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Surgical removal of an asymptomatic radicular cyst after 10 years of follow-up

KEYWORDS
Radicular cyst;
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The radicular cysts, also known as the periapical cysts or root end cysts, are odontogenic cysts that form as a result of a complex interaction of factors within the dental pulp and are usually associated with the permanent teeth. The radicular cysts commonly occur in the maxillary central incisors, followed by the mandibular first molars. They are caused by bacterial infection of the dental pulp, resulting in inflammation in the periapical area and subsequently irritating the epithelial cell rests of Malassez at that area to proliferate and in turn forming the radicular cyst. Most cases of the radicular cysts are asymptomatic and are usually diagnosed incidentally during the routine dental radiographic examinations. Even in the case of asymptomatic radicular cysts, they have the potential to cause significant damage to the associated alveolar bone if left unchecked.[1] This article reported a case of a radicular cyst at the periapical area of the mesial root of the tooth 46, which was removed after the 10-year follow-up, and emphasized the role of the general dentists in the early detection, diagnosis, follow-up, and recommendations of treatment planning for the cysts.

A 49-year-old female patient came to the hospital to visit an oral surgeon for treatment of a cystic lesion in her right posterior mandible. In fact, this cystic lesion was discovered 10 years ago when she had a panoramic radiograph taken during her initial visit at a dental clinic (Fig. 1A). Although she had no relevant symptoms (such as swelling, pain or abscess), the clinic dentist still found a radiolucent lesion at the periapical area of the mesial root of the tooth 46 from the panoramic radiograph. It looked like a radicular cyst formed after the endodontic treatment of the tooth 46 performed 21 years ago. The dentist informed the patient the existence of this incidentally discovered cystic lesion, the surgical treatment method, and the potential risks if left untreated. Since the patient did not have any uncomfortable symptoms and there was no abnormality in the facial appearance, the patient decided not to seek surgical treatment for the time being. Therefore, the dentist further advised the patient to follow up the cystic lesion every 3–6 months to track the changes of this cystic lesion and the occurrence of any untoward symptoms such as the swelling or formation of abscess or fistula.

After 10 years of follow-up, the patient did not feel any discomfort, but to avoid the risk of continuous damage to the associated alveolar bone caused by the growth of the cystic lesion, the patient finally accepted the suggestion of the oral surgeon to remove the cystic lesion in the hospital. The preoperative panoramic radiograph showed a radiolucent lesion at the periapical area of the mesial root of the tooth 46, and the size of the cystic lesion was larger than that found 10 years ago (Fig. 1A and B). Therefore, under local anesthesia, the cystic lesion was enucleated after flap reflection and bone window creation, and the apicoectomy of tooth 46 were also performed. Then, the CollaPlug (a kind of resorbable collagen wound dressing) was inserted

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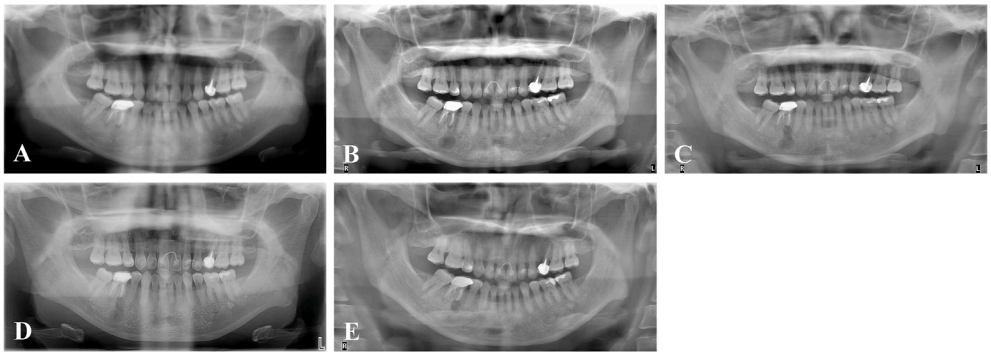

Figure 1 A series of panoramic radiographs of an adult female patient who was found to have a cystic lesion in the right posterior mandible and received the surgical treatment after 10 years of follow-up. (A) A cystic lesion at the periapical area of the mesial root of the tooth 46 was discovered 10 years ago, when she had a panoramic radiograph taken during her initial visit at a dental clinic. (B) The preoperative panoramic radiograph showed a radiolucent lesion at the periapical area of the mesial root of the tooth 46, and its size was larger than that found 10 years ago. (C) The postoperative panoramic radiograph showed a clear-cut radiolucent image at the periapical area of the mesial root of the tooth 46 after enucleation of the cyst. (D) The panoramic radiograph taken 2 months after the surgery showed the initial bone healing in the surgical wound area. (E) The panoramic radiograph taken 6 months after the surgery showed a marked reduction of the size of the cystic lesion postoperatively, indicating the continued bone regeneration of the postoperative cystic defect.

into the surgical wound. The postoperative panoramic radiograph showed a clear-cut radiolucent image at the periapical area of the mesial root of the tooth 46 after enucleation of the cyst (Fig. 1C). The pathological report of the specimen showed a cystic lesion lined by non-keratinized stratified squamous epithelium. Thus, a histopathological diagnosis of a radicular cyst was confirmed. The panoramic radiograph taken 2 months after the surgery showed the initial bone healing in the surgical wound area (Fig. 1D). The panoramic radiograph taken 6 months after the surgery showed a marked reduction of the size of the cystic lesion postoperatively, indicating the continued bone regeneration of the postoperative cystic defect (Fig. 1E).

The radicular cysts are the most common type of cysts in the mandible and originate from the remnants of Malassez cells located around the tooth root. They are usually asymptomatic and therefore often overlooked unless secondary infection occurs.[2,3] Due to bone resorption caused by the cyst formation and expansion, the radicular cysts appear radiolucent on the radiographs and usually have well-defined cortical borders. The surgical treatment of radicular cysts is almost always enucleation combined with apicoectomy to preserve the tooth associated with the cystic lesion. The postoperative bone lesions are usually treated well because they are very prone to bone regeneration if the cystic lesions are removed completely.[1]

In Taiwan, since panoramic radiography is a basic benefit item for the dental patients under the national health insurance (NHI) system, the dentists routinely use the panoramic radiography as a supportive tool for the detection and diagnosis of oral diseases.[4] In addition to caries and periodontal diseases, the general dentists can easily use the panoramic radiography to detect the jawbone diseases (such as radicular cysts) for their patients and make appropriate suggestions or treatment planning. Due to the high accessibility of the medical treatment and the results of the digital construction of dental radiographs under the NHI system, the general dentists can collect a series of panoramic radiographs from their patients over a long period of time for the discovery, diagnosis, and tracking of jawbone diseases and the evaluation of their treatment outcomes.

Declaration of competing interest

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

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