Introduction

Asymmetric craniomandibular morphology during growth causes kinematic disability. Subsequent growth can also increase the asymmetric morphology and kinematics, making late treatment difficult. Open-bite, defined as a lack of tooth contacts in maximal intercuspal position (MCP), is often observed clinically. In many cases, the open-bite malocclusion is in the anterior teeth because anterior open-bite is associated with abnormal oral habits, tongue-thrust, respiratory disturbances and posterior discrepancy. Takahashi et al. mentioned that an abnormal tongue position at rest, and during daily function, can cause certain types of malocclusion, including anterior open-bite. On the other hand, posterior open-bite can be caused by impaction or infraocclusion of upper molars, lower molars or both.

The incidence of submerged or impacted primary teeth is higher than that of permanent teeth. Submerged primary teeth potentially cause many problems during the growing period (e.g., delayed exfoliation, increased difficulty of extraction, progression of submergence, delayed eruption of successor teeth, damage to adjacent teeth, malocclusion, and craniofacial growth). Most submerged primary teeth have ankylosis of the root. In this case report, we present the consequences of ankylosis on the clinical treatment of a unilateral posterior open-bite.

Case summary

A 7-year and 9-month-old girl had the chief complaint of unilateral (right) posterior open-bite. On initial examination, her right upper and lower teeth (primary canine, first and second primary molars and first permanent molar) lacked tooth contacts in MCP (Figure 1). Her upper right second premolar was shifted into a mesio-superior position (Figure 3-A). Her second primary molar was impacted, with ankylosis of the buccal roots observed radiographically, (Figure 2) by percussion sound and by the lack of normal mobility. The palatal root of her second primary teeth were close to the crown of her second premolar (frontal view), and they extruded partly into her maxillary sinus (sagittal view). Her mother did not remember whether her upper right second primary molar had been injured. Her family had no history of ankyloitic teeth or lateral open-bite.

The girl’s upper right first molar was mesially shifted and tipped. She could not move her right condyle as far as her left condyle. She usually had her tongue thrust against the right posterior teeth, but her tongue size was normal (Figure 4-C-1). Her right upper and lower teeth were infraoccluded compared with her left teeth.

No space discrepancy was found in her lower dentition, but her right upper dentition had a discrepancy of about 3.0 mm. She had several abnormal skeletal patterns compared with the mean values of Japanese girls: an SNA of 76.2 degrees (Normal: 80.2 ± 3.2 degrees), an ANB angle of 1.5 degrees (Normal: 3.8 ± 1.5 degrees), a deep overbite and a Class II tendency.

Tongue thrust against the right posterior teeth was observed at the first examination (Figure 1). The right upper second premolar relative to the upper left was observed at the first examination (Figure 1). The treatment plan must consider the degree of submergence and the age of the patient. Extraction too early can cause space loss, requiring future orthodontic treatment. But many clinicians believe that unilateral open-bite in the posterior teeth should be treated early to prevent increasing asymmetrical craniofacial growth. On the other hand, final alignment of the permanent teeth depends upon whether the permanent successor is present or absent. There is an optimal period to treat the submerged teeth even if the patient has some severe problems. We decided that enough self-erupting force of the second premolar remained because this patient was at the age of the change from the primary molar to the secondary premolar. This was an ideal time to perform actively accelerated eruption of the second premolar by extracting the second primary molar with fenestration. This result demonstrates the importance of treating primary molar with root ankylosis and improving oral habits in the optimal period of growing children.

Discussion

The aetiology of submerged primary molars is not known and the optimal treatment has not still been established. In this case, an asymmetric position at the upper right second premolar relative to the upper left was observed at the first examination (Figure 1). The treatment plan must consider the degree of submergence and the age of the patient. Extraction too early can cause space loss, requiring future orthodontic treatment. But many clinicians believe that unilateral open-bite in the posterior teeth should be treated early to prevent increasing asymmetrical craniofacial growth. On the other hand, final alignment of the permanent teeth depends upon whether the permanent successor is present or absent. There is an optimal period to treat the submerged teeth even if the patient has some severe problems. We decided that enough self-erupting force of the second premolar remained because this patient was at the age of the change from the primary molar to the secondary premolar. This was an ideal time to perform actively accelerated eruption of the second premolar by extracting the second primary molar with fenestration. This result demonstrates the importance of treating primary molar with root ankylosis and improving oral habits in the optimal period of growing children.

Reference