Case Report: Non-Extraction Management for Class III Malocclusion.

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Abstract

Orthodontic treatment plays an important role in teeth alignment. There is always debate whether treatment involve extraction or non-extraction. The present case report highlights the various advantages of non-extraction than the extraction treatment. A 25-years-old male came to the clinic with chief complaint of teeth crowding and inappropriate bite. The patient had no previous orthodontic treatment. The patient had straight to slight concave profile with a long face, anterior lateral teeth cross bite, slight midline deviation, carious second premolar and crowding in upper arch as well as lower arch crowding. The relationship of the molars was an Angle Class III malocclusion. The present case report discusses in details the case presentation of the patient and the preformed treatment.

Introduction

Profit stated that there are three treatment options growth modification for correction of skeletal Class III malocclusion, which are differential growth of the maxilla relative to the mandible, camouflage of the skeletal discrepancy through tooth movements and orthognathic surgical correction.

The treatment option depends on the patient’s age, the facial profile, the skeletal pattern, mandibular incisors position, and the severity of malocclusion before treatment. (1)

Camouflage treatment of mild Class III malocclusion may include intermaxillary elastics with fixed appliances have been used for this purpose. However, Class III elastic wear causes undesirable drawbacks, such as maxillary incisor proclination, maxillary molar and mandibular incisor elongation and lower incisors retroclination in addition to patient compliance. (2)

Anggitia et al (3) stated that orthodontic camouflage can be considered as an effective treatment for correcting mild cases of skeletal Class III malocclusion. Fifteen years old man with skeletal Class III malocclusion was treated by intermaxillary Class III elastics. His occlusion, smile esthetics, and soft tissue profile pattern were significantly enhanced. Jonna and Harry (4), investigated that, among three groups, the improved mandibular position was significantly greater in the non-extraction group and was accompanied by an enhancement in facial convexity. Finally, they showed that, a non-extraction/headgear approach has advantages over a standard mid-arch extraction.

Case presentation

A 25-years old male came to the clinic with chief complaint of teeth crowding and inappropriate bite. The patient said that he is medical and dental history free and had no previous orthodontic treatment. He had no trauma history and there were no signs and symptoms of temporomandibular disorders. The patient’s extra-oral examination showed a straight to slight concave profile with a long face while intraoral examination showed anterior lateral teeth cross bite, slight midline deviation, carious second premolar and crowding in upper arch as well as lower arch crowding as shown in Fig. (1). The relationship of the molars was an Angle Class III malocclusion.
Treatment planning: Based on lateral cephalometry readings and clinical examination, there were two treatment options either extraction of carious second premolar with its contralateral one and extraction of lower first premolar, or trying to not to extract and deferring second carious premolar restoration till observing lower arch levelling and alignment.

Treatment Aims: The treatment aimed to relief crowding, correcting anterior crossbite, achieve alignment and ending the case with class I molar and canine relationship without extractions.

Treatment progress: The second option was done trying to avoid extraction of upper second and lower first premolars after obtaining consent from the patient on treatment plan.

Treatment was initiated by ROTH brackets by bonding upper arch skipping the carious premolar, while lower arch was initiated with “drifodontics technique” (5) which is bonding the lower arch except the lower anteriors, to avoid flaring of lower incisors resulting in full anterior crossbite with using IPR every visit to relief crowding allowing self-correction by natural drift.

Levelling and alignment was achieved till 17x25 SS wire in the maxillary arch and 16x22 SS in mandibular arch. Class III elastics were used to retract lower arch. After successfully retracting lower arch by class III elastics and obtaining normal overjet, lower incisors were bonded and aligned with lower teeth.

Obtained Results: The patient has ideal overjet and overbite with coincident midline. Levelled upper and lower arches. Class I canine and molar relationship was achieved. The carious premolar was endodontically treated and restored with Zircon crown.

Extra-oroally the patient has nice smile with straight profile and coincident upper and lower lips.

The patient was highly satisfied by his new smile which is the main objective in any orthodontic and dental treatment as shown Fig. (2)

Ceph readings were corrected to nearly normal values as shown in table (1)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Before</th>
<th>After</th>
<th>Normal value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNA</td>
<td>82.8</td>
<td>79.3</td>
<td>81±3</td>
</tr>
<tr>
<td>SNB</td>
<td>80.6</td>
<td>77.4</td>
<td>78±3</td>
</tr>
<tr>
<td>ANB</td>
<td>1.7</td>
<td>2</td>
<td>3±2</td>
</tr>
<tr>
<td>OB</td>
<td>1.6</td>
<td>2.1</td>
<td>2±3</td>
</tr>
<tr>
<td>OJ</td>
<td>3.5</td>
<td>2.3</td>
<td>2±3</td>
</tr>
<tr>
<td>U1 SN</td>
<td>106.7</td>
<td>103.5</td>
<td>103±6</td>
</tr>
<tr>
<td>L1 MP</td>
<td>88</td>
<td>84.2</td>
<td>92±5</td>
</tr>
<tr>
<td>MX/MP</td>
<td>26.1</td>
<td>28.8</td>
<td>17-28</td>
</tr>
<tr>
<td>Jarabak Ratio</td>
<td>61.8 %</td>
<td>58.1 %</td>
<td>54-58</td>
</tr>
<tr>
<td>Nasolabial Angle</td>
<td>120</td>
<td>104.8</td>
<td>85-120</td>
</tr>
<tr>
<td>Interincisal Angle</td>
<td>127</td>
<td>133</td>
<td>135±10</td>
</tr>
</tbody>
</table>

Discussion

In the present case, non-extraction treatment was used even if it takes longer time to avoid extraction four premolars treatment.

Some clinicians refused to try less invasive techniques believing that the extraction treatment gives more stable results and better skeletal profile; although others believe that any less invasive treatment that could comply the
requested results and give patient satisfaction is much better.

Moon et al (6) demonstrated that the extraction treatment might be associated with few soft-tissue benefits in cases with convex profile; however, non-extraction protocols for orthodontic treatment are safe and effective alternative to extraction protocols. Khanum (7) stated that the extraction vs non-extraction decision in orthodontic treatment is controversial. The option to treat with extraction or non-extraction should be different for each case based on soft tissue conditions.

Farhadian et al (8) stated that the final occlusion of patients treated with extraction seemed to be more acceptable than non-extracted cases. Also, Cortin (9) showed that the whole patient satisfaction was similar in extraction and non-extraction groups. Additionally, Hechler (10) stated that the patient satisfaction is a mixing issue and long term studies are available to make a definite claim.

Conclusion

Extraction decision is not easy either for the orthodontist or the patient.

Try to treat the existing condition with least invasive treatment even if it takes longer time.

Non extraction treatment provides the patient with better dental appearance and more satisfaction and achieves the results of any orthodontic treatment.

Conflict of Interest: The authors declare that there is no conflict of interest regarding the publication of this article.

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8. N. Farhadian, AF. Miresmaeili, MK. Soltani. Comparison of Extraction and Non-extraction Orthodontic Treatment using the Objective Grading System. Journal of Dentistry, Tehran University of Medical Sciences, Tehran, Iran (2005; Vol: 2, No.3)