A Case of Dentigerous Cyst in a thirteen-year-old Girl

Science of Health Improvement Department of Growth and Development of Functions
Division of Developmental Stomatognathic Function Science
(Chief: Prof. Mitsutaka KIMURA)

Yukimi KOJIMA, Reishi SEO, Kenshi MAKI, Mitsutaka KIMURA

Key words: dentigerous cyst (含歯性囊胞), marsupializaion (開窓療法), occlusal guidance (咬合誘導)

Introduction

A dentigerous cyst is frequently encountered in daily clinical practice by pediatric dentists. We treated a thirteen-year-old-girl with a dentigerous cyst caused by upper left side canine and congenital partial anodontia of upper right side lateral incisor. Following marsupializaion of the cyst, we guided the impacted teeth in preparation for a prosthesis for partial anodontia of upper right side lateral incisor, and then observed the patient for a long period. Here in, we present our report of this interesting case and our treatment process.

Case Report

A thirteen-year-old-girl was referred to Kyushu Dental College Hospital Department of Pediatric Dentistry, on June 1, 1998 for examination of swelling in the region of upper left side canine. She had consulted a dentist in 1997, who had previously extracted teeth to retain space for eruption of upper first premolars in 1995. There were no abnormal findings in her medical history.

An oral examination revealed that the stage of occlusal development was III C, while upper right side lateral incisor and upper right side canine were not found. However, microodontia of upper left side lateral incisor was seen and space was lacking for its eruption (Fig. 1A). An area of swelling was found on the labial side of the maxilla in the region of upper left side canine (Fig. 1B). A facial examination revealed symmetry, with no abnormal findings. A radiographic examination showed that the crown of impacted upper left side canine was observed near the apex of upper left side lateral incisor. Radiolucency which seemed to be cystoid tissue could be seen around the crown of upper left side canine (Fig. 2A). Further, the root formation of upper left side canine had not been completed and partial anodontia of upper right side lateral incisor could not be found (Fig. 2B).

We marsupialized the cyst on July 1, 1999. When we ablated the gingival mucosa from upper left side central incisor to upper left first premolar, we found that upper left side canine was completely surrounded by bone (Fig. 3A, 3B). After carefully performing a tylectomy, we removed bone from around the crown, exposing it (Fig. 3C). In addition, we finished a lingual button to adhere to the lingual surface of the crown to guide eruption, and left the wound open (Fig. 3D).

The extracted cyst was surrounded by a film, and was 32mm×25mm×15mm in size (Fig. 4A). We
fixed the extracted specimen in 10% neutral formalin, and examined it, after performing H.E. staining. Our pathological examination revealed that the inner portion of the cyst was covered with funicular and irregular stratified squamous epithelia, which was composed of circular cells, most of which were lymphocytes, that had infiltrated under the epithelium. Further, there was a layer of connective tissue, including granulation tissue (Fig. 4B, 4C).

Based on the clinical, radiographic, and pathological findings, we diagnosed the cyst as a dentigerous cyst caused by upper left side canine.

Three months after the operation, we confirmed that the wound, had healed and began guidance by traction. We placed open coils on upper left side lateral incisor and upper left first premolar, and thereby gained space for the eruption by upper left side canine (Fig. 5A). No recurrence of the cyst was found on panoramic radiographs and medial tipping of by upper left side canine was ameliorated (Fig. 5B).

Six months after the operation, upper left side canine was guided to the correct position, which was accomplished by moving the gaps between the anterior teeth into the space left by the missing upper right
Fig. 3 Photograph taken during operation on July 1, 1999.
A: Swelling is shown on the labial side of the maxilla in the region of upper left side canine.
B: Upper left side canine is seen completely surrounded by bone.
C: We removed bone from around the crown, and exposed the crown of upper left side canine.
D: A lingual button was fashioned to adhere to the lingual surface of the crown.

Fig. 4
A: Findings of extract of the extracted cyst.
B: Pathological examination (×3.3).
C: Pathological examination (×10).
Fig. 5 Photograph taken three months after the operation.

Fig. 6 Photograph taken six months after the operation.
side lateral tooth (Fig.6). No recurrence of the cyst and nearly completed occlusion were found on a later panoramic radiograph (Fig.7A, 7B). One year eight months after the operation, the gaps between the anterior teeth had nearly moved into the space left by the missing upper right side lateral tooth. No recurrence of the cyst and nearly complete occlusion were found, therefore, we provided a retainer and continued to check the oral condition of the patient regularly (Fig.8A, 8B). Two years two months after the operation, occlusion was completed after use of the retainer for six months and no recurrence of the cyst was found. We then placed a resin veneer bridge for missing upper right side lateral incisor, using upper right side canine as an abutment tooth (Fig.9), and no recurrence of the cyst was found on panoramic radiographs at that time (Fig.10). We decided it would be best to check the occlusion of upper right side canine on a regular basis and adjust it if necessary. All treatments were finished about four years after the first visit.

At the time of writing, the patient is nineteen years old, and attends school in another prefecture. We will continue to check her oral condition when she returns to her parent’s home.

Discussion

A dentigerous cyst is derived from the enamel portion of a developing tooth and may be formed at dif-
Fig. 9 Photograph taken two years two months after the operation.

Fig. 10 Photograph taken two years eight months after the operation.
A: Panoramic tomography.    B: Dental (region of upper left side canine).
ferent stages of the tooth development \(^1\). This kind of cyst is composed of epithelium-lined sacs that form around the crown of an unerupted tooth \(^2\). They occur most frequently in children aged ten to eleven years old \(^3\), and are commonly seen in association with the third molars and maxillary canines \(^2,4\).

The exact cause of their development is not clear, however, Kimura reported cases caused by apical periodontitis of primary teeth \(^5,6\).

Many cases have been reported, however, the present report is a rare case associated with partial anodontia of upper right side lateral incisor.

The basic treatment for dentigerous cyst in adult patients is extraction. However, Russel \(^7\) recommended for infant patients in 1936, after which, dentists in Japan have used the procedure to treat impacted permanent teeth \(^8\)–\(^10\). Careful attention must be given to minimize influence on the development of the dental arch and mandible, as well as masticatory function, therefore, we chose marsupializaion according to the procedure reported by Arita for the present case \(^11\).

Using that method, we removed most of the cyst wall, except for the cervical region of the impacted teeth. In our regular postoperative checks thereafter, we could see no relapse and good occlusion were seen.

**Conclusion**

We treated a thirteen-year-old girl with a dentigerous cyst and partial anodontia upper right side lateral incisor.

1) Based on clinical, radiographs, and pathological findings, we diagnosed the cyst as a dentigerous cyst caused by upper left side canine.

2) Following marsupialization, we guided the impacted teeth and in preparation for a postthesis for partial anodontia of upper right side lateral incisor. Five years after the operation, the prognosis remained good.

**Reference**