



Scissor bite and crowding correction with clear aligners: case report

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Abstract

Background: To describe an esthetic orthodontic treatment using aligners in an adult patient with crowding and dental scissor bite. A 21-year-old female patient with skeletal class I presented for an orthodontic treatment. Occlusally, the patient presents class II subdivision, scissor bite at tooth 4.4, an upper midline deviated with respect to the lower and facial midlines, and crowding in both arches. The patient refused conventional fixed multibracket treatment in favor of aligners. Pre- and post-treatment records are presented.

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Findings: Treatment objectives were achieved in 14 months, and the patient was satisfied with the functional and esthetic outcomes, which were stable at 1 year.

Conclusion: Combining aligners with appropriate auxiliaries is an efficacious means of resolving orthodontic issues such as dental scissor bite and crowding in a time-frame comparable to that of conventional fixed orthodontics. Furthermore, this system is associated with optimal oral hygiene and excellent esthetics.

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 diastems, and even complex cases featuring extraction, open-bite, and poor occlusal

relationships.

Invisalign technique

Invisalign is a new technique able to resolve some orthodontic malocclusions without the use of traditional fixed equipment.

The real innovation of the methodology is represented by Clin-Check, a digital three-dimensional simulation that allows clinicians and the patients to see a film on the computer tracking the movements from beginning to end of the dental treatment.

The Aligners, made of transparent thermoplastic polymer, allow a tooth movement of 0,15â€”0,25 mm; they must be worn at least 22 hours a day and have to be replaced every 10 days with the next aligner. The possibility of removing these alignments also allows the patient to control daily oral hygiene.

Some types of movement are favoured by the "Attachments" forms at the dental composite used in relation to their shape and positioning that determine movements such as intrusion, extrusion, rolling, fluid, torque, up righting of the root. In order to provide masks without defect it is crucial to make impressions with intraoral scan in order to obtain precise study models.

Case Report

This case report describes an adult female patient with class I subdivision, dental scissor bite, and crowding treated successfully with aligners.

Diagnosis and etiology

A 21 years old patient came to our observation complaining of a relational problem regarding poor aesthetics of the smile (Figs. 1, 2).

Clinical examination revealed class I subdivision, anterior upper midline shifted due to tipping of 2.2, a severe crowding in both superior and inferior (Fig. 4) dental arch, scissor bite against element 1.4 and 4.4 with the presence of deep bite.

The pre-treatment OPT (Fig. 7) 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 (Fig.2)

Treatment objectives

The treatment objectives were to align the arches, correct the scissor bite, centering the upper midline and obtain ideal overjet and overbite. Upper and lower crowding was to be resolved by expansion of both arches and anterior inter proximal reduction (IPR).

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 38 treatment steps for each arch.

To achieve the correction of the scissor bite, the plan involved expansion of molars and premolars of lower arch combined with correction of buccal crown tip and lingual root torque of tooth 4.4 and rotation of 4.3 (46 degrees)

To achieve upper midline correction, the plan involved protrusion and derotation of upper central incisors.

In order to align lower frontal teeth, IPR in combination with proclination and then retrusion and intrusion of lower frontal teeth was 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. 8). Both upper and lower arches were well aligned with complete correction of scissor bite (Fig. 9).

Treatment results

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

(Fig.7). Intraoral examination reveals the achievement of all planned objectives, scissor bite correction and crowding correction (Fig.7). Post-treatment panoramic radiography (Fig.9) showed good root parallelism, no sign of crestal bone height reduction, and no evidence of apical root resorption.

Summary and conclusions

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

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Illustrations

Illustration 1

Smile before treatment (t0)



Illustration 2

frontal view t0



Illustration 3

Occlusal view upper arch (t0)



Illustration 4

Occlusal view lower arch (t0)



Illustration 5

Lateral view right side (t0)



Illustration 6

Lateral view left side (t0)



Illustration 7

OPT before treatment



Illustration 8

smile after treatment (t1)



Illustration 9

Extra oral photo (t1)



Illustration 10

OPT (t1)



Illustration 11

Lateral view right side (t1)



Illustration 12

Lateral view left side



Illustration 13

Occlusal view upper arch (t1)

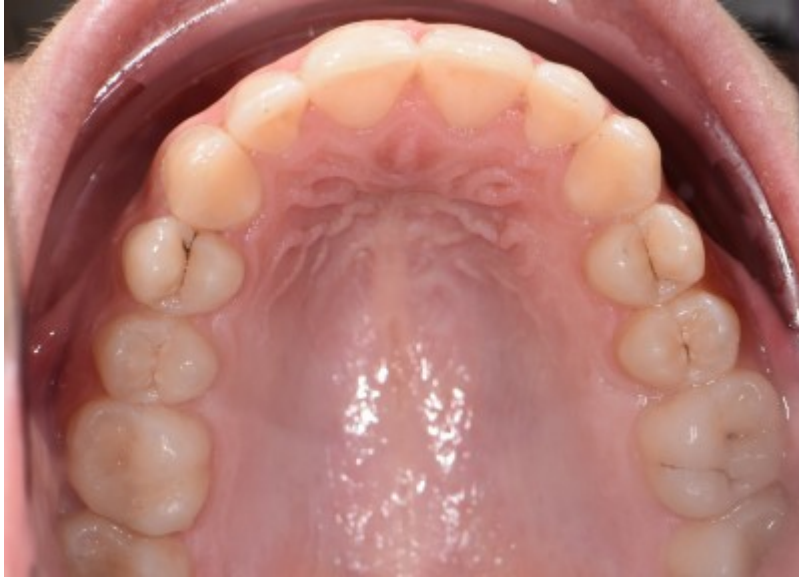


Illustration 14

Occlusal view lower arch (t1)

