
Successful orthodontic treatment of Class II division 1 malocclusion in a non growing patient : A case report

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ABSTRACT

Aim & objectives of the present case report was to evaluate the management of skeletal Class II division 1 malocclusion in non growing patient with extraction of upper first premolars. Clinical and cephalometric evaluation revealed skeletal Class II division 1 malocclusion with severe maxillary incisor proclination, convex profile, average mandibular plane angle, incompetent lips, increased overjet and overbite. After extraction of upper 1st premolars, canine retraction was done which was followed by retraction of severely proclined upper anterior teeth by judicious control of third order bend in rectangular stainless steel arch wire with "V" loop. For anchorage management, intra oral anchorage with tip back & toe in bends in stainless steel arch wire was satisfactory. Following treatment marked improvement in patient's smile, facial profile and lip competence were achieved and there was a remarkable increase in the patient's confidence and quality of life.

Keywords: Class II div1 malocclusion, non growing patient, tip back, toe in bend (Bangladesh Journal of Orthodontics and Dentofacial Orthopedics, Vol. 2, No. 2, April 2012, p 41-45).

INTRODUCTION

Class II div 1 malocclusion is more prevalent than any type of malocclusion after Class I malocclusion in our country.^{1,2} Over the last decade, increasing numbers of adults have become aware of orthodontic treatment and are demanding high quality treatment, in the shortest possible time with increased efficiency and reduced costs.³ Class II malocclusions can be treated by several means, according to the characteristics associated with the problem, such as anteroposterior discrepancy, age, and patient compliance.⁴ Methods include extraoral appliances, functional appliances and fixed appliances associated with Class II intermaxillary elastics.⁵ On the other hand, correction of Class II malocclusions in nongrowing patients usually includes orthognathic surgery or selective removal of permanent teeth, with subsequent dental camouflage to mask the skeletal discrepancy. The indications for extractions in orthodontic practice have historically been controversial.⁶⁻⁸ Premolars are probably the most commonly extracted teeth for orthodontic purposes as they are conveniently located between the anterior and posterior segments. Variations in extraction sequences including upper and lower first or second premolars have been recommended by different authors for a variety of reasons.⁹⁻¹⁴ For correction of Class II malocclusions in non-growing patients extractions can involve 2 maxillary premolars¹⁵ or 2 maxillary and 2 mandibular premolars.¹⁶ It is usually not the skeletal characteristics of a Class II malocclusion that primarily determine whether it should be treated with 2 or 4 premolar extractions but, rather, the dentoalveolar characteristics.

The extraction of only 2 maxillary premolars is generally indicated when there is no crowding or cephalometric discrepancy in the mandibular arch.^{17,18} Extraction of 4 premolars is indicated primarily for crowding in the mandibular arch, a cephalometric discrepancy, or a combination of both, in growing patients.¹⁷⁻¹⁹

Recent studies have shown that patient satisfaction with camouflage treatment is similar to that achieved with surgical mandibular advancement²⁰ and that treatment with two maxillary premolar extractions gives a better occlusal result than treatment with four premolars extractions.²¹

CASE REPORT

Pretreatment assessment

A 17 year old female reported to the Orthodontic Department at Dhaka Dental College & Hospital with multiple complaints "my teeth stick out", "I am unable to close my lips" "I feel embarrassed when I laugh". She gave a history of previous orthodontic treatment by a quack where an attempt was made to retrocline protruded upper teeth by upper removable appliance with proximal disking of upper anterior teeth. Extra oral examination revealed a mesocephalic symmetrical face, convex hard and soft tissue profile, lip trap and an acute nasolabial angle. The patient showed a good range of mandibular movements and no TMJ symptoms. Intra oral examination revealed that the patient had a full Class II molar and canine relationship, excessively proclined maxillary incisors with an overjet of 11mm and traumatic deep overbite. (Fig 1) Cephalometric examination revealed Class II skeletal relation with severe maxillary incisor proclination with horizontal growth pattern. (Fig 2) Although the underlying sagittal jaw discrepancy was severe, the selective extraction of two permanent maxillary first premolar teeth was considered acceptable. Our treatment objective focused on the chief complaint of the patient, and the treatment plan was individualized based on the specific treatment goals.

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Figure 1. Pretreatment extra oral & intra oral photographs



Figure 2. Pre treatment lateral Cephalogram

DIAGNOSIS

Skeletal Class II division 1 malocclusion with severe maxillary incisor proclination, convex profile, average mandibular plane angle, lip trap, incompetent lips, increased overjet & traumatic deep overbite.

TREATMENT OBJECTIVES

1. Achieve lip competence and reduce the labiolingual fold.
2. Develop an ideal overjet & overbite.
3. Correct the anteroposterior relationship.
4. Achieve occlusal intercuspation with a Class I canine relationship.
5. Improve the profile and facial esthetics.

TREATMENT PLAN

1. Extraction of maxillary first premolars.
2. Alignment & leveling of upper & lower arches.
3. Retraction of upper canines.
4. Correction of deep overbite.
5. Upper arch contraction.
6. Final settling of the occlusion and arch coordination.

TREATMENT PROGRESS

The maxillary first premolars were extracted. The first molars were banded and the maxillary and mandibular teeth were bonded from premolar to premolar with a 0.018 x 0.025 standard edgewise brackets. Retractions of upper canines was done in 0.016 inch round stainless steel arch wire with stop loops and tip back and toe-in anchorage bends.



Figure 3. After Canine retraction upper arch contraction started (right buccal, frontal and left buccal view)



Figure 4. Rectangular (0.017 X 0.025) arch wire with “ V ” loop for upper arch contraction



Figure 5. Completed upper arch contraction (Left buccal, frontal and right buccal view)

Arch contraction and closure of extraction spaces in upper arch was done by rectangular (0.017 X 0.025 inch) Stainless Steel archwire with “V” loops with proper control of third order bend ‘Torque’. (Fig. 5 & 6). Final settling of occlusion was done with proper interdigitation, inclination, angulation, ideal overjet and overbite. Proximal recontouring of upper incisors was done by composite resin due to proximal diskling in previous orthodontic treatment. Debonded and retention was given by upper & lower Hawley’s retainers. Patient was advised to follow up in retention period.

Post treatment assessment:

Lip competence and a straight profile were achieved, improving the patient’s facial appearance. A functional occlusion with normal overjet and overbite; Class I canine relationship was achieved (Fig. 7, 8 & 9). Duration of the treatment was 21 months. The patient and her parent were very happy with complete satisfaction.

Table 1: Cephalometric Analysis

Variables	Reference measurement	Pretreatment	Post treatment
SNA	82	86	84
SNB	80	80	80
ANB	2	6	4
IIA	130	106	125
GoGn to SN	32	30	33
U1 - SN	104	115	104

Figure 6. Pre & post treatment extra oral photographs



Figure 7: Pre & Post treatment intra oral photographs



DISCUSSION

Patient had improved smile and profile after orthodontic treatment. Upper incisors were retracted to achieve normal incisor inclinations, overjet and overbite. Bilateral Class I canine relation was achieved with maximum intercuspation. The case was successfully managed by contemporary orthodontic technique with intra oral anchorage incorporated in archwire.

CONCLUSIONS

Camouflage treatment of Class II malocclusion in adults is challenging. Extractions of premolars, if undertaken after a thorough diagnosis leads to positive profile changes and an overall satisfactory facial aesthetics. A well chosen individualized treatment plan, undertaken with sound biomechanical principles and appropriate control of orthodontic mechanics to execute the plan is the surest way to achieve predictable results with minimal side effects.

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