C L I N I C A L C A S E

Management of three impacted teeth detected early

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ABSTRACT

Impacted teeth often represent an important therapeutic hazard in a treatment, both in terms of the uncertainty of the result, the quality of the periodontium, and the duration of the treatment.

A bioprogressive approach can resolve the problem and preserve the teeth in a healthy environment, avoiding subsequent implants

INTRODUCTION

François, aged 9 years, consulted in July 2005, with a panoramic showing a cyst that resulted in the central right maxillary incisor becoming impacted.

A resection was carried out in September 2005 (Fig. 1). François was addressed by his dentist, who mentioned the possibility of extracting 13, 12, and 11, and to employ three implants later.

CLINICAL EXAMINATION AND DIAGNOSIS

The patient was seen again in December 2006, when he was aged 10 years and 5 months (Fig. 2). A fresh panoramic image showed the very horizontal position of 12 blocking the development of 13 and 11 (Fig. 3).

The child's record was updated in March 2007. To complete the documentation, in addition to the frontal, profile, and panoramic X-rays, a head computed tomography (CT) scan was performed for visualizing the spatial position of these three teeth (Fig. 4).

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*Article received: 03/01/2017.
Accepted for publication: 10/02/2017.*

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Figure 1
Pretreatment panoramic view (Sept 2005).

Figure 2
Initial frontal, profile and Smile views of the face (December).

The clinical examination does not show any functional problems, the child has very good dental hygiene, tonsils, and adenoids are present.

The ventilation is nasal, and Francois only refers to his "smile with holes."

From a dental point of view, he is in class I on the left and in class II on the

right with an overhang of 2 mm and an incisive covering of 60%. A mild obstruction of 2 mm is noted in the mandible, but the stability of 75 and 85 allows enough leeway (Fig. 5).

The centered relation and the maximum intercuspation coincide. The upper maxilla is in V with rotation of the

Figure 3
Initial panoramic view (December).

Figure 4
Initial Frontal and profile teloradiography (December).

Figure 5
Initial intraoral view (March 2007).

molars, and the mandible is locked. His upper median is obviously deflected to the right by 2 mm, his central incisor is 4 mm visible at rest and 9 mm visible when he smiles, without gingival exposure.

The movements of the TMJ show a maximum aperture of 45 mm, a protrusion of 6 mm, and lateralization of 7 mm to the right and left, without any pain or noises made by the joint.

The cooperation of the child and the parents is very good, and François has benefited from re-education therapy in the third grade for a hiss.

The profile cephalometric analysis shows meso-facial growth with a small

anterior mandibular rotation, but without skeletal shift. The upper central incisors are in linguoversion, as well as the lower incisors and the analysis of the Harvold triangle shows a small mandibular insufficiency and a slight decrease in the lower section of the face. The profile is harmonious (Fig. 6)

The facial analysis highlights a superior maxillary endognathia with an intermaxillary distance of 50 mm instead of 58 mm at his age. 21 is beyond the median line, without mandibular deviation (Fig. 7).

The scanner visualizes the horizontality of 12, blocking 13 and 11, the latter being very palatal and rotating (Fig. 8).

TREATMENT PLAN

The father is provided an explanation that there is a very big risk of losing 12 during the treatment. The proposed treatment plan is as follows:

1. Upper molar anchorage with a Nance arch with loops on 16 and 26

to correct the molar rotation and ensure expansion.

2. Disimpaction of 13 and 11, without touching 12.
3. Leveling the upper arch by reversing 13, correction of the upper median.

Figure 6
Rickets frontal cephalometric analysis (March 2007).

Figure 7
Initial frontal cephalometric analysis (March 2007).

Figure 8
Initial Scan.

Figure 9
Treatment objectives.

4. Reassessment of retention of 12.
5. Advanced leveling of lower incisors
6. Finish with class II intermaxillary traction on the right.
7. Elastication.

8. Superior and inferior supports

Visualization of the objectives (Fig. 9).

TREATMENT PHASES

The treatment started in August 2007:

- September 2007: Placement of Nance arch and request for extraction of 53 and 63.
- February 2008: Attachment of the upper arch and request for disimpaction of 13 and 11 (Fig. 10). The traction on 13 and 11 is performed over a 6-month period with treatment interruptions.
- January 2009: Attachment of bracket to 11, coil spring on 12 (Figs. 11–16).
- May 2009: Attaching a lower incisor bracket on 12 for decreasing torque and setting up a very light. 012 arch (Fig. 17). Then support this tooth using radiculo-vestibular torque in front of this tooth on the base arch with intrusion (Fig. 18).
- October 2009: Base arch and lateral upper sections (Fig. 19).
- February 2010: Attachment of the mandibular arch, advancement of lower incisors in accordance with our objectives.
- March 2010: Intermaxillary class II traction on the right between 46 and 13 (Figs. 20 and 21).
- December 2010: impression taking and centered relationship for the preparation of the elastomer set up in January 2011, control X-rays for assessment (Figs. 22 and 23). The brackets of the upper incisors and canines are maintained for 3 months to ensure proper maintenance of the device. It is worn for 9 months then glued supports are placed on the upper and lower canine incisors (Figs. 24–28).

Figure 10
Intraoral View step 1.

Figure 11
Intraoral View Step 2 (January 2009).

Figure 12
Intraoral view step 3.

Figure 13
Intraoral view step 4.

Figure 14
Intraoral view step 5.

Figure 15
Intraoral view step 6.

Figure 16
Intraoral view step 7.

Figure 17
Intraoral View Step 8 (May 2009).

Figure 18
Base arch with radiculo-vestibular torque on 12.

Figure 19
Intraoral view step 9.

Figure 20
Class II Intermaxillary Traction (October 2009).

Figure 21
Intraoral view Step 10 (March 2010).

Figure 22
Control panoramic images.

Figure 23
Profile radiological assessment in order to carry out the elastomer treatment.

Figure 24
Intraoral View Stage 11 (December 2010).

Figure 25
Elastomer in place (January 2011).

Figure 26
Remove brackets (March 2011).

Figure 27
End of treatment.

Figure 28
Frontal, Profile and Smile images of the face at the end of treatment.

DISCUSSION

Follow-up X-rays show that there is no root resorption, even on 12, which has made a dramatic recovery. However, there remains a slight radicular linguoversion of this tooth. The Harvold triangle at the end of treatment shows a good balance of structures and the teleradiography of the face shows a maxilla with a width of 57.5 mm (Figs. 29–31).

The objectives set out at the beginning were achieved: Remittance on the

arch of 13, 12 and 11, slight in of the upper incisors, correction of the median and slight vestibuloversion of the lower incisors. The quality of the occlusion was ensured by the elastomer (Figs. 32 and 33).

Contention monitoring 4 years after the treatment confirms a good level of stability (Figs. 34 and 35).

At the end of the treatment, the father asked me with a big smile on his face: "Where do we put the implants?"

Figure 29
Final Ricketts Cephalometric Profile Analysis.

Figure 30
Final Grummons Cephalometric Frontal Analysis.

Figure 31
Final panoramic view.

Figure 32
Evaluation of results.

Figure 33
2 years after contention.

Figure 34
3 years after contention.

Figure 35
Face 3 years after contention.

CONCLUSION

The use of light and progressive forces on the impacted teeth allowed them to be placed onto the arch without any apparent root lesions. The segmentation of the mechanics was key to having a control adapted to the various maxillary sectors—in particular, an indi-

vidualized base arch with multiple impacted teeth. The three teeth and their environment are perfectly healthy, and the prognosis seems very favorable.

Conflict of Interest: The author states that there is no conflict of interest.