Management of Ectopic Eruption of Maxillary Incisors: Case Report

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Introduction

Eruption disturbances can be related to improper timing or improper positioning (2). Disturbances in proper positioning are associated with ectopic eruption and transpositions (2). Ectopic eruption usually occurs in maxillary incisors and can be associated with various causes including supernumerary teeth, retained primary teeth, trauma, tooth size arch length discrepancies, and congenital conditions (4). Maxillary incisors are necessary for phonetics, esthetics, and craniofacial development (2).

The maxillary incisors and canines are called the social six due to their highly aesthetic location (2). Due to the incisors being among the first teeth to erupt in primary and permanent dentition, eruption disturbances can be recognized early on by patients and caregivers and can be the cause of serious concerns. It is imperative for clinicians to recognize and diagnose such disturbances to provide timely comprehensive and interceptive treatment.

Interceptive orthodontic treatment may eliminate or decrease the developing malocclusion and can allow for less complex, time-consuming, and costly orthodontic treatment going forward (4). The use of rapid palatal expanders (RPE) and 2x4 appliances are among some of the many ways to provide interceptive orthodontic therapy and is the treatment of choice for this present case study.

Case Report

A 9-year-old healthy female presented to the dental clinic at Staten Island University Hospital with her mother for a recall examination on 4/27/2021. Upon clinical evaluation, teeth 7 and 8 were present, however, teeth 9 and 10 were unerupted, and could be palpated in the labial vestibule region (Figures 2a & 2b). At that time, orthodontic and oral surgery consults were recommended and scheduled.

The patient presented in the early mixed dentition stage, with bilateral class III malocclusion, 5 mm overjet, and 50% overbite. Additionally, she had a bilateral posterior crossbite with a functional shift and an anterior skeletal crossbite (Figures 1a & 1b). The patient also presented with a retrognathic maxilla and an obtuse nasolabial angle (Figures 3a & 3b). The orthodontist recommended interceptive orthodontic therapy, including rapid palatal expansion first with the use of a 2x4 appliance afterwards.

Figure 1a. Patient's right side. Depicts posterior and anterior crossbite.

Figure 1b. Patient's left side. Illustrating posterior and anterior crossbite.

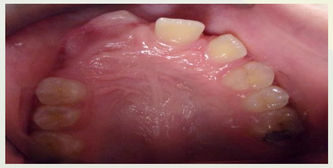

Figure 2a. Patient's maxillary arch. Depicts ectopically erupting teeth 9 and 10.

Figure 2b. Patient's labial vestibule. Showing anterior region after turning RPE. Patient no longer in anterior or posterior crossbite.

Figures 3a (left) & 3b (right). Illustrating patient's right side (3a) and frontal view (3b).

Management

The patient was seen by the orthodontist for consultation on 6/11/2021. At that time, photo records, panoramic, and cephalometric radiographs were obtained. It was determined that the patient would receive interceptive orthodontic treatment, consisting first of the use of an RPE to correct the posterior and anterior crossbites and then placement of a 2x4 appliance. The patient would later receive full banded comprehensive orthodontic treatment once the ectopic incisors were in a more ideal location in the arch.

The treatment options for ectopically erupting teeth are removal of an etiological agent to allow for spontaneous eruption, or orthodontic treatment by placing a removable or fixed appliance to bring the teeth into their correct position. Therefore, an oral surgery consultation was obtained on 10/6/2021 and a CBCT scan was recommended to determine if there was an etiological agent causing the ectopic eruption. However, the results showed that patient did not have an etiological agent present and orthodontic treatment must be initiated.

On 11/12/2021, the patient's RPE was cemented and the patient's mother was instructed to turn the appliance twice a day until the follow-up appointment on 11/19/2021. At the follow-up visit on 11/19/2021, the RPE was turned twice more and the patient's mother was instructed to turn the appliance twice for the following 2 days and then no longer turn the appliance. The patient missed her 11/26/2021 appointment and instead followed up on 12/17/2021, at which time, the patient's maxillary arch was wide enough and the key was taken away so that no additional turns could be made (Figure 2b). At a follow up orthodontic visit on 1/28/2022, brackets were placed on the maxillary right 1, 2, and 4 and maxillary left 2 and 4 and a sentalloy 0.18 wire was placed.

The final course of treatment for this patient has not yet been determined. Currently, the patient is still wearing her RPE, but is finished turning the device. At this time, tooth 10 has erupted through the gingiva but is still in an unfavorable position. At the patient's follow up orthodontic visit on 3/11/2022, it was recommended by the orthodontist to schedule the patient for an oral surgery consultation to incise the gingiva surrounding tooth 9 to allow for spontaneous eruption. The other option, since tooth 10 was able to erupt spontaneously, is to watch and wait for spontaneous eruption of tooth 9. If the tooth does not erupt on its own after incision, we will place a gold chain on tooth 9 and bring the tooth into the arch.

Discussion & Conclusion

There are multiple limitations to this case study. Some of these limitations include the amount of time between appointments, as well as patient/parent compliance in coming to appointments. The patient had a 14-month gap period between her previous hygiene visit and the recall examination where the ectopic eruption was recognized. Therefore, this issue could have been recognized and treated earlier had patient/parent compliance been better. The patient also missed some appointments throughout her ongoing orthodontic treatment and dislodged her RPE 3 times, which postponed and/or increased treatment time. Additionally, our orthodontic attending at SIUH dental clinic is present on Friday mornings and our oral surgery attendings are present on Wednesday afternoons, therefore, consultations for these specialties must be done at different times which can sometimes delay treatment planning.

In conclusion, normal eruption of maxillary incisors is an essential part of facial esthetics. A deviation from the norm is a condition that must be recognized by clinicians right away in order to provide referrals to proper specialists and therefore, provide more favorable outcomes. Detection and treatment of a case of ectopic eruption of maxillary incisors by our dental team at SIUH from initial presentation, diagnosis, treatment planning, and providing interceptive orthodontic therapy will restore the facial esthetics in a 10-year-old patient.

References

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