CONSERVATIVE ORTHODONTIC TREATMENT IN A CASE WITH SEVERE DENTAL CROWDING

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ABSTRACT

Non extraction orthodontic treatment should be the best choice for both practitioners and patients when possible. That’s why in the last decades people are concerned more and more in developing new techniques for solving orthodontic problems without dental extractions. In our paper we present an adolescent case with severe dental crowding with two stage orthodontic treatment; in the first stage we used pendex appliance for distal movement of upper molars and correction of transverse discrepancy, followed by the second stage with fixed orthodontic appliance. The patient presented ectopic upper canines and class II malocclusion. At the end of the treatment our patient presented correct dental alignment, functional and stable occlusion, good profile, nice smile and improvement of the facial esthetics.

Key words: dental crowding; pendex appliance; upper molar distalization

INTRODUCTION

Dental crowding remains the main concern for the orthodontic patients maybe because dental irregularities are the most “seen” feature during speech and smile. We have different possibilities for solving crowding depending on the patient’s age and degree of malocclusion. Among conservative methods we use dental stripping for mild cases, transverse expansion for narrow dental arches, forward movement of the frontal teeth if initial teeth position allows this and distal movement of the buccal teeth or combinations of this(1,2). The extraction treatment remains an option when all conservative possibilities are not suitable(3). We present a case of a 11 years patient, with ectopic canines and severe maxillary crowding, class II malocclusion treated by conservative approach.

Case presentation

BC, an 11 years boy, presented with class II division 2 malocclusion, deep bite, narrow upper arch, retroclined upper and lower incisors ectopic maxillary canines, congenitally missing left second lower premolar, high nasolabial angle, thin lips (fig.1, A to F).
The lateral cephalometric findings (fig.2): SNA = 83°, SNB = 80°, ANB = 3°, Wits = 1 mm, retrusive profile Z= 81°

The initial orthopantomography shows missing second lower premolar and lower left third molar bud (fig.3).

**Figure 1. Patient BC, 11 years initial intraoral and extraoral view**

**Figure 2. Patient BC, initial orthopantomography**

**Figure 3. Pretreatment cephalometric analysis**

**Treatment options**

Considering the age of the patient, the high nasolabial angle and the retroclination of the incisors we considered that first premolar extraction would worsen the patient’s profile and occlusal relationships. So, we decided to make a two-phase treatment plan:

1. In the first stage we used a pendex appliance consisted of a Nance button with expansion screw on the midline bonded on upper premolars and TMA 0.8 mm wires on the palatal tubes of the first molar bands$^{(4,5)}$. In order to control molar tipping we added “U”-shape loops on the TMA wires. The screw was used in order to correct transverse discrepancy and the patient was instructed to activate it once a week. The TMA arches were activated every 2 months in order to overlap the palatal tube on a distance equal with its length (fig.4, A to C).
2. After 8 months we got 6 mm space distal to the second upper premolar right and left and the pendex appliance was removed. The first molars were kept in the new position with a palatal Gosgharian bar and a .022x.028 straight wire appliance was bonded in order to continue dental alignment (fig.5).

Figure 4. Patient after pendex appliance

Figure 5. Treatment in progress

RESULTS AND DISCUSSIONS

The overall treatment time was 32 months, 8 months for the initial phase when we achieved distal movement of the molars and 24 months for fixed orthodontic treatment completion. At the end of the treatment we established correct dental alignment, a class I dental occlusion with class I skeletal relationships, improved facial esthetics and good profile (fig.5, A to I ). The cephalometric exam shows normal values for skeletal and dental measurements (fig.6) and the final orthopantomography reveals good dental relations (fig.7). Considering that the left lower third molar is congenitally missing, we decided to keep space on the dental arch for left second premolar for a future dental implant placement. For this purpose we created a fixed space maintainer soldered on first molar band and with a stop in the distal groove of the left first premolar bonded with composite resin for caries prevention (fig.8).
CONCLUSIONS

1. The conservative orthodontic treatment can be an available treatment option during growth period, even in more severe crowding in the upper arch.

2. The pendex appliance can increase arch length in transverse and sagittal dimension by distal movement of the upper first molars, especially before second molar eruption.

3. In borderline cases with severe crowding tooth extraction should be delayed until all the correct methods of achieving space failed.

REFERENCES


