Non Extraction philosophy: Distalization using Jone’s Jig appliance- a case report

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Abstract: Extraction Vs Non-extraction controversy covers the major part of orthodontic debate since years. Premolar extractions are one of the simplest methods to relieve crowding in majority of the cases. However soft tissue profile, an integral part of orthodontic diagnosis and should be given equal consideration while treatment planning. In this case with severe crowding, where initial diagnosis gave an impression of all first premolar extraction case, considering other factors like cephalometric analysis and soft tissue profile, this case was treated by non-extraction philosophy with distalization using Jone’s Jig. This case was completed with good occlusion, maintaining soft tissue profile. Treatment plan should not only base on model analysis or cephalometric numbers without giving much importance to photographic analysis and soft tissue contours. In fact treatment plan should be based on clinical features, model analysis, cephalometric readings, photographic analysis and soft tissue contours.

Keywords: Extraction Versus non-extraction, Distalization, Jone’s Jig

I. Introduction

Extraction versus non extraction treatment has been always controversial and makes major part of orthodontic debate. Clinicians are forced to reconsider whether extraction is always required? Or should other treatment options be tried? Should the treatment plan based on model analysis or cephalometric numbers without giving much importance to photographic analysis and soft tissue contours? In fact treatment plan should be based on clinical features, model analysis, cephalometric readings, photographic analysis and soft tissue contours. Here, a 15 year old patient with severe crowding was treated with distalization using Jone’s Jig followed by non-extraction treatment. This case was completed with good occlusion without changing her profile.

II. Case Report

15 year old female patient name Avni Patel came to department of orthodontics and dentofacial orthopaedics with the chief complaint of irregularly placed upper front teeth.

Extra oral examination:
Patient had mesoprosopic facial type with normal gait and posture, with no clinical facial asymmetry was reported. Patient had straight soft tissue profile, non-consonant smile arc with competent lips. [Fig. 1]

Intraoral examination:
Intraoral examination showed Angle’s class II subdivision (Angle’s class I molar on right side and class II molar on left side) with Class I canine on right side and end on relation on left side. Patient having ovoid upper and lower arches with crowding in both arches, complete deep bite, reduced over jet, buccal non-occlusion in relation to lower left 1st premolar andlingually tipped lower left 2nd molar, 2 mm curve of spee. Upper left 2nd premolar is palatally blocked out, 2mm curve of spee. [Fig. 2]

Other findings:
Model analysis showed 13.5mm discrepancy in upper arch and 11.5 mm in lower arch with normal Bolton’s ratio. Lateral cephalogram showed skeletal class I maxillomandibular base relationship with retroclined upper and lower anteriors. Reading of lateral cephalogram is noted in Table 1. Orthopantomogram showed presence of all 3rd molar tooth buds [Fig. 3] [Table 1].

Diagnosis:
Angle’s class II subdivision (Angle’s class I molar on right side and class II molar on left side) imposed over skeletal class I maxillomandibular base relationship with horizontal growth pattern, retroclined and crowded upper and lower incisors with complete deep bite and decreased lower anterior facial height with straight soft tissue profile.

Treatment Objectives:
Non Extraction philosophy: Distalization using Jone’s Jig appliance - a case report

- Alignment and levelling of upper and lower arch.
- Achieve and maintain class I molars and canines bilaterally.
- Correction of palatally blocked upper left 2nd premolar.
- Correction of buccal non-occlusion in relation to lower left 2nd premolar and lingually tipped lower left 2nd molar.
- Achieve ideal overjet and overbite.
- Improve smile.

Treatment Options:
1. Non-extraction fixed mechanotherapy with upper left molar distalization.
2. Extraction of all first premolar.
3. Extraction of three first premolars and upper left 2nd premolar.

It is always beneficiary to take a chance for non-extraction treatment. So we decided to take non-extraction approach. Molar distalization of upper left 1st molars using Jone’s jig appliance with fixed mechanotherapy.

Treatment Progress:
- Case was started with fixed mechanotherapy using 0.022” MBT preadjusted edgewise appliance.
- 0.014” Niti was used for alignment and levelling. Initially palatally blocked out upper left 2nd premolar was not included.
- Upper left 3rd molar tooth bud was removed after initial alignment.
- Wire progression to 0.016” Niti, 0.017”x0.025” HANT, 0.017”x0.025” stainless still (SS) was carried out.
- Fixed anterior bite plate with Jone’s Jig was placed to create space for blocked out maxillary left 2nd premolar.
- After creating space with Jone’s Jig, blocked out maxillary 2nd premolar was bonded bonded both buccally and palatally to derotated it using couple force, after derotation it was brought buccally into arch with piggyback Niti. [Fig. 4, 5]
- Mandibular left 2nd premolar and 2nd molar were brought into alignment. Wire progression was done from 0.017”x0.025” SS to 0.019”x0.025” HANT and 0.019”x0.025” SS.

Retention Plan:
- Upper and lower canine to canine fixed bonded retainer with Howlays retainer with anterior bite plate for upper arch and only howlays retainer for lower arch.
- Percision in relation to upper central and lateral incisors and upper left premolars to prevent relapse.[Fig. 6, 7, 8][Table 1]

III. Discussion
The distal movement of the maxillary first molars to achieve Class I relationship in Angle’s class II malocclusion is a challenge without the extraction of teeth. Several methods have previously been advocated, including the use of extraoral force, Wilson mechanics combined with Class II elastics, and removable appliances. All these treatment modalities require varying degrees of patient compliance. The developments of appliances for distal movement of maxillary molars requiring limited patient compliance are repelling magnets, compressed coil springs, super elastic nickel titanium wires, TMA loops and the Jones jig appliance. The major premise of non-extraction treatment of Class II patients with average to low FMA involves either moving the molar maxillary first molars distally or restricting maxillary growth and mesial migration of the mandibular first molars. The Jones jig acts specifically to move the maxillary first molars into a Class I molar relationship. The maxillary first molars were observed to move distally a mean of 2.51 mm. This change was similar to that reported in studies examining molar movement via the Herbst appliance, Wilson mechanics, repelling magnets and the pendulum appliance.
IV. Figures And Tables

Fig. 1 Extraoral Pretreatment photographs

Fig. 2 Intraoral Pretreatment photographs

Fig. 3 Pretreatment Radiographs
Non Extraction philosophy: Distalization using Jone’s Jig appliance- a case report

Fig. 1. Jones-Jig Appliance

Fig. 4 Photographs showing treatment mechanics for Jone’s Jig appliance

Fig. 5 Predistalization photograph & Postdistalization Photograph

Fig. 6 Post debonded extraoral Photographs

Fig. 7 Post debonded Intra oral Photographs
Non Extraction philosophy: Distalization using Jone’s Jig appliance- a case report

Cephalometric Analysis (Table 1)

<table>
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<tr>
<th>Parameters</th>
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<th>Post Debonded</th>
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<tbody>
<tr>
<td>SNA</td>
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<td>88</td>
</tr>
<tr>
<td>SNB</td>
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<td>84</td>
</tr>
<tr>
<td>ANB</td>
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<td>4</td>
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<tr>
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<td>4</td>
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<td>Pog to N┴</td>
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<td>Facial Angle(NPg-FH)</td>
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<tr>
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<td>Lower Gonial Angle(N-Go-Me)</td>
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V. Conclusion

Here 2.5 mm molar distalization was achieved using Jone’s Jig appliance. This 2.5 mm space along with spaced achieved by derotation of 2nd premolar, 2nd premolar was brought in alignment. In this case report patient had 13.5 mm discrepancy in upper and 11.5 mm in lower arch indicating all 1st premolar extraction protocol, but patient’s straight soft tissue profile and retroclined upper and lower anteriors guided us to distalization with non-extraction treatment plan. Sop facial photographs are also very important aspect of diagnosis and treatment planning of any case and should not be ingnored.

References