



Mandibular Extraction in Orthodontic Treatment Therapy -Case Report

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Abstract

A post pubertal male M. Aslam aged 19 years residing in Shival Khas, Meerut, Uttar Pradesh, came to the department with chief complaint of irregularly placed upper front teeth.

Cephalometric summary

Skeletally: It is a Normal maxilla with Normal mandible and Normal chin

Class III skeletal pattern with Horizontal growth pattern

- Decreased IMPA and LAFH
- Dental
- Retroclined upper and lower incisors

Soft tissue

- Thin Upper Lip
- Class III pattern (Rakosi)
- PROBLEM LIST INCLUDE-Midline: Upper midline shifted towards right by 1.5 mm, Lower midline shifted towards left by 2.0 mm.
- Malaligned teeth and asymmetrical arches
- Cross bite wrt 11,12,13,21,22,31,32,41,42, and 43
- Class III canine relation on right side and class II canine relation on left side
- Class III incisor relation
- Overbite (3.5 mm) and overjet of -2 mm
- Rotations -11,14,15,32,34,35 and 3
- Palatally placed- 22.
- Treatment plan -Fixed mechanotherapy with therapeutic extraction of 41.

Keywords: Extraction; Fixed Orthodontic Treatment; Mandibular Extraction; Scissor Bite

Introduction

Choosing whether to extract teeth is one of the most important treatment planning choices. The orthodontic pendulum has swung back and forth from a predominately non-extraction attitude in the early 1900s to one that emphasises more extraction-oriented therapy in the middle of the century [1]. Current treatment op-

tions for crowded mandibular anterior teeth include premolar removal, labial movement of incisors, lateral movement of canines, distal movement of posterior teeth, removal of one or more incisors, and various combinations of the aforementioned procedures. It can be challenging to choose the best course of action, and not all recommendations hold true in every situation [2].

Despite the apparent benefits of the extraction in the area of crowding, treatment by removal of a single mandibular incisor is not common in the orthodontic profession [3,4,6]. Objections to this extraction option have been based on case reports or subjective clinical opinions after observing less desirable outcomes in treated Class I and Class II malocclusions [1,2,3,5]. Unwanted side-effects have been increases of overbite and overjet beyond acceptable limits, space reopening, partly unsatisfactory posterior occlusion, recurrence of crowding in the remaining three incisors, and unaesthetic loss of the interdental papillae in the mandibular anterior region [7,8].

History and Clinical Picture

A post pubertal male M. Aslam aged 19 years residing in Shival Khas, Meerut, Uttar Pradesh, came to the department with chief complaint of irregularly placed upper front teeth. No significant information was elicited on recording prenatal and postnatal history and childhood diseases. No history of oral habits and injuries.

- **Familial malocclusion History:** Has an elder brother and younger sister with no similarity in arrangement of teeth to that of Aslam as reported by him. He is internally motivated with positive attitude towards orthodontic treatment and is citing esthetics is the main reasons for taking orthodontic treatment.
- **Pubertal Status:** post pubertal ,Body type - Athletic , Build - Ectomorphic
- **Facial Form -** Leptoprosopic (84-87.9), Facial symmetry – symmetrical
- **Upper lip length -** 16.5 mm (22.5 mm), **Lower lip length -** 40 mm (45.5mm)
- **Profile is** Orthognathic, **Mentolabial sulcus -** Normal, **Lips -** Competent
- **Nasolabial angle -** Obtuse (110°), **Incisor display -** During speech = 4 mm, During smile = 9 mm (full incisor show)
- **Gingiva:** Normal, adequate width of gingiva except 41 and Gingival recession- Class I wrt 41, Attrition: 11,12,21,22,31,32,33,41,42 and 43
- **Vertical relationship:** Overbite = 3.5 mm (43.75%).
- **Midline:** Upper midline shifted towards right by 1.5 mm, Lower midline shifted towards left by 2.0 mm
- **Antero posterior relationship:** RIGHT -Molar relation = Class I, Canine relation = Class III, Incisor relation = Class III, LEFT- Molar relation = Class I, Canine relation = Class II, Incisor relation = Class III

Teeth erupted

11,12,13,14,15,16,17,18,21,22,23,24,25,26,27,28, 31,32,33,34, 35,36,37,38,41,42,43,44,45,46,47 and 48

Rotations-11,15 and 14, Palatally placed- 22, LOWER ARCH- Arch Shape- Average, Crowding- Moderate, Rotations- 32,34,35 and 43.



Figure a: Pretreatment photographs – extraoral.



Figure b: Final stage extraoral photographs.



Figure c: Pretreatment photographs - intraoral.



Figure d: Final stage intraoral photographs.

Diagnosis

- Angle's class I malocclusion on class III skeletal jaw bases with Dewey's modification type III labioversion 14, palatelly placed 22, posterior cross bite w.r.t. 35 and scissor bite w.r.t. 14 and 34.
- PRE TREATMENT OPG- Rt and Lt condyles appears normal
- Rt and Lt articular eminence appears normal
- No other abnormal pathology
- Eruption levels - All permanent teeth present
- Root formation - completed
- Height of interdental crestal bone is normal and adequate.

Cephalogram findings- skeletal

- Sagittal plane -Readings suggestive of normal maxilla
- SNA: 82° degree
- N + to Point A: -3 mm (-2 to +2)

Readings suggestive of normal mandible

- SNB : 80 degrees (ANB 2 degree)
- N + to pogonion : -6 mm
- Wits Appraisal: -1mm
- Vertical plane

Readings suggestive of horizontal growth pattern

- Go Gn to SN =24 degrees (32)
- Go Me to FH =26 degrees (26)
- Go Gn to FH =25 degrees (26)
- Go Me to SN =30 degrees (32)
- FMA =28 degrees (25)
- Jarabak ratio: 75.22 %

Dental - Readings suggestive of proclined maxillary incisors

- U.I. to NA
- (Linear) = 3 mm (4mm)
- (Angular) =17degrees (22degrees)
- U.I. to point A distance = 4 mm
- U.I. to SN = 102 degrees (102)
- U.I. to PP = 104 degrees (110)

Readings suggestive of proclined mandibular incisors

- L.I. to NB (Linear) = 4 mm (Angular) = 20 degrees
- IMPA = 87 degrees
- Lower incisor inclination = 22 degrees (22)
- Lower incisor to A-Pog line distance: 2 mm
- Soft tissue- 'S' line: Upper lip -2 mm , Lower lip 1 mm
- 'E' line : Upper lip: -7 mm , Lower lip -6.5mm
- Nasolabial angle: 107 degrees

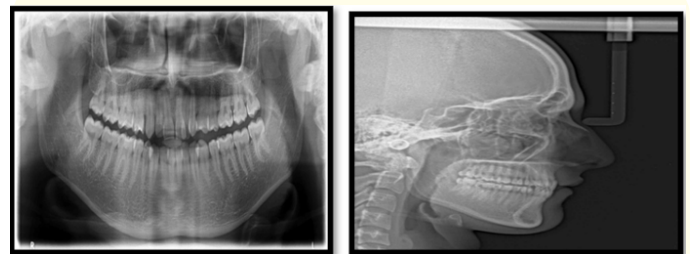


Figure e: Pretreatment OPG and lateral CEPH.

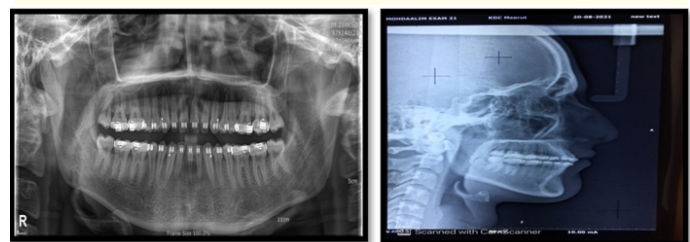


Figure f: Final stage OPG and lateral CEPH

Cephalometric summary

Skeletally: It is a Normal maxilla with Normal mandible and Normal chin

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Dental

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Model analysis

- Bolton Tooth Ratio: Anterior ratio: 83.14% and Overall ratio: 94.1%.
- Inference: Overall mandibular excess of 2.37 mm and Anterior mandibular excess of 2.65 mm.
- Careys/Arch Perimeter Analysis: Tooth material excess of 1 mm in upper arch and Tooth material excess of 5 mm in lower arch.

Problem list

- Malaligned teeth and asymmetrical arches
- Cross bite wrt 11,12,13,21,22,31,32,41,42, and 43
- Class III canine relation on right side and class II canine relation on left side
- Class III incisor relation
- Over bite (3.5 mm) and overjet of -2 mm
- Rotations -11,14,15,32,34,35 and 3
- Palatally placed- 22.

Objective of treatment

- To level and align upper and lower arch
- To correct overbite and established overjet
- Correction of mandibular midline
- To achieve Class I canine and incisor relation
- Correction f scissor bite wrt 14 and 34
- Establishing soft tissue harmony
- To stabilized the correction achieved

Treatment plan

- Fixed mechanotherapy with therapeutic extraction of 41
- Type of appliance
- MBT system 0.022 Slot
- Open coil Spring to create space for 22
- MBT Versatility -10 degree for 22 (invert bracket of lateral incisor)
- Circumferential Supracrestal fibrotomy for 14

Parameters	Pretreatment	Present stage
SNA	82 degrees	83 degrees
SNB	80 degrees	80 degrees
ANB	2 degrees	3 degrees
N perp. to Point A	3 mm	3 mm
Go-Gn to SN	24 degrees	32 degrees
U1 to NA (Angle)	17 degrees	23 degrees
U1 to NA (Linear)	3 mm	4 mm
L1 to NB (Angle)	20 degrees	27 degrees
L1 to NB (Linear)	4 mm	4 mm
L1 to Mand. Plane	87 degrees	93 degrees

Table a

Treatment steps

- 0.012 NiTi Palatal button on 14 and welded button on 16 And E-chain 150 gram of force from 14 to 16. Figure 1
- Bonding in lower arch and bite block placed .
- 0.014 NiTi in upper And Lower arch
- 0.018 NiTi in upper And Lower arch
- 0.018 SS in upper And Lower arch And Open coil spring Space achieved for lateral incisor , Inverted lateral incisor bracket Buccal root torque (10 degree)
- 17X 25 NITI upper and lower
- 17x 25 SS upper and lower
- 19x 25 ss upper and lower with piggy back with 0.012 niti Figure 2
- Space closure with e - chain on 19x 25 ss upper lower Figure 3



Figure 1: Upper arch bonded with 012 Niti welded button on 16.

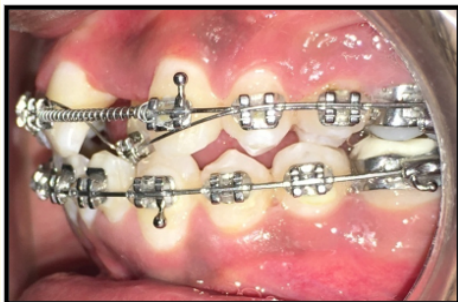


Figure 2: 19 x 25 ss upper and lower with piggyback with 0.012.



Figure 3: Space closure with e-chain on 19 x 25 ss upper lower and extraction of 41

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