Can the Occlus-o-guide be used in mixed dentition as interceptive therapy of Class II? A literature review

Peer review status:
No

Corresponding Author:
Dr. Oriana Martino,
Doctor in Dentistry, Sapienza University of Rome - Italy

Submitting Author:
Dr. Oriana Martino,
doctor, orthodontics - Italy

Article ID: WMC005632
Article Type: Systematic Review
Submitted on: 29-Aug-2020, 03:15:31 PM GMT Published on: 02-Sep-2020, 11:52:09 PM GMT
Article URL: http://www.webmedcentral.com/article_view/5632
Subject Categories: ORTHODONTICS
Keywords: Occlus-o-guide, Class II, Interceptive, Mixed dentition, Primary dentition, Eruption Guidance Appliance, Orthodontic Interceptive Therapy, Orthodontic Interceptive Device

How to cite the article: Martino O. Can the Occlus-o-guide be used in mixed dentition as interceptive therapy of Class II? A literature review. WebmedCentral ORTHODONTICS 2020;11(9):WMC005632

Copyright: This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC-BY), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Source(s) of Funding:
No

Competing Interests:
None
Can the Occlus-o-guide be used in mixed dentition as interceptive therapy of Class II? A literature review

Author(s): Martino O

Abstract

The Occlus-o-guide is an elastodontic Eruption Guide Appliance, which could achieve the ideal occlusion by exploiting the natural forces of growth to obtain harmonic occlusion in a balanced craniofacial context. This study is a literature review and was conducted in order to know if the Occlus-o-guide can be used as an interceptive therapy of Class II malocclusion.

In this review, 4 articles were included. According to these studies, the Occlus-o-guide is a removable, elastodontic appliance which could be used as interceptive therapy of Class II malocclusion and as guide of the eruption of teeth into ideal occlusion. Moreover, this appliance could be used as retainer after the active phase of treatment until the eruption of all permanent canines, premolars, and second molars.

Therefore, the Occlus-o-guide is a safe appliance that allows for simultaneously solving the skeletal, dentoalveolar and dental problems in interceptive therapy phase during mixed dentition and guarantee the long-term efficacy of the obtained results with moderate and constant strength, of correction and stabilisation of overbite and overjet.

Introduction

The Occlus-o-guide is an Eruption Guidance Appliance, which, according to Bergesen E.O. theory of guided occlusion, could achieve the ideal occlusion by supporting, intercepting and guiding the innumerable variables of times and methods of each element of tooth eruption. In fact, it could exploit the natural forces of growth to obtain harmonic occlusion in a balanced craniofacial context.

The Occlus-o-guide is a monoblock appliance, built on a head-to-head incisal relation, it exists in various series and sizes, depending on the clinical case and the phase of dentition. This device is indicated for patients aged between 6 and 12; it is made of soft elastomeric silicone, a vinyl resin that is called ElvaxR which has optimal characteristics of resilience, in fact it is removable, comfortable, safe and simple in construction and function, and is indicated both in primary and in secondary dentition.

Materials and Methods

This study was conducted to evaluate if the Occlus-o-guide could be used in clinical practice as interceptive treatment of Class II malocclusion. The review was conducted by consulting Pubmed database. The following key word was used: occlus-o-guide. Review articles, systematic reviews, case-control studies, randomized studies were included. Articles not in English were excluded.

Results

According to inclusion and exclusion criteria, 4 articles were included. The Occlus-o-guide is used in these articles in order to evaluate if it could treat Class II malocclusion as interceptive appliance.

Condo’ et al. evaluated in two identical twins suffering from the same malocclusion the clinical effectiveness and stability of the functional Class II division 2 interceptive treatment by mandibular back-positioning associated with deep bite at puberty, and to compare skeletal and dento- alveolar changes induced by the application of two different removable appliances: the Twin block of Clark and Occlus-o-guide of Bergesen. Twin-block is a removable functional device in resin consisting of two plates each provided with opposing lateral planes, inclined at 70 degrees to the occlusal plane, which come into contact in the distal region of lower second premolars, resulting in a protruded position of the jaw and allowing the correct mandibular rotation. Moreover, in the literature, the small reports on the use of the Twin Block interceptive treatment of Class II division 2 malocclusion show that this appliance is able to promote growth of the mandible.

The twins included in this study were 11 years and 4 months of age, in mixed dentition, with the same malocclusion: Class II division 2 caused by mandibular retro-positioning associated with deep bite and radiographic presence of Class II division 2 dental relationship on a Class II skeletal basis and...
mandibular retro-positioning. Comparing the before and after cephalometric results, both devices were able to promote significant and obvious clinical effects. Moreover, the twin treated with the Occlus-o-guide had: the strengthening of condylar growth in both length and degree of mandibular myo-skeletal progress as well as the establishment of basal and dental Class I; the achievement of optimal intercuspitation for guiding the eruption and maintenance of each individual permanent element in the correct position until the end of the dental exchange; the decrease in the overjet and the stabilization of the overbite within the ideal minimum; the alignment and levelling of the dental arches; progressive improvement of gingival recession present in correspondence to the vestibular surfaces of both central mandibular incisors (due to multifactorial etiology).

The study of Ierardo et al. reports the case of a 5 years old age child affected by Dentinogenesis Imperfecta - a disorder of tooth development, characterized by severe hypomineralization of dentin and altered dentine structure. The patient was treated with elastomeric devices since 5 years to 12 years of age, because of long face and flat profile with a vertical asymmetry, deep-bite, distal step on the right and on the left, deep dental wear. The cephalometric analysis showed: increased overjet, increased overbite and normal divergence.

The patient was treated in two phases: in the first one with the Nite-Guide - an elastodontic device used at night and two hours a day, which is only for primary dentition from 5 to 7 years old kids - while, during the second phase (from 7 years old) she was treated with Occlus-o-guide in order to correct second class of malocclusion and guide the permanent teeth in the right position in the arch and to decrease the overjet and overbite. Thanks to this elastodontic therapy, the patient corrected the Class, deep bite without a severe intervention on surfaces of the teeth.

Lagana' et al. used the Occlus-o-guide in order to correct the dento-skeletal malocclusion, to obtain a correct overbite and overjet, to control the permanent teeth in a good eruption, to improve aesthetical conditions and to maintain clinical results in a 9 years old patient with mixed dentition with dento-skeletal class II malocclusion, deep bite, increased overjet and gummy smile. The face of the patient was symmetric with gummy smile and low retrognatic profile. Clinical examination showed right and left class II molar relationship, no crowding in mandibular arch, increased overjet, severe deep bite, coincident midlines. In the cephalometric analysis, she showed Class II malocclusion with mandibular, hypodivergency, dental deep bite, increased overjet, proclination of lower incisor and reclination of upper incisor, alteration of profile. The treatment consisted of Occlus-o-guide used during nighttime and two hours a day, which lead to the correction of Class II malocclusion (in 12 months), crowding, gummy smile and deep bite, increasing of overjet, in association with good aesthetic results. These results were stable during time, in fact after 3 years, the patient had correct intercuspitation, no crowding, normal overjet and overbite, right and left canine and molar Class I.

Keski-Nisula et al. investigate the effects of orthodontic treatment in the early mixed dentition with the eruption guidance appliance. In this study, the Authors included patients with at least 1 of the following occlusal characteristics: distal step ofÂ greater than or equal toÂ 1 mm, Class II canine relationship ofÂ greater than or equal to 1 mm, crowding, overjet greater than or equal to 3 mm and lack of tooth-to-tooth contact between the incisors, overbite ofÂ greater than or equal to 3 mm and lack of tooth-to-tooth contact between the incisors, anterior crossbite, and scissorbite. The number of children included was 315. Of them, 33 were treated with other appliances, mainly the quad-helix, and they were excluded from the study sample. In 27 cases, the child or the family refused orthodontic treatment. Treatment with an eruption guidance appliance was started in 255 children. During the treatment, 12 children moved to another municipality and could not complete the treatment; their records were excluded from the analysis. Of the remaining 243 children, 167 completed the treatment. There were two times of evaluation: T1 (the time when the treatment started at the beginning of the mixed dentition period) and T2 (after full eruption of all permanent incisors and first molars), when, the early treatment group entered the retention period, and treatment was started in the control group.

The Authors analyzed the occlusal changes from T1 to T2 of 167 children in the treatment group (85 boys, 82 girls) and 104 children in the control group. The mean ages in both groups were 5.1 years at T1 and 8.4 years at T2. Two or 3 prefabricated eruption guidance appliances (Nite-Guide or Occlus-o-Guide; Ortho-Tain, Winnetka) were used in each patient in the period between T1 and T2 (for 3.3 years), and were worn 1 hour a day and during nighttime, and at T2, all the appliances were used as retainer 2 nights a week, until all permanent canines, premolars, and second molars were fully erupted. The results indicated that orthodontic intervention with the eruption guidance
appliance (included Occlus-o-guide) in the early mixed
dentition is an effective treatment modality for
malocclusions with Class II or Class II tendency,
excess overjet, deepbite, open bite, crowding, anterior
crossbite, or buccal crossbite, in fact during the
treatment, the erupting permanent incisors and first
molars were guided into their correct positions in the
dental arches, and intermaxillary relationships in the
incisor, canine, and molar segments were largely
corrected. This study shows that treatment in the early
mixed dentition with the eruption guidance appliance is
an effective method to restore normal occlusion and
eliminate the need for further orthodontic treatment.

Conclusions

According to these studies, the Occlus-o-guide is a
removable, elastodontic appliance, which could be
used as interceptive therapy of Class II malocclusion
and as guide of the eruption of teeth into ideal
occlusion with moderate and constant strength, of
correction and stabilization of overbite and overjet. In
fact, they show that it prevents or eventually corrects
development of more or less complex malocclusion
before the dental exchange is fully completed,
gradually guiding the permanent teeth towards a
stable relationship in the Class I normal conformant
arches with ideal parameters of overjet and overbite
so as to be as close as possible to the physiology of
occlusal development.

Using the elastodontic treatment for Class II
malocclusion produces the following results: increase
in mandibular growth and degree of mandibular
protrusion, increase in lower anterior and total anterior
face height, lingual tipping and retraction of the
maxillary incisors, protrusion of the mandibular
incisors, increased mandibular molar mesial drifting
and mandibular posterior dento-alveolar height,
improvement in maxilla-mandibular and molar
relationships, decrease in overjet and overbite and
inhibition of the vertical development of the maxillary
incisors.

Interceptive treatment of Class II could be done by a
careful supervision of the developing dentition and
occlusion and a correct diagnosis during mixed
dentition. On the other hand, we should consider that
Occlus-o-guide is a removable device, so the
collaboration of patient and support of parents are
essential.

Moreover, this appliance could be used as retainer
after the active phase of treatment until the eruption of
all permanent canines, premolars, and second molars.

In conclusion, Occlus-o-guide is a safe appliance that
allows for simultaneously solving the skeletal,
dento-alveolar and dental problems in interceptive
therapy phase during mixed dentition and guarantee
the long-term efficacy of the obtained results.

References

- Bergersen EO. Preventive and interceptive
orthodontics in the mixed dentition with the
myofunctional eruption guidance appliance:
correction of overbite and overjet. J Pedod. Spring
1988;12(3):292-324

- Bergersen EO. The eruption guidance
myofunctional appliance: case selection, timing,
motivation, indications and contraindications in its

- Bergersen EO. The eruption guidance
myofunctional appliance: how it works, how to use it.

- Condo R., Perugia C., Bartolino M., Docimo R.
Analysis of clinical efficacy of Interceptive treatment
of class II dentition: A prospective, controlled study
on the effects of the eruption guidance appliance.
Am J Orthod Dentofacial Orthop 2008
Feb;133(2):254-60

- Ierardo G., Luzzi V., Nardacci G., Vozza I.,
Polimeni A. Minimally invasive orthodontics:
elastodontic therapy in a growing patient affected by

- Katri K.N., Riitta H., Maritta H., Leo K.N., Juha V.
Orthodontic intervention in the early mixed
Orthodontic intervention in the early mixed dentition:
A prospective, controlled study on the effects of the
eruption guidance appliance. Am J Orthod
Dentofacial Orthop. 2008 Feb;133(2):254-60

- Lagana’ G., Cozza P. Interceptive therapy with
elastodontic appliance: case report. Ann Stomatol
(Roma) 2010 Jul;1(3-4):22-8

- Seow WK. Developmental defects of enamel and
dentine: challenges for basic science research and
clinical management. Australian Dental Journal.
2014 Jun;59(supp1):143-154

- White L. Early orthodontic intervention. Am J Orthod
Dentofacial Orthop 1998;113:24-8