure of the perforation hole of the maxillary sinus was observed. The left maxillary central and lateral incisors were restored with fiber posts and covered by resin faced cast crowns. Two years after the surgery, no inflammation and fistula at the left maxillary anterior labial gingiva was observed (Fig. 1M). Periapical radiography and computed tomography scanning showed nearly complete healing of the radiolucent lesion and no involvement of the left maxillary sinus (Fig. 1N, O, P, and Q). A long-term follow-up for our patient is needed to make sure that there is no recurrence of the radicular cyst.^{3,4}

In this case, because the left anterior maxillary sinus had developed to the vicinity of the left maxillary lateral incisor, the odontogenic maxillary sinusitis was caused by the radicular cyst arising from the infected left maxillary central and lateral incisors.

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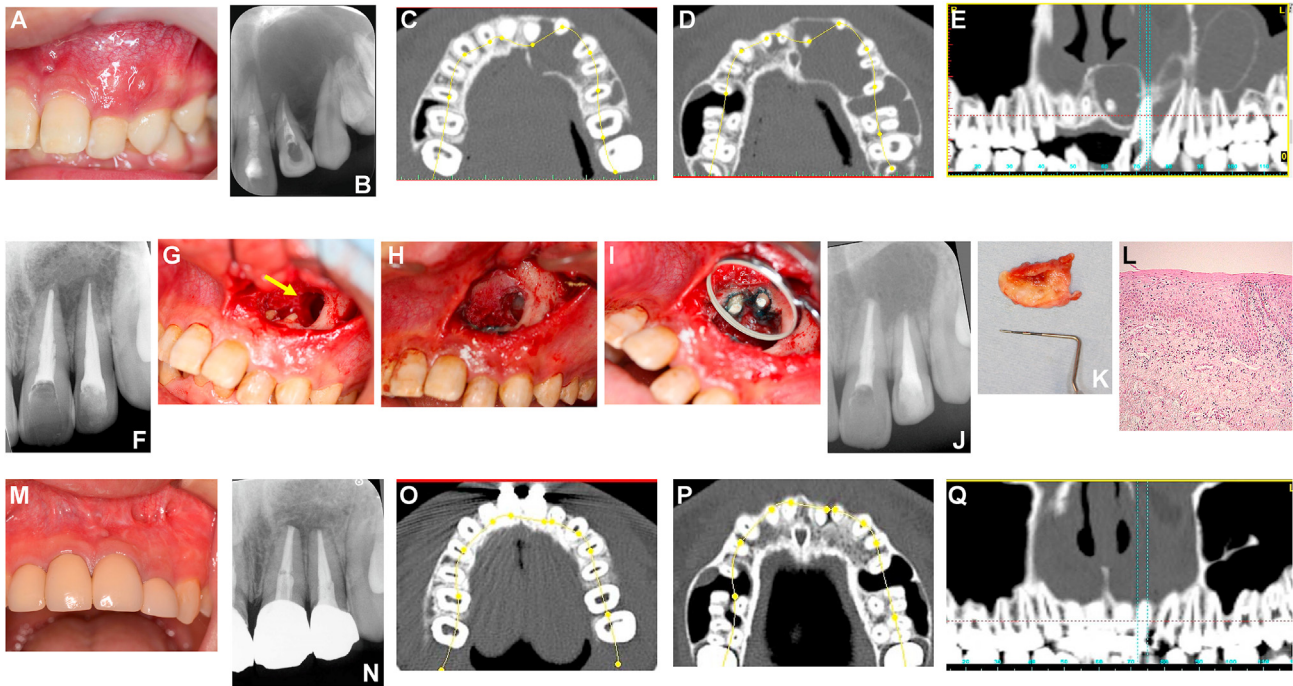


Figure 1 The clinical and radiographic photographs of our case. (A to E) Initial examination. (A) Intraoral clinical photograph showing a fistula at the labial gingiva of tooth 22. (B) Periapical radiograph demonstrating a radiolucent lesion at the periapical area of teeth 21 and 22. (C, D, and E) Computed tomography images exhibiting a large radiolucent lesion at the left maxillary anterior region extending from tooth 21 and tooth 24 with the possible involvement of the left maxillary sinus and thinning of the labial and palatal cortical plates. (F) Periapical radiograph showing root canal filling of teeth 21 and 22. (G to J) Intraoperative findings. (G) After cyst enucleation, a perforation hole to the left maxillary sinus was found (arrow). (H) After apicoectomy of teeth 21 and 22. (I) After root-end filling of teeth 21 and 22 (mirror image). (J) Periapical radiograph after root-end filling. (K) The removed tissue specimen of the cystic lesion. (L) Histopathological microphotograph exhibiting a radicular cyst lined by non-keratinized stratified squamous epithelium. (M to Q) Two years after surgery. (M) Intraoral clinical photograph showing the normal labial gingiva of the left maxillary anterior region. (N, O, P, and Q) Periapical radiography and computed tomography scanning showed nearly complete healing of the radiolucent lesion and no involvement of the left maxillary sinus.

Declaration of competing interest

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

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