

## Minor Tooth Movement to Malocclusion: Case Series

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### Abstract

*Melancholy with dento-facial appearance is the main reason for seeking orthodontic treatment. Growth modification is difficult to achieve in skeletally mature patients thus it is very common challenge for the orthodontics to treat such subject without camouflage therapy. In skeletally mature subjects the treatment only depends on tooth movement, the desired results can be achieved alone or along with surgical interventions. This article describes orthodontic treatment of a 16 years, 17 years and 23 years old Malaysian female whose main complaint were unpleasant smile. The treatment was satisfactorily finished by fixed orthodontic appliance. The satisfactory occlusion with ideal overjet and pleasant smile for all subject were achieved. Therefore with the orthodontics intervention via fixed appliances in subject having mild crowding can be successfully managed.*

**Keywords:** Fixed orthodontic treatment, mild malocclusion

### Introduction

As teeth are ornamental part of human body, the demands for orthodontic treatment become arising day by day<sup>1</sup>. According to Glossary of Orthodontic term, the state of any deviation from the normal or ideal occlusion is known as malocclusion<sup>2</sup>. Everyone has some degree of malocclusion and it can present itself in numerous ways; mild malocclusion, moderate malocclusion and severe malocclusion. The prevalence of malocclusion varies among different races and populations<sup>3</sup>.

Tooth size and arch length discrepancy or arch crowding is the most prevalent type of malocclusion noticed in orthodontic clinic which is characterized by misalignment, derotation or displacement of teeth from jaw. Undesirable eruption of teeth and early or late loss of primary teeth are the main reason of crowding. Patients feel shy and lose their self esteem and confidence which affect their personal and social life. Beside this crowding patient cannot maintain their oral hygiene properly, as a result there is more chance of dental caries and periodontal diseases. It also interrupts the proper functioning of teeth<sup>4-6</sup>.

Proper treatment of crowding is necessary not only to prevent these clinical problems but also to preserve the attractive smile<sup>7</sup>. In this article, we describe three cases of crowding in which satisfactory correction took place. Among these, Case No 1 was Class II division I deep bite case with moderate crowding and another two were Class I crowding case.

### Case Reports

**Case-1:** 17-year-old Malaysian female patient came to our hospital for orthodontic treatment. Her chief complaints were

unaesthetic smile, anterior proclined teeth and inability to close the lips. No significant medical history was found. Clinical examination showed that symmetrical facial pattern with convex facial profile and incompetent lips. All teeth were present including third molars and patient had good oral hygiene and healthy soft tissue. There overjet was 9mm and deep overbite was found and cross bite was found on lower both 2<sup>nd</sup> premolars. There was class I canine relationship and class II molar relationship (Figure-1).



**Figure-1**

**Pre-treatment extra and intra oral photographs of case 1**

**Case-2:** The Patient was 23 years old Malaysian woman came to our hospital whose chief complaint was unaesthetic smile. Clinical examination showed mild convex facial profile. Anterior crowding in lower arch with buccally placed lower right lateral incisor and left canine. Both canines of upper arch were buccally rotated. Overjet and over bite were normal. Canine relationship on right side was Class I and on the left side was edge to edge relation. Molar relationships were Class I on both sides (Figure-2).



Figure-2

**Pre-treatment extra and intra oral photographs of case 2**

**Case-3:** It was another case of having chief complaint of unaesthetic smile. The patient was 16 years old Malaysian female. On examination we found moderate crowding on lower arch, lower left 2<sup>nd</sup> premolar was lingually placed. Upper arch was well aligned and oral hygiene was average (Figure-3).



Figure-3

**Pre-treatment extra and intra oral photographs of case 3**

## Diagnosis

Case-1: It was Class II division I deep bite with moderate crowding.

Case-2: It was class I moderate crowding.

Case-3: It was class I deep bite with moderate crowding.

## Treatment Objectives and Plan

The treatment objectives of these entire patients were to achieve normal overjet and overbite, maintain the facial profile, maintain canine and molar class I relationship, to achieve an ideal occlusion, to relieve crowding.

Extraction of upper first premolars and lower second premolars was planned for case-1. The main goal of the treatments was to level and align the teeth and to retrocline the upper anterior teeth to achieve lip competence by fixed orthodontic treatment. Oral hygiene instructions were also given to the patients.

**Treatment progress: Case-1:** Treatment was started with extraction of upper right first premolar and lower right second premolar followed by upper left first premolar and lower left second premolar to create space. Then both arches were bonded with fixed orthodontic appliance. Arch wires of 0.012, 0.016, 0.017X025 inch NITI, 0.017X025 SS with sequence were followed. When upper anterior retroclination was done and deep bite was corrected. Class II (bill) elastic was also applied. Finally debonding was done and retainer was delivered to patient. Patient was satisfied with the improved aesthetic appearance (Figure-4).

**Case-2:** Treatment was started with bonding of brackets with all teeth using the MBT 0.022 inch Preadjusted Edgewise Appliance. Discing was done on upper both canine and lower left canine to create space. Then modified derotation force was applied to derotate the left canine of both upper and lower arch. By using power chain complete correction was achieved. For final stabilization 0.017X025 SS wires were applied on both arches.

After 15 months of treatment, the treatment objective was achieved successfully. Then, decided to debond brackets. (Figure-5)

**Case-3:** Treatment was started with bonding of brackets with all teeth. Alignment and leveling were achieved with sequence of 0.012, 0.014, 0.016, 0.018 NITI, 0.017X025 SS arch wires. Discing was done on 43, 42, 33 and 35 to achieve space. 3<sup>rd</sup> order bend given to lower incisors and second order bend given to lower left canine and 1<sup>st</sup> premolar. By using close power chain complete correction was achieved on lower arch. At the end of the treatment, retainer was delivered to the patient to maintain the result (Figure-6).

By using fixed orthodontic appliances facial profile and smile was enhanced of all patients. Upper incisors were retroclined with normal overjet and overbite achieved successfully and lips also become competent in relation to E-plane (case-1). An ideal occlusion including facial aesthetic was achieved in all these three cases without any side effects. Class I canine and molar relationship was achieved on both sides. The patient’s previous complaints were fruitfully resolved by treatment. The patients were satisfied with her teeth and profile. Figure-7 shows the changes of before and after treatment of all these three cases.



Figure-4

Post-treatment extra and intra oral photographs of case 1



Figure-5

Post-treatment extra and intra oral photographs of case 2



Figure-6

Post-treatment extra and intra oral photographs of case 3

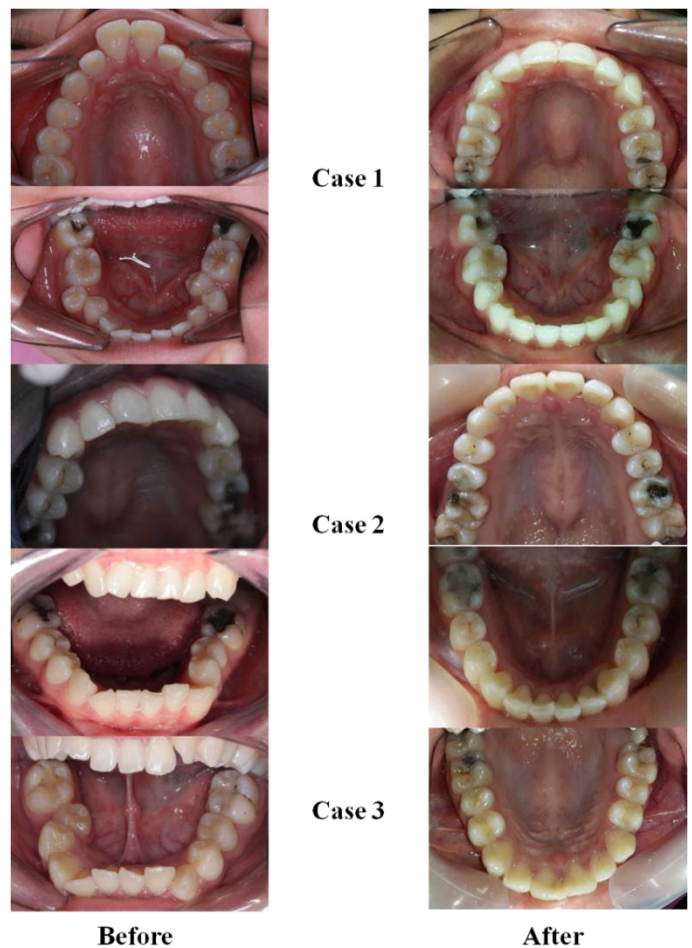


Figure-7

The pictures showing before and after treatment of crowding of all these three cases

**Discussion:** The most important cause of seeking orthodontic treatment is despondency with facial appearance<sup>8</sup>. In that prospect crowding is the most common chief complaint of patient looking for treatment to align their crooked tooth<sup>9</sup>. Crowding is seen more frequently in anterior region than posterior region<sup>10</sup>. According to National Health and Nutrition Examination Survey (NHANES III), approximately half of children in the United States comprise at least mild crowding in the mixed dentition, which may aggravate during puberty and later life<sup>11</sup>. Crowding is not only related with aesthetic problem but also associate with some unaesthetic matter like dental protrusion, soft tissue and facial profile problems, lip incompetency and poor gingival condition like our first case<sup>12</sup>.

As arch length- tooth material discrepancy is the main causative factor of crowding, in such cases the main focus of the treatment will be space gaining. Treatment protocol of crowding basically depends on types and severity of the case. Space gaining can be obtained by different methods; discing/ stripping, expansion of the arches, distalization, extraction of tooth or labial flaring<sup>13,14</sup>. Every treatment alternative has its own pros and cons<sup>15</sup>. However, when minimum space is required discing is preferred. But when more space is required extraction, labial flaring can be the treatment of choice. Equally in case of growing patient, space can be created by expansion of arches. After getting the desirable space, braces can correct or eradicate the crowding and align the teeth<sup>14,16</sup>. Correction of crowding facilitates to maintain oral hygiene properly thus prevent dental caries and periodontal diseases<sup>3</sup>.

In these cases we achieved space by extraction of upper first premolars and lower second premolars (case-1) and by doing discing (case-2 and 3).

## Conclusion

Crowding is a noteworthy etiological factor behind the development of unaesthetic profile and occlusal disharmony. By using fixed orthodontic treatment, correction of dentoskeletal malocclusion can bring excellent improvement in soft tissue profile and also can achieve an ideal occlusion with negligible side effects within a comparatively short period of time. This case series shows satisfactory treatments, as patient's previous complaints were diminished. And patients were very happy with their improved esthetics and function.

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