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Case Report

Radicular cyst associated with anomalous tooth, suspicious of dens invaginatus: Report of two cases

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ABSTRACT

Dental anomalies can occur in primary and permanent dentition, and include fusion, germination, concrescence, dens evaginatus, and dens invaginatus. It is possible for a dental anomaly to induce pulp infection which is generally treated in non-vital teeth by means of a root canal procedure. Here, we present two similar cases that received surgical treatment for radicular cyst arising in an anomalous canine tooth in the maxilla without root canal treatment or tooth extraction. Histopathological results of excised specimens confirmed the diagnosis of radicular cyst. Follow-up examinations showed no recurrence in either case at 6 months postoperatively. Early diagnosis and treatment of dental anomaly is important for preventing pulp infection. Furthermore, computed tomography is useful for diagnosis and evaluations of the size and location of the cystic lesion, as well as determining the optimal surgical modality.

1. Introduction

Dental anomalies in various forms can occur in both primary and permanent dentition. Anomalies of tooth shape include microdontia, macrodontia, dens invaginatus (DI), dens evaginatus (DE), fusion (double tooth), germination, concrescence, and other malformations. Of those, DI is an anomaly caused by invagination in the surface of a tooth crown, which is lined by enamel and dentin. While dens evaginatus occurs in focal area of the crown, projecting outward and giving rise to a horn-like protuberance on the surface which appears as an extra cusp. Traditional terminology classifies fusion as a union of 2 separately developing tooth buds leading to 1 fewer teeth than normal, with 2 root canals and 1 or 2 roots possibly evident in radiographic images. Germination is incomplete division of 1 tooth germ, resulting in a large tooth crown which has a single root with a single canal. While concrescence represents an uncommon developmental anomaly in which adjacent teeth are united in the cementum, but not in the dentin. Several case reports have been presented describing treatment of concrescence with extraction, while treatment options for DI include preventive sealing of invagination filling, root canal treatment, and endodontic periapical surgery. Generally, root canal treatment or cystectomy is necessary for the radicular cyst. Here, we present 2 clinical cases of radicular cyst associated with tooth anomaly, which leads us to suspect DI.

2. Case reports

2.1. Case 1

A 14-year-old female referred to our hospital for evaluation of gingival swelling with pain in the left maxillary canine region. Her medical history was unremarkable without any drug allergies noteworthy. Clinical examination findings revealed that #22, #23, and #24 had no filling, without any cracks nor fractures. The probing pocket depth of these teeth ranged from 2 to 3 mm. Percussion pain was noted for #23. Pulp vitality testing showed that all were vital, though mildly tender on percussion. Panoramic radiography

☆ Asian AOMS: Asian Association of Oral and Maxillofacial Surgeons; ASOMP: Asian Society of Oral and Maxillofacial Pathology; JSOP: Japanese Society of Oral Pathology; JSOMS: Japanese Society of Oral and Maxillofacial Surgeons; JSOM: Japanese Society of Oral Medicine; JAMI: Japanese Academy of Maxillofacial Implants.

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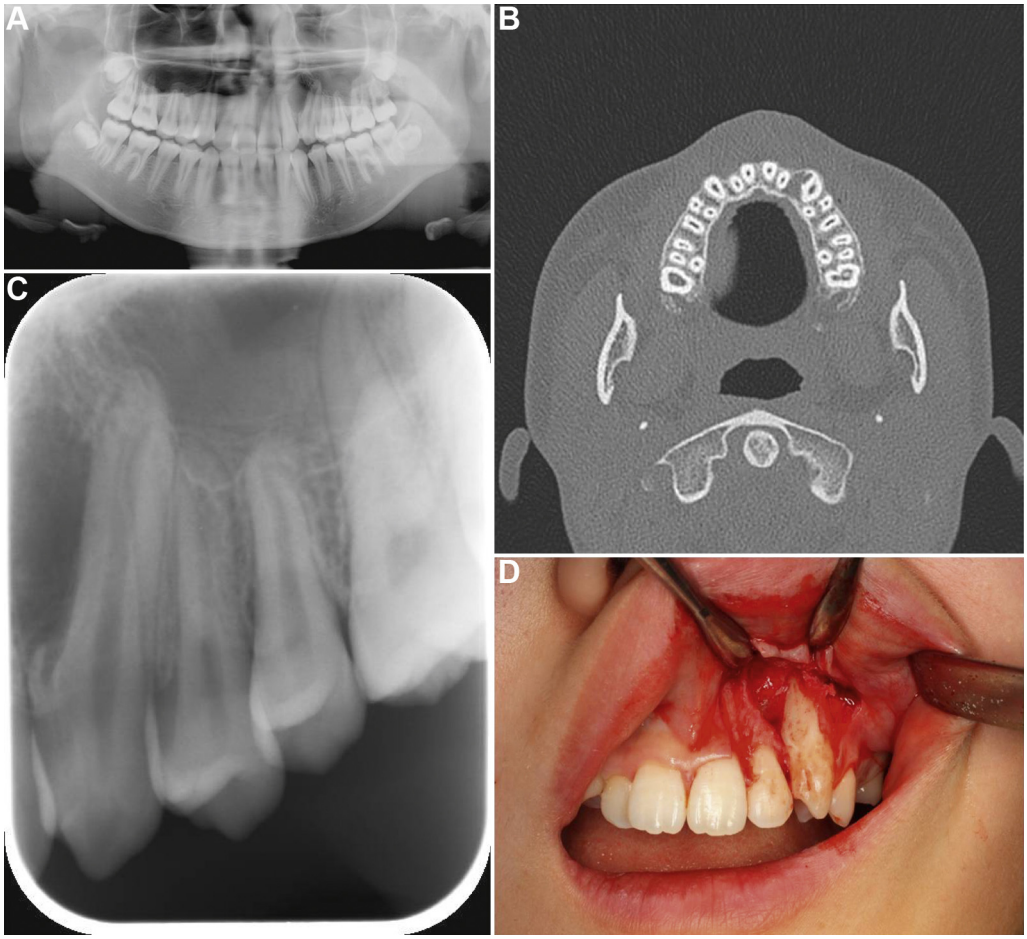

Fig. 1. Case 1. (A) Panoramic radiographic image showing a well-circumscribed radiolucent cystic lesion between the left lateral incisor and canine. (B) Dental X-ray image. (C) Axial sectional CT image. (D) Intraoperative photo.

revealed a cystic radiolucent lesion between the roots of #22 and #23 (Fig. 1A), while dental X-ray findings showed that #23 had a horn-like protuberance on the coronal part with small root canal (Fig. 1B). Furthermore computed tomography (CT) revealed that the cystic lesion was located next to the horn-like protuberance, though the root apex of #23 was not involved (Fig. 1C). The diagnosis was radicular cyst associated with an anomaly canine tooth. Under local anesthesia, the cystic lesion was surgically enucleated and the horn-like protuberance was removed by use of a turbine bur without endodontic treatment (Fig. 1 D). Cosmetic contouring of crown was performed by resin, but the root surface was not resin coating or sealing. The gross appearance of the resected specimen showed a well-demarcated cystic lesion (Fig. 2A) and histopathological findings confirmed the diagnosis of radicular cyst (Fig. 2B, C). Follow-up examinations performed regularly for 6 months postoperatively. Dental X-ray imaging showed no recurrence (Fig. 3), which revealed #22 and #23 remained vital.

2.2. Case 2

A 14-year-old female referred to Minamisanriku Hospital Dental Clinic for swelling and pain in the right maxilla. She had any remarkable medical history. Pulp testing showed that #12 and #13 were vital, though severely tender on percussion. Dental X-ray findings indicated a horn-like protuberance on the coronal part of #13, which also had a small root canal (Fig. 4A). CT revealed a cystic lesion neighboring the horn-like protuberance, though the root apex of #13 was not involved (Fig. 4B, C). We diagnosed periostitis caused by radicular cyst associated with an anomalous canine tooth. An antibiotic was given via oral administration for a few days. After anti-inflammation treatment, the cyst was enucleated under local anesthesia. Cosmetic contouring of crown was performed by resin, but the root surface was not resin coating or sealing. Histopathological findings of the excised specimen confirmed the diagnosis of radicular cyst (Fig. 4D, E). Follow-up examinations performed regularly for 6 months postoperatively including dental X-ray imaging showed no recurrence (Fig. 5), showed the vitality of #12 and #13, while slight dentin hypersensitivity occured in #13. Application of Desensitizer (Gluma®) was effective for dentin hypersensitivity.

3. Discussion

It is not uncommon to encounter the patient complaining of swelling and gum pain in routine dental practice. Dental X-ray examination is generally performed for those patients, which occasionally reveals a pear-shaped radiolucent lesion located between the roots of the upper lateral incisor and canine. Normally, in case the tooth with cystic lesion involvement is non-vital, the clinical diagnosis may be the radicular cyst. However, in case the involved tooth is vital, diagnosis becomes much difficult. Differential diagnostic alternatives in addition to radicular cyst may be; paradental cyst, keratocystic odontogenic tumor, central giant cell granuloma, odontogenic calcified cyst, and odontogenic myxoma. Recent improvements on CT imaging provide more accurate diagnostic information as compared to conventional two-dimensional