

## Management of Bimaxillary Protrusion – A Case Report

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### ABSTRACT

This case report will evaluate the management of bimaxillary protrusion by standard edge wise technique with extraction of premolars. The objective of treatment was to use mild forces and to provide maximum space for the retraction of anterior teeth. The goal of the treatment was to improve facial appearance. The case was successfully managed by extraction of all first Premolars and fixed appliance therapy using standard edge wise mechanics. Post-treatment changes were good and stable.

Key Words: **Bimaxillary protrusion; standard edge wise technique; facial appearance.** (Bangladesh Journal of Orthodontics and Dentofacial Orthopedics, April 2013; Vol-3, No. 2, p 32-34)

### INTRODUCTION

Class I bimaxillary protrusion is frequent type of malocclusion and impaired facial appearances specially facial profile.<sup>1</sup> The demand for facial esthetics during treatment is an increasing concern for patients.<sup>2</sup> There are wide ethnic variations in the prevalence of bimaxillary protrusion. Its management frequently involves four premolar extractions. These cases were earlier managed to reasonable extent using edgewise appliance<sup>3,4</sup> and later with Begg's appliance.<sup>5</sup> This case report illustrates a young female patient having angles Class I dental with bimaxillary protrusion on Class I skeletal base treated with extraction of all the first premolars using standard edge wise mechanics. Many different treatment approaches have been presented in the literature ranging from first premolar extractions supported with dental or skeletal anchorage devices to various types of accelerated osteogenic orthodontics.<sup>6-9</sup> Premolar extractions were recommended in the third stage of treatment after alignment and leveling and no additional anchorage system was employed.<sup>1</sup>

healthy soft tissue, U- shaped maxillary and mandibular arches, decreased overjet and overbite, unerupted 3<sup>rd</sup> molars. Radiographic examination confirmed the presence of all 32 permanent teeth with the 3<sup>rd</sup> molars unerupted. and mildly crowded. The soft-tissues confirmed the impaired facial esthetics and a protrusive lower lip.

### CASE -REPORT

This 20-year-old female patient presented with a Class I bimaxillary protrusion with no relevant medical history was referred for orthodontic treatment to Dhaka Dental College and Hospital. The patient's chief concern was the procumbent and uneven tooth. The patient requested treatment to improve her dental appearance. She had no contributory medical history. Extra oral examination revealed slight convex facial profile, increased lower anterior facial height, protruded lips. Intraoral examination revealed Angles Class I molar and canine relation, buccally places and rotated upper left first premolar, mild crowding on both jaws, good oral hygiene,



Figure 1: Pre-treatment extraoral photographs



Figure 2: Pre-treatment intraoral photographs

## TREATMENT OBJECTIVES

- Correction of bimaxillary protrusion
- Obtain Class I canines with good anterior guidance
- Establish normal overjet and overbite
- Maintain Class I molar relation
- Improve facial esthetics.

## TREATMENT PLAN WITH MECHANICS

- Initial leveling and alignment by fixed appliance therapy using 0.18 slot standard edge wise bracket and multiloop 0.014 inch s.s arch wire.
- Extraction of all first Premolars
- Retraction of upper canines using .016 inch ss wire and elastic chain.
- Retraction of lower canines using .016 inch ss wire and elastic chain.
- Leveling and alignment after canine retraction with 0.016 X0.022 inch NiTi arch wire.
- Contraction of lower anterior segment with 0.016 X0.022 inch SS wire using contraction loop.
- Finishing with 0.016 X0.022 inch NiTi arch wire using ideal arch wire.
- For retention upper Beggs retainer and lower fixed retainer with Flexible Spiral Wire.

## TREATMENT PROGRESS

Molar bands were fixed on all first molars, after proper separation then 0.018 slot standard edge wise bracket were bonded to central incisors (4.5 mm- slot to edge distance), lateral incisors (4 mm- slot to edge distance), canines (4.5 mm- slot to edge distance) and all premolars (2.5 mm- slot to inter-marginal ridge lines distance) in the upper and lower dental arches. For the vertical and axial positioning, the incisal edges of anterior teeth and the inter-marginal ridge lines of premolars were used as reference.

Initial leveling and alignment was done with 0.014 inch s.s multiloop arch wire and took two months. After leveling the extractions of first premolars were performed. Canines were retracted using sliding mechanics on 0.016" s.s custom made arch wires and elastic chain. The retraction process took four months.

After canine retraction, 0.016 X 0.022 inch NiTi arch wire were used on both arch for leveling prior to contraction at the period of one and half months for easy insertion of contraction arch wire. Then contraction of lower arch followed by upper arch was done using 0.016 X 0.022 inch ss wire with contraction loop (Fig. 3). Contraction of arches took another 4 months.

After contractions again 0.016 X 0.022 inch NiTi arch wire were used on both arch for leveling prior to final finishing at the period of one and half months for easy insertion of ideal arch.

During the detailing and finishing phase, rectangular 0.016 X 0.022 inch ss custom made ideal arch were used with intermaxillary elastics full time for a month and then for another month at night time only. The space closure was maintained during this phase of treatment with passive lace backs were placed under the archwire from molar to molar.

After 15 months of commencement of treatment the fixed appliance was removed after ensuring a perfect intercuspation of the teeth and good functional movements (Fig. 4). A slight incisal edge contouring was done to improve the aesthetics(Fig. 5). At this stage, a Beggs retainer was placed in the upper dental arch and a 5/5 lingual retainer was bonded to the lower arch (Fig. 6). The Beggs retainer was prescribed for a period of 6 months full time and a further 6 months night time wear then gradually decrease. The lower 5/5 lingual retainer was advised to be kept in place for a period of 2 years.

## TREATMENT RESULT

The final outcome showed that the treatment attained all functional and esthetic goals. The patient and her parent were happy with her appearances (Fig.7).



Fig 3. Intra oral photograph at the end of contraction phase



Fig 4. Intra oral photograph after removal of fixed appliance



Fig 5: Intra oral photograph after contouring of incisal edge



Fig 6: Intra oral photograph with retention appliance



Fig 7: Extra oral photograph after treatment

## CONCLUSION

A common malocclusion encountered in our country is bimaxillary protrusion. Careful and proper treatment is necessary for management of bimaxillary protrusion. The anchorage management is very much difficult during bimax corrections. In this case the treatment was carried out without additional anchorage sources other than the first molars.

To overcome anchorage loss extraction was carried out after initial leveling phase. Another problem with treatment of bimax cases are relapse. So it is prudent to emphasis on a effective retention plan.

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