

Management of Class 2 Subdivision with Atypical Extraction and Unilateral Molar Distalisation: A Case Report

Dipesh Grover¹, Akash Verma², Aastha Purohit³

¹Senior Consultant, Orthodontics and Dentofacial Orthopaedics, Grover Dento Studio, Delhi, India

²Senior Consultant, Orthodontics and Dentofacial Orthopaedics, Manosthiti Dental Clinic, Delhi, India

³Senior Consultant, Orthodontics and Dentofacial Orthopaedics, Chandigarh, India

ABSTRACT

In the past few years, there has been an increase in the percentage of non-extraction cases in the average orthodontic practice, which now stands as high as 80%. Mid-arch extractions can compromise facial esthetics, especially in patients with concave profiles. The treatment plan must allow for post-treatment facial growth, including the tendency for the nose and chin of young adults to grow more forward than their lips. Decision of extraction of permanent teeth should be based on sound diagnosis, and it should be evidence based. This is a case report of young male patient who had moderate crowding, anterior crossbites, with midlines shift and an unaesthetic smile. This case was treated with unilateral first premolar extractions by using a individual T loop along with pre-adjusted Edgewise appliance and distalisation of molar by mini screws.

Key-Words: Atypical Extraction, Assymetrical Extraction, Unilateral Premolar Extraction, Unilateral Molar Distalisation

INTRODUCTION

The extraction/non-extraction philosophy had received a great deal of consideration in orthodontics. The “no extractions under any circumstances” Angle’s philosophy had been conquered by “extractions when necessary” Case’s philosophy.¹ Nance in 1949 was one of the first to draw consideration to the extraction of second premolars in mild discrepancy cases.² Literature has stated that a nonextraction approach can be more esthetic in patients with mild or moderate bimaxillary protrusion.³ Bimaxillary protrusion in adolescent patients has traditionally been treated by extracting the four first premolars and retracting most of the anterior teeth.^{4,5} Although this approach is less complex than non-extraction treatment and can produce a good occlusal result, it also tends to retrude the lips and reduce the convexity of the face.^{6,7} In the cases with severe incisor protrusion, facial convexity, lip incompetence, or crowding, premolar extractions may be unavoidable. In this case report, we describe the orthodontic management of a case who had moderate crowding, anterior cross bite, midlines shift, an unaesthetic smile and was treated with the unilateral extractions of first premolars.

CASE REPORT

A 17 years-old post-pubertal male patient came to the clinic with the chief complaint of irregularly placed anterior teeth and unaesthetic smile. He was physically healthy and had no history of medical or dental trauma. No signs or symptoms of temporomandibular joint dysfunction or trauma were noted at the initial examination. Extra-orally he had a mesoprosopic facial form, mesomorphic body type with a straight facial profile, without any gross asymmetry. Intra-orally he had class I molar relation on left side and end on molar relation on right side and class I canine relation on right side, with an overjet of 1mm, and overbite of 4 mm, the maxillary left canine was in crossbite, lower arch form-square shaped. Upper midline is shifted to left by 1mm and lower midline is shifted to left by 3 mm. [Fig 1].

Treatment Objectives

1. The treatment plan was to obtain space in both arches by the unilateral extraction of right first premolars. In upper arch space is required for assymetric crowding and in lower arch space is required to relieve the crowding.
2. The midlines had to be corrected.
3. Correction of anterior crossbite in relation to 13.
4. To achieve a stable functional occlusion with normal overjet and overbite, Class I canine and molar relationship on right side.
5. Maintaining Class I molar and canine relation on left side and pleasing profile.

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Corresponding Author: Dr. Dipesh Grover, E-mail: drdipeshgrover@gmail.com



Fig 1: Pre Treatment intraoral and extraoral photographs showing class 2 subdivision molar relation, crowding in both arches and midline deviated to left side

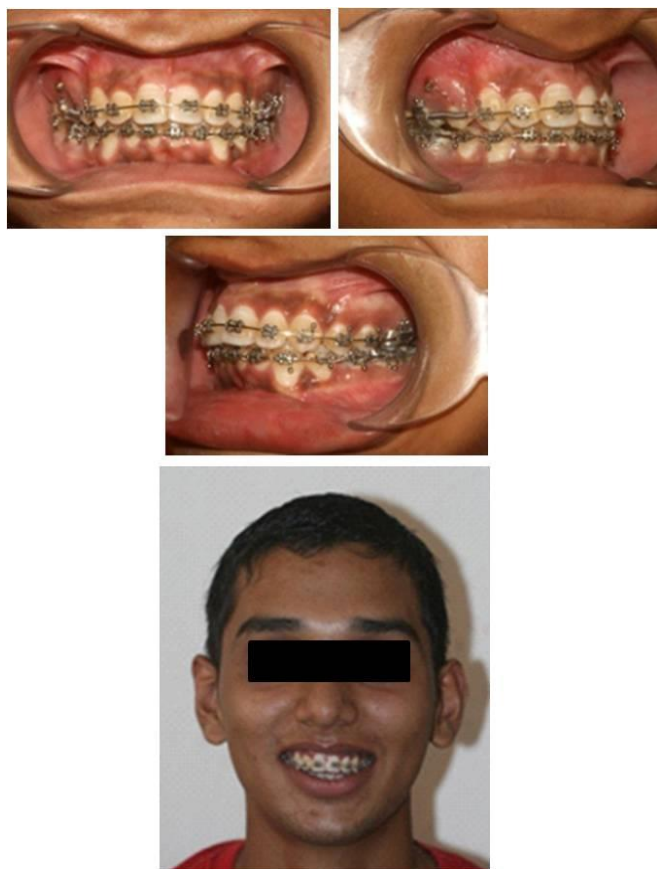


Fig 2: Mid treatment photographs: unilateral molar distalisation by mini implants between 26 and 25 to achieve class 1 molar relation on right side

Treatment Progress

Initially, 24 and 34 were extracted and a MBT 0.022 bracket were bonded. Initial alignment wires, 0.014 NiTi were ligated. Ligation tie was given from 23 to 26 to aid in distalisation of canine for relieving of crowding. Simultaneously after decrowding, 0.017*0.025 wire was ligated in both arches. Miniscrew (1.3*8mm) was inserted in the maxilla in the region between 25 and 26. (fig2) Bracket on the right side premolar was removed and coil spring was tied to the mini screw for distalisation of the molar to correct the molar relation and midline Total duration of the unilateral distalisation was 5 months. The case was debonded after 16 months of active treatment. Upper and lower Bonded Lingual Retainer from canine to first premolar were given. (Fig 3)



Fig 3: Post treatment extraoral and intraoral photographs showing class 1 molar and canine relation and coincident midline

DISCUSSION

This case demonstrates the importance of identifying the specific area of arch asymmetry when initial good profile is present. Because the dental asymmetry for this patient was on the left side, it was appropriate to unilaterally extract in the maxillary arch to achieve canine symmetry and in the mandibular arch to relieve crowding. If the case had been treated with bilateral extractions, it was unlikely that the arch asymmetry would have been corrected thereby resulting in failure to center the dental midlines facially. Another advantage of this type of asymmetric extraction was to create the canine guidance

during lateral one movement of the mandible. The establishment of canine guidance is aimed in the orthodontic completion due to several factors: the strategic positioning of the canine in the arch; the favorable root anatomy, presence of a better crown root proportion; the presence of dense and compact bone around the root, which better tolerates the occlusal forces compared with the medullar bone of the posterior teeth; the sensorial pulse that activates less muscles when the canine teeth are in contact than when posterior teeth contact each other.^{8,9} A study was done by Chen et al.¹⁰ to clinically investigate the results of unilateral extraction in the treatment of moderate crowding cases. There is no significant difference in dental arch symmetry between unilateral extraction and bilateral extraction.

CONCLUSION

Asymmetric extractions could simplify and facilitate orthodontic treatment and mechanics in some specific cases. As a result, first molars relationship could differ for right or left sides and this asymmetry would not bring functional or esthetics problems. However, the orthodontist must have total control of the mechanics used to achieve the best final results at the end of the treatment.

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