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Clinical case

Management of the retained permanent upper central incisor: about two cases

Prise en charge de l'incisive centrale supérieure permanente retenue : à propos de deux cas

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Résumé

L'éruption dentaire est un processus symétrique et programmé dans le temps. Pour plusieurs raisons, cette éruption cutanée peut être précoce, prématurée ou retardée. L'absence ou le retard d'éruption de l'incisive centrale supérieure est souvent un motif de consultation en raison des répercussions esthétiques, fonctionnelles et psychologiques pouvant altérer le bien-être et la qualité de vie de l'enfant. Plusieurs causes ont été rapportées dans la littérature, dont la présence d'odontomes. Nous décrivons ici la prise en charge de deux patients présentant une incisive centrale supérieure retenue par des odontomes et dont le traitement était chirurgical, c'est-à-dire chirurgical-orthodontique. Ce travail souligne l'importance d'un diagnostic précoce en présence de toute dent manquante ou non évoluée, mais aussi dans les cas complexes, l'intervention d'un orthodontiste pour le placement harmonieux de la dent sur l'arcade dentaire.

Mots-clés : incisive permanente conservée, odontome, orthodontie, traitement.

Abstract

Tooth eruption is a symmetrical and time-programmed process. For several reasons, this rash can be early, premature, or delayed. The absence or delay of eruption of the upper central incisor is often a reason for consultation because of the aesthetic, functional and psychological repercussions that can alter the child's well-being and quality of life. Several causes have been reported in the literature, including the presence of odontomes. We describe here the management of two patients with an upper central incisor retained by odontomas and whose treatment was surgical, i.e. surgical-orthodontic. This work emphasizes the importance of early diagnosis in the presence of any missing or non-evolved tooth, but also in complex cases, the involvement of an orthodontist for the harmonious placement of the tooth on the dental arch.

Keywords: retained permanent incisor, odontoma, orthodontics, treatment.

Introduction

A tooth eruption is the movement of a tooth from its site of development in the jaws to its functional position on the arch. It is a symmetrical, time-programmed process that is an integral part of craniofacial growth.

The chronology of tooth eruption is well established with variability related to age, sex, ethnicity, race, climate, geographical location, dentition, etc. [1]

Tooth eruption can be disrupted, resulting in either delayed eruption, early eruption or even tooth retention, which occurs when the eruption path is blocked by an obstruction [2].

The prevalence of unevolved maxillary incisors at age 5-12 years is between 0.13% and 2.6% [3, 4]. Several genetic or environmental factors have been reported in the literature [5]. However, the presence of supernumerary teeth or odontomes in the maxillary region has been cited as the most common cause of retention of the permanent maxillary incisors [6].

Failure to erupt the maxillary permanent incisors usually manifests during the mixed dentition period between the ages of 7 and 9 years. Indeed, the absence of anterior teeth can have a negative impact on facial aesthetics, phonetics, self-esteem, relationships with the outside world and therefore well-being and quality of life. It is a reason for consultation, especially when the adjacent tooth is completely on the occlusion plane. Therefore, it is important to detect and manage the problem as early as possible.

This work reports the management of two cases of permanent incisors retained in the Pediatric Dentistry Department of the Institute of Dentistry and Stomatology of Dakar.

Clinical cases

Case n°1

- *Clinical and radiographic examination*

The patient was a 10-year-old girl who had come to see her for no eruption of the right maxillary upper central incisor.

The medical history revealed that she was asthmatic and well monitored. She had no family history of supernumerary or congenitally missing teeth, but the dental history revealed a history of trauma at the age of two.

The exo-oral examination does not show any peculiarities.

Endobuccal, the patient had mixed dentition with the absence of the right maxillary central incisor, a functional eruption of her left counterpart, and marginal rotation of the right maxillary lateral incisor. Bony arching was observed at the level of the vestibular gingiva in the region of the missing tooth. Intraoral examination also showed that there was no reduction in space between the lateral incisor and the left maxillary central incisor.

Radiographic examination performed with an occlusal biter revealed the presence of the right maxillary permanent central incisor in the immature position of the root. There were also two small teeth appearing as adjacent radiopaque structures and overlapping the coronary portion of the unevolved incisor. They were surrounded by a thin radiolucent area and measured approximately 1 and 1.5 cm (Figure 1).

The information collected during the interview, the clinical examination and the radiographic assessment made it possible to suggest the presence of a compound odontome.

- *Therapeutic management*

The therapeutic approach adopted was avulsion of the compound odontoma and clinical follow-up at regular time intervals.

Thus, after local anesthesia (lidocaine 2%), a crestale incision without discharge at the site of the eruption area was made. A detachment exposed the mechanical obstruction that was extracted (Figures 2 and 3).

- *Post-operative follow-up*

A clinical follow-up at 3 months showed the onset of an eruption of the 11 (gain of more than 3mm). Follow-ups at 6 months and 12 months showed an almost complete eruption of the retained incisor (Figure 4)

At this stage, orthodontic repositioning was considered.

Case n°2

- *Clinical and radiographic examination*

The patient was a 10-year-old girl who was seen for delayed eruption of the right maxillary central incisor. The patient had no known general medical conditions.

The exooral examination was unremarkable.

Endooral examination revealed the absence of 11 with a lack of space at its site (Figure 5).

Radiographic assessment based on an occlusal bite and a panoramic dental x-ray showed the presence of an odontoma on the eruption path of the 11.

He had the appearance of a normal rotating tooth with a fully formed root (Figures 6 and 7).

- *Therapeutic management*

Faced with the lack of space at the eruption site of the 11, the opinion of an orthodontist was necessary and a multi-attachment treatment suggested in order to increase the space needed for the correct positioning of the 11. The first surgical step was the placement of brackets and four months later, the surgical phase was carried out to remove the obstacle.

After local anesthesia, an incision on the alveolar ridge was made, followed by discharge at the lateral incisor and the contralateral central incisor. The detachment of the flap revealed the odontome that was extracted (Figures 8, 9 and 10).

- *Post-operative follow-up*

A follow-up at 5 months showed a normal onset of rash of the 11 without any orthodontic traction (Figure 11).

At 8 months postoperatively, almost 2/3 of the crown was visible (Figure 12).

The 10-month check-up showed a complete and normal eruption of the tooth (Figure 13), which allowed brackets to be deposited.

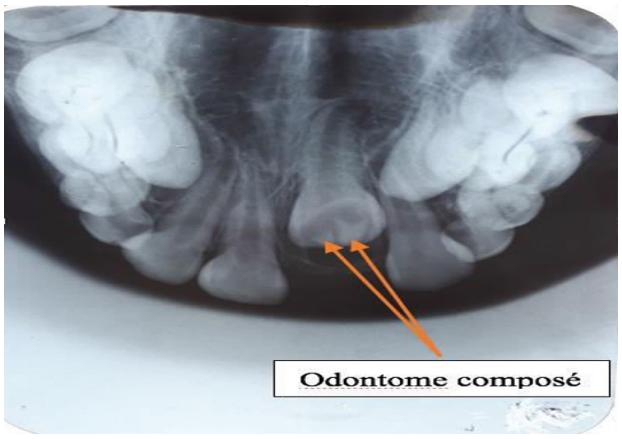

Figure 1: Evidence of a compound odontome and retained incisor

Figure 2: Incision tracing on the edentulous ridge

Figure 3: Surgical specimen (odontoma)

at 3 months at 6 months at 1 year

Figure 4: Clinical follow-up at 3 months, 6 months and 1 year

Figure 5: Clinical view

Figure 8: Multi-Attachment Placement and Odontoma Extraction

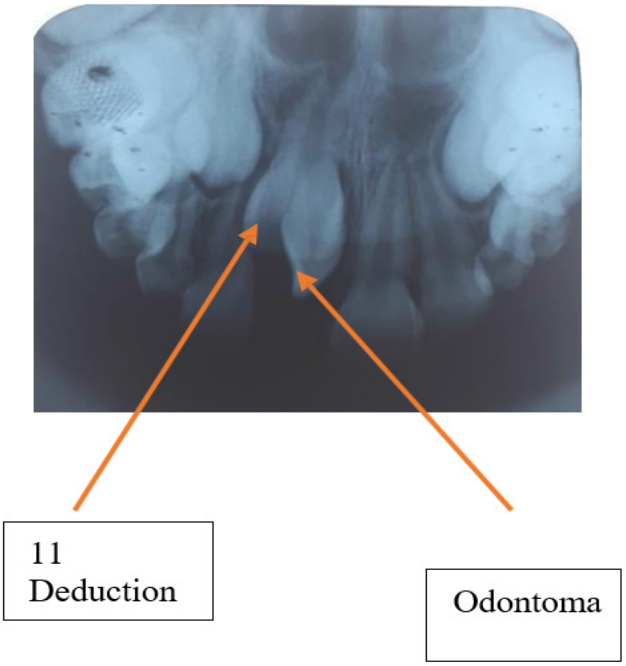

Figure 6: X-ray view (bitten)

Figure 9: Operating Specimen

Figure 7: X-ray view (dental panoramic)

Figure 10: Highlighting 11

Figure 11: 5-month follow-up

Figure 13: 10-month follow-up

Figure 12: Follow-up at 8 months

Figure 13: 10-month follow-up

Discussion

Delayed tooth eruption is a chronological anomaly. The majority of eruption delays have no significant clinical significance. However, the presence of an obstacle on the eruption path may be the cause of this eruption delay. In 54 to 78% of cases, the supernumerary teeth cover the incisor, and their removal will result in a spontaneous eruption of the permanent incisor within an average of 16 months, [7] provided there is enough space.

Their early diagnosis, confirmed by X-rays, allows for rapid management and increases the chances of therapeutic success while minimizing complications. The choice of treatment should take into account the degree of inclusion (low to high), the axis of orientation in relation to the normal eruption axis, the stage of root building or apical maturity, the consent and motivation of the parents, and the degree of patient cooperation. Generally, there are two treatment approaches. The first, of a simple surgical type, consists of the extraction of the supernumerary tooth or odontome and monitoring of the spontaneous eruption of the retained tooth. We chose this option in the first clinical case because the eruption corridor was close to the cortex, the potential for spontaneous eruption was very high because the tooth is immature, and there was sufficient space for proper positioning of the affected tooth. This procedure has been adopted in many studies which have shown that extraction of the odontome at the beginning of the mixed dentition is preferable because it allows normal eruptive forces to promote spontaneous eruption of the upper

permanent incisors, prevent loss of anterior space and deviation of the midline, andResult in better alignment of the teeth, thus minimizing the need for orthodontic treatment [8]. If extraction of the supernumerary tooth is considered when the apex of the unevolved central incisor is nearly mature, disadvantages such as loss of eruptive forces of adjacent teeth, loss of space, crowding, and possible deviation of the midline may be observed [9]. In addition, quite complex orthodontic treatment is often necessary.

This therapeutic approach is common with varying success rates ranging from 49 to 91% [10, 11]. However, according to Becker A et al. [2], the mere removal of the supernumerary tooth does not seem to guarantee a successful eruption of the maxillary incisor concerned, especially when the time required for eruption is subject to large variations.

Conversely, surgical exposure combined with orthodontic traction has been shown to be more predictable in terms of eruption success [2, 12]. It is usually a multidisciplinary approach that coordinates odontoma extraction and orthodontic traction with or without prior space creation within the anterior maxillary arch or a combination of both [13]. However, between 30% and 54% of impacted incisors require additional surgery [14] and orthodontic alignment [7]. However, this could long-term affect the gingival and periodontal structures of the erupting incisor [12]. This option is quite similar to our second clinical case, with the difference that there was no orthodontic traction but rather the placement, by an orthodontist, of a multi-bracket appliance to find sufficient space for a normal eruption of the retained tooth. The positioning of the maxillary central incisor was effective at 15 months and at 24 months, the control showed a satisfactory result.

Seehra J et al, 2023 [5], in a systematic review, showed that the surgical-orthodontic option had a better chance of success than the surgical option alone.

In all cases, early diagnosis and appropriate management are recommended for the retained upper incisors.

Conclusion

We have illustrated two types of therapeutic approaches when faced with an upper central incisor held by a mechanical obstacle. The diagnosis is made as a result of a concern on the part of the parents about the absence of the tooth, especially when the contralateral tooth has erupted. Generally speaking, the treatment is based on the extraction of the mechanical obstruction to allow the evolution of the retained tooth, which can be done either spontaneously or in conjunction with orthodontic treatment. This highlights the value of a systematic visit and multidisciplinary collaboration in order to develop an adequate treatment chronology allowing the functional and aesthetic placement of the retained tooth.

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Conflict of interest : None

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