

## Midline diastema and crowding correction with Invisalign lite: a case report

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# Midline diastema and crowding correction with Invisalign lite: a case report

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## Abstract

The Clear Aligner can be used to correct tooth movement without involving extraction, surgery, and other adjunct orthopaedic appliances. Some forms of attachments are required with clear aligners to achieve all major types of orthodontic tooth movements. The Clear Aligner is a procedure that can be performed by a clinician with computer simulation/calculation. Since the Clear Aligner can be fabricated in steps, it is readily available to change the treatment sequence throughout the course of the treatment in cases of complex malocclusions. The patient can receive any necessary dental procedures with ease during the course of the treatment. The treatment can also be easily resumed even if the patient has not worn the aligners for a period of time. The purpose of this article is to report dental anterior crossbite correction with a series of Clear Aligners without the use of any forms of attachments. The Clear Aligner could be used as an alternative in appropriate cases for those who are reluctant with conventional appliances.

## Introduction

Nowadays, there is a growing demand for aesthetic treatment among both adolescents and adults. Indeed, a recent study estimated that 45% of adults are unhappy with their smile and that 20% of these have considered undergoing orthodontic treatment to improve their appearance. Hence, aligner systems must now be able to treat various types of malocclusion, and over recent years, many studies have shown their great efficacy in correcting crowding, crossbite and diastemas, and even complex cases featuring extraction, open-bite, and poor occlusal relationships.

## Case Report

This case report describes an adult female patient with class I subdivision, midline diastema and crowding treated successfully with aligners.

### Diagnosis and etiology

A 35 years old patient came to our observation complaining of a relational problem regarding poor aesthetics of the smile (Figs. 1).

Clinical examination revealed class I subdivision with midline diastema and crowding in the inferior dental arch (Fig. 3).

The pre-treatment OPT (Fig. 6) shows the presence of all the permanent teeth with overall good alveolar bone density and good root morphology.

Periodontal biotype and oral hygiene were good.

### Treatment objective

The treatment objectives were to align the arches, correct the midline diastema, correct tipping of central incisors and obtain ideal overate and overbite. Lower crowding was to be resolved by interproximal reduction.

Additional objectives were to improve facial aesthetic and reduce black buccal corridors during smiles.

The buccal segment occlusion and Class I molar relationship was to be maintained with both fixed and removable retainers to maintain the treatment outcomes.

In view of the case history, a non-invasive treatment was chosen that would resolve aesthetic and functional problems. The Patient's desire was to improve the smile, but without going through fixed type traditional orthodontics.

### Treatment progress

The virtual set-up dictated 13 treatment steps for each arch.

In order to align lower frontal teeth, IPR in combination with expansion of molars, premolars and rotation was done.

In upper arch, IPR and sequential distalization of upper premolars and molars was done. Retrusion and an increment of palatal root torque of upper incisors were done.

The patient was instructed to wear each aligner for 22 h per day and to move on to the next one in the series after 10 days.

At the end of treatment a successful outcome was

achieved (Fig. 7). Both upper and lower arches were well aligned with complete correction of midline diastema (Fig. 9).

## Discussion

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Post-treatment records demonstrate satisfactory final results with all objectives achieved. Extraoral photos show a good profile, correct incisor exposure during smile and absence of buccal corridors. Intraoral examination reveals the achievement of all planned objectives, midline diastema and crowding correction. Post-treatment panoramic radiography showed good root parallelism, no sign of crestal bone height reduction, and no evidence of apical root resorption.

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## Summary and Conclusions

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Use of aligners is an efficacious means of resolving orthodontic issues such as midline diastema and crowding within a time-frame inferior to conventional fixed orthodontics, but with excellent aesthetics and oral hygiene.

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## Illustrations

### Illustration 1

Smile before treatment (t0)



### Illustration 2

Occlusal view of upper arch (t0)



### Illustration 3

Occlusal view of lower arch (t0)



### Illustration 4

Lateral view of right side



## Illustration 5

Lateral view of left side (t0)



## Illustration 6

OPT before treatment



## Illustration 7

Smile after treatment (t1)



## Illustration 8

OPT after treatment





## Illustration 9

Occlusal view of upper arch after treatment (t1)



## Illustration 10

Occlusal view of lower arch after treatment





## Illustration 11

Lateral view of right side (t1)



## Illustration 12

Lateral view of left side (t1)

