

## 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

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### 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 <sup>[1]</sup>.

### 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 1<sup>st</sup> premolar andlingually tipped lower left 2<sup>nd</sup> molar, 2 mm curve of spee. Upper left 2<sup>nd</sup> 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 3<sup>rd</sup> 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:

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- Alignment and levelling of upper and lower arch.
- Achieve and maintain class I molars and canines bilaterally.
- Correction of palatally blocked upper left 2<sup>nd</sup> premolar.
- Correction of buccal non-occlusion in relation to lower left 2<sup>nd</sup> premolar and lingually tipped lower left 2<sup>nd</sup> 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 2<sup>nd</sup> 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 1<sup>st</sup> molar 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 2<sup>nd</sup> premolar was not included.
- Upper left 3<sup>rd</sup> 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 2<sup>nd</sup> premolar.
- After creating space with Jone's Jig, blocked out maxillary 2<sup>nd</sup> premolar was 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 2<sup>nd</sup> premolar and 2<sup>nd</sup> 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<sup>3</sup> 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<sup>1</sup> 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 [2-5].

**IV. Figures And Tables**

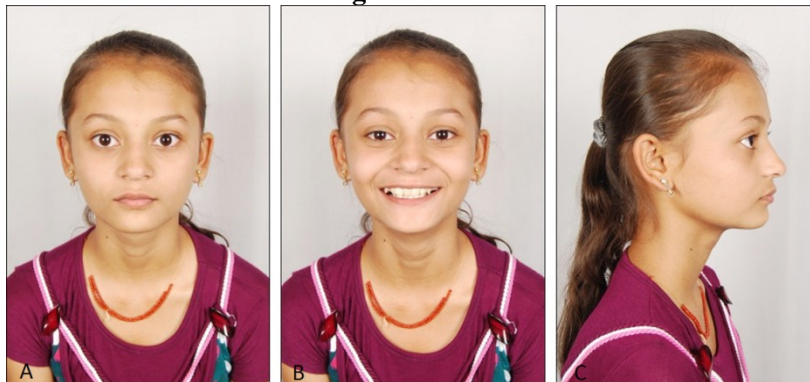


Fig. 1 Extraoral Pretreatment photographs

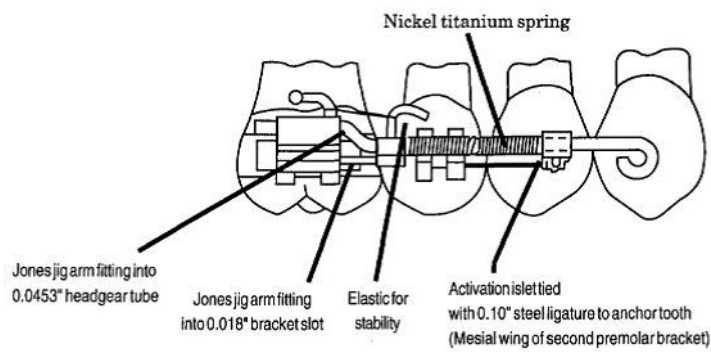


Fig.2 Intraoral Pretreatment photographs



Fig. 3 Pretreatment Radiographs



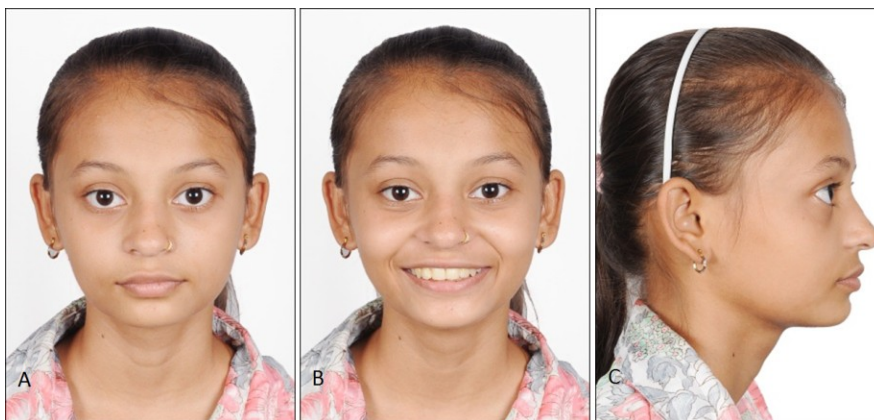


**Fig 1. Jones-Jig-Appliance**

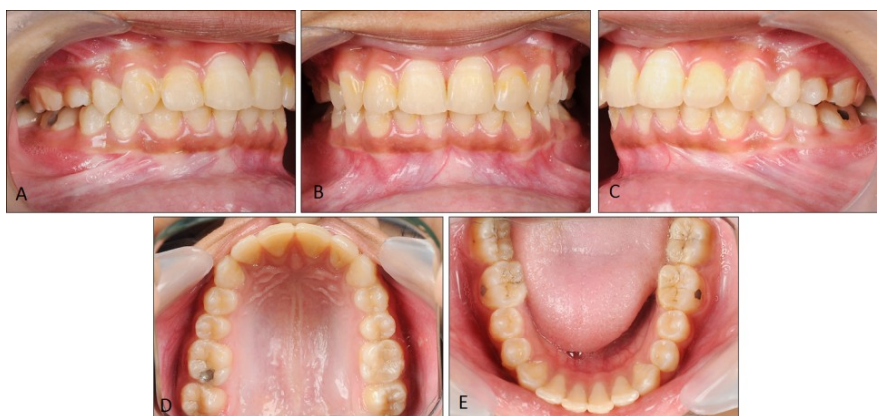
**Fig. 4 Photographs showing treatment mechanics for Jone's Jig appliance**



**Fig. 5 Predistalization photograph & Postdistalization Photograph**



**Fig. 6 Post debonded extraoral Photographs**



**Fig. 7 Post debonded Intra oral Photographs**

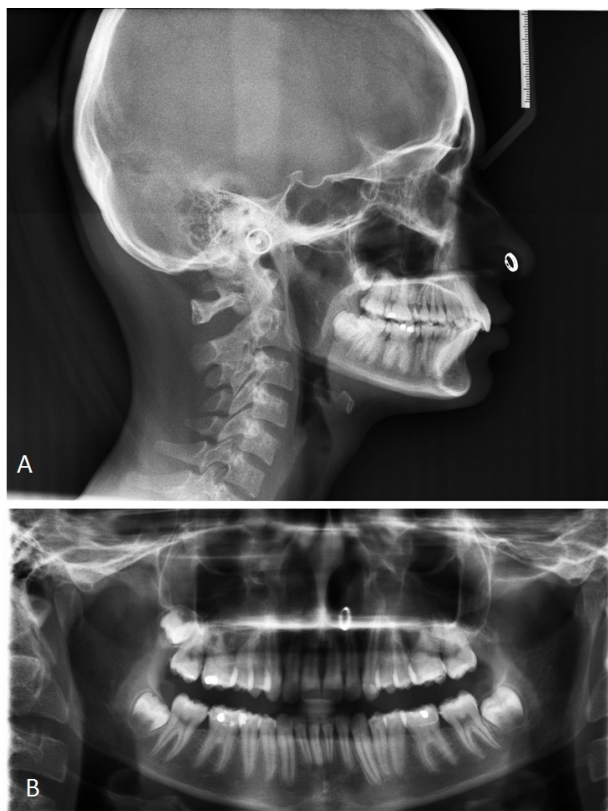


Fig. 8 Post Debonded Radiographs

Cephalometric Analysis (Table 1)

Parameters	Pre Treatment	Post Debonded
SNA	87	88
SNB	84	84
ANB	3	4
Nasion $\perp$ to point A	3	4
Pog to N $\perp$	2	2
NA-Apg	5	8
Wits appraisal	1	3
$\beta$ angle	22	24
Jaraback's ratio	74.45%	73.26%
Y-Axis	52	54
FMPA	13	16
Facial Angle(NPg-FH)	92	92
Facial Axis Angle(Ba-Na to ptm-Gn)	+10	+8
SN-GoGn	18	20
Saddle angle (N-S-Ar)	126	127
Articular Angle(S-Ar-Go)	134	133
Gonial Angle(Ar-Go-Gn)	119	119
Upper Gonial Angle(Ar-Go-Na)	59	58
Lower Gonial Angle(N-Go-Me)	60	61
Upper molar to Ptv	18	16
1 to NA(angular/linear)	3, 2 mm	23, 4.5mm
1 to NB(angular/linear)	4, 3 mm	32, 5mm
1 to SN	91	112
1 to Palatal Plane	92	112
IMPA	79	105

### **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 2<sup>nd</sup> premolar, 2<sup>nd</sup> 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 1<sup>st</sup> 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**

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