Case Reports

MANAGEMENT OF UNERUPTED CENTRAL AND LATERAL INCISORS COMPLICATED BY A MESIODENS: REPORT OF A CASE

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أحيل إلى العيادة طفل في الثامنة من عمره بسبب تبادل في موضعي الثنية والرباعية. أظهرت صور الأشعة ما بدا وكأنه تبادل في موضع السنين رقم ١٢ و١١، بالإضافة لوجود سن زائدة. ولدى مراجعة الكتابات الطبية وإجراء المزيد من الاستقصاءات اتضح أن لدى المريض سن زائدة وبزوغ منحرف في الثنية. تم استئصال السن الزائدة وتقويم موضع القواطع.

تناقش هذه المقالة الناحية التقويمية في معالجة هذه الحالة.

وعلى الرغم من أن السن الزائدة المتوسطة لدى هذا المريض بدت من الناحية التشريحية على أنها رباعية، إلا أن البحث لا يدعم الاعتقاد بتبدل مواضع الثنية والرباعية في الجانب الأيسر من الفك العلوي مع وجود سن زائدة منطمرة "1,2,3,4,5,15" . وعلى النقيض من ذلك، فلم يكن هناك سوى تقرير واحد يصف تبدل مواضع الثنايا والرباعيات، وأفاد الناشرون كذلك أنه التقرير الأول والوحيد الذي يبحث موضع تبدل مواضع القواطع المركزية والجانبية.

تم استخدام جهاز التقويم الجانبي التقليدي مقاس ٠,٢٢ بوصة، ثم تم تطويق الأرحاء وربط الأسنان الأمامية. قمنا بربط سلك قوسي من النيكل والتيتانيوم مقاس ٠,٠١٤ تم تثبيته في موقعه الصحيح. تم تليين الأطراف البعيدة للسلك قبل ربطها بصورة نهائية وطيها بالطريقة الاعتيادية وذلك لمنع السلك من الانزياح. وبعد ذلك قمنا بقلع السن الزائدة تحت التخدير الموضعي. كانت الثنية رقم ١١ أقرب إلى الشفة من الرباعية ١٢.

وبعد شهرين تقريبا من قلع السن الزائدة، بزغ السن رقم ١١ وكان بعيدا بحيث يمكن ربطه. تابعنا حالة الطفل بعد ذلك بمعدل مرة كل ٤ ـ ٦ أسابيع لتعديل أجهزة التقويم حسب المتبع. وبعد ستة أشهر، أعيد وضع السن رقم ١١ بشكل أقرب إلى الطبيعي. ثم قمنا بنزع جهاز التقويم (استغرقت المعالجة التقويمية عشرة أشهر). وبعد نزع جهاز التقويم، كان مظهر التصوير الشعاعي وتصوير داخل الفم متوافقا مع ما يمكن أن نجده لدى طفل عادي في مثل سنه "15" (الشكلان ٢، ٣).

وبناء على الكتابات المنشورة الخاصة بطب الأسنان وتاريخ الطفل فإن التشخيص الأولي وهو تبدل مواضع الثنايا والرباعيات كان تشخيصا خاطئا. فقد بدت السن الزائدة عند مراجعة الطفل لأول مرة مشابهة من الناحية التشريحية للرباعية. وقد تمت مناقشة المعالجة التقويمية لهذه المشكلة.

An eight-year-old male was referred to a clinic with a diagnosis of transposition of a central and lateral incisor. Radiographs revealed what appeared to be transposition of teeth 1.2 and 1,1 complicated by a supernumerary tooth. Further investigation and literature review suggested that the child had a mesiodens and an ectopically erupting central incisor. The mesiodens was extracted and the incisors brought into alignment. The orthodontic management of the case is discussed.

Introduction

An eight-year-old American Caucasian male was referred to a university dental clinic with a diagnosis of transposition of the maxillary right central and lateral incisors and a supernumerary tooth present in the area [Fig. 11.

The child's medical history was non-contributory for pertinent findings. The child's father reported that the child's paternal grandfather had "an extra top front tooth"; the remaining dental history was unremarkable except for a history of routine dental

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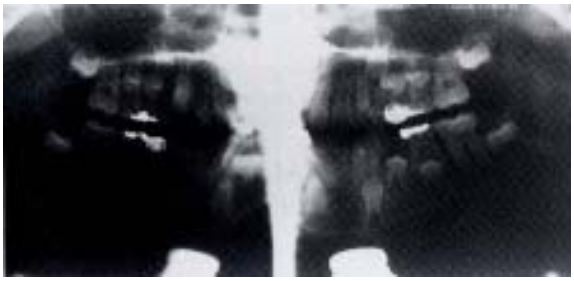

Figure 1. Pre-treatment panoramic radiograph.

care. A Class I skeletal pattern with no vertical dysplasia was confirmed by routine cephalometric analysis; there were no transverse problems noted during the oral examination. Tooth 2.1 was present in the oral cavity and 2.2 was partially erupted. Teeth 1.2 and 1.1 were unerupted and radiographically superimposed upon one another; the tooth occupying the space of tooth 1.1 was diagnosed as a mesiodens instead of the referred diagnosis of a transposed maxillary lateral incisor 1.2 [Fig. 11.

Transposition of teeth occurs infrequently and most often involves the maxillary canine.[1-5] Most reports of transposition have not been quantitative, rather case reports. Ruprecht and colleagues reported two cases of transposition out of 1,581 sets of dental patients records evaluated in a Middle Eastern dental school patient population.[6] The cause of transposition is unknown.[1] Among the theories of the etiology of this condition are large stage development disturbances,[7] migration of teeth within the jaws[s] and heredity.[9'10]

The incidence of supernumerary teeth has been reported in various populations including Hawaiian (0.3%), Western Canadian (%3.1), Danish (%1.7) and Saudi Arabian (2.3%).[11-14] Profitt[15] states "Supernumerary or extra teeth also result from disturbances during the initiation and proliferation stages of dental development. The most common supernumerary tooth appears in the maxillary midline and is called a mesiodens. Supernumerary lateral incisors also occur." Heredity appears to play a role in the development of some supernumerary teeth.[16,17] Moyers[18] summarizes the etiology of supernumerary teeth as "The principle causative factors are said to be (1) heredity, (2) epithelial remnants and (3) gross aberrations in development, such as the supernumeraries seen with the cleft palate."

Although the mesiodens, in this patient, anatomically appeared to be a lateral incisor, the literature does not support the conclusion that the left side maxillary central and the lateral incisors were transposed with an unerupted supernumerary tooth present.[1-5,15] On the contrary, only one report was found describing central-lateral transposition and the authors claimed it was the first and only report of central-lateral transposition in the literature.[19]

Management of the Case

Since the radiographic appearance of the submerged teeth suggested fusion, the mesiodens was not initially extracted until the status of the two unerupted teeth could be determined.

The treatment plan called for orthodontically banding and bonding the following maxillary teeth: first permanent molars, primary canines, the mesiodens and the left central incisor. Standard Edgewise appliances (0.022" slot) were to be used. The molars were to be banded and the anterior teeth bonded. A light nickel-titanium wire (0.014" or 0.016" round) was to be placed. The plan called for surgically uncovering the central incisor (1.1) and the lateral incisor (1.2) and evaluating if they were fused. If not fused the plan called ' for extracting the mesiodens and orthodontically bonding to the submerged teeth and subsequently attaching them to the archwire via stainless steel ligatures. If the teeth were fused, the plan called for extracting both, keeping the mesiodens. The mesiodens would then be orthodontically repositioned into the lateral incisor position and at the appropriate time a resin bonded bridge would be constructed to replace 1.1. The anatomy of the mesiodens was favorable as an adequate substitution for 1.2.

The orthodontic appliances were placed according to the plan. An initial 0.014" nickel-titanium arch wire* was ligated into place. The distal ends of the wire were annealed prior to final ligation and were turned down in the conventional manner, in order to prevent the wire from dislodging. The buccal mucosa was protected from irritation from the long span of unbracketed wire

*Ni-Ti, Ormco Corp., Glendora, CA, USA

(space from the tube of the upper molar to the primary canine, right and left) by threading measured lengths of 1.7 mm diameter plastic tubing* over the wire. The oral surgery was scheduled.

Fortunately, the surgery was delayed for two months. When the child presented to the clinic for follow-up, the right central incisor was partially erupted. Upon clinical examination, it was apparent (local anesthetic was administered and an instrument was placed between the teeth; they moved independently) that the two teeth (1.1 and 1.2) were not fused. The mesiodens was extracted that day under local anesthesia. The central incisor (1.1) was buccal to the lateral incisor (1.2).

Approximately two months after the extraction of the mesiodens tooth 1.1 was erupted far enough to be bonded, more incisal than conventional [Fig. 2]. Tooth 1,2, although unerupted at that time, was essentially in its proper mesial-distal-axial position in Ihe arch [Fig. 1]; tooth 1.1 was repositioned mesially by using a .008 X .030 inch open coil spring compressed over a light 0.016" round steel archwire. The archwire was "stepped" in order for the incisal edges of the central incisors to be at the same vertical position. The coil was compressed (approximately 0.25") between the right maxillary primary canine (5.3) and the right maxillary incisor (1.1). Plastic tubes were threaded over the buccal segments of the archwire for mucosal protection and distal ends of the archwire were secured as previously described. The boy was seen for routine orthodontic adjustment visits every 4 to 6 weeks. New lengths of coil were placed as needed to maintain a light force.

After six months of those mechanics, tooth 1.1 was repositioned (tipped) into a more normal position and # 1.2 had partially erupted. Teeth 1.2 and 2.2 were then bonded and brought into position over a period of approximately two months. The appliances were then removed (orthodontic treatment time: 10 months). Tooth 5.3 did not prematurely exfoliate nor did it move distally as a result of the reciprocal forces placed upon it. At the time of appliance removal the child's radiographic and intraoral appearance was consistent with what one would normally find in *a* child of his age[15] IFigs. 2,3]. (Please note that the

*5 French Feeding Tube, Professional Medical Products, Ocala, FL, USA

Figure 2. Post-treatment panoramic radiograph taken the day the appliances were removed.

Figure 3. Post-treatment intraoral photograph taken after the appliances were removed

Panorex was exposed prior to appliance removal but on the same day the appliances were removed.) Although the Panorex showed that the roots of 1.1 and 1.2 were in close approximation, the teeth were debanded/bonded as there was a concern that continued orthodontic treatment might be injurious to the root of 1.2, due to the position of 1.3. The child was lost to follow-up after appliance removal.

Based on the dental literature and the child's history the initial diagnosis of central-lateral incisor transposition was incorrect. The child presented with a mesiodens that looked anatomically like a lateral incisor. The orthodontic management of the problem was discussed.

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