

# Correction of skeletal class 2 malocclusion with Carriere Motion appliance: case report

© Mariam M. Shubitidze

Peoples' Friendship University of Russia" (RUDN University), Moscow, Russia

## Abstract:

The article considers nonsurgical and nonextraction method of treatment of patient with skeletal class 2 malocclusion.

**Aim.** To evaluate the treatment effectiveness of Carrier Distalize, determining the short-term skeletal and dental effects occur as a result of Class II malocclusion correction utilizing the Carrière Overall, the Carriere Distalizer appears to be effective in early results in the treatment of Class II malocclusion.

**Materials and methods:** A 25 years old male patient presented for treatment exhibition a class 2 malocclusion with a severely retrusive mandible was treated with Carrier motion class 2 appliance, after previous orthodontic unsuccessful treatment with extraction of the lower right premolar by brace system. the appliance was used for 5 month full time. This systematic review was conducted and changes were analyzed from dental photo protocol, lateral cephalograms taken at the start and after and study model measurements from pre and post treatment

**Results:** the time of skeletal class two correction in class one for Carriere motion appliance was significantly shorter. great mesial mandibular movement and improvement in sagittal skeletal relation were shown after carrier motion appliance treatment for five month.

**Conclusions.** Treatment resulted that carrier motion appliance is simple to apply, comfortable for patient and effective in correcting class 2 malocclusion.

**Keywords:** Class II malocclusion, Carriere Distalizer, Class II.

**Received:** 01.02.2022; **revised:** 6.03.2022; **accepted:** 13.03.2022.

**Conflict of interests:** The authors declare no conflict of interests.

**Acknowledgments:** There are no funding and individual acknowledgments to declare.

**For citation:** Mariam M. Shubitidze. Correction of skeletal class 2 malocclusion with Carriere Motion appliance: case report. Endodontics today. 2022; 20(1):54-56. DOI: 10.36377/1726-7242-2022-20-1-54-56.

## INTRODUCTION

The Carriere Motion Appliance (CMA) has become popular among orthodontic practitioners for non-extraction Class II dental correction, since Dr. Louis Carriere first introduced and described his appliance in 2004. [1] Carriere asserts that the CMA "allows distal movement of the canine along the alveolar ridge without tipping" and "produces a distal rotational movement of the maxillary first molars around their palatal roots [2]." The manufacturer, Henry Schein, reports an average of 3 to 6 mm of distalization of the maxillary posterior segment as a unit while controlling for unwanted torqueing and tipping. According to the literature, a distal movement of the maxillary first molars with Carriere motion appliance occurs prior to fixed appliances or clear aligners, with the anchorage from either lower arch or Essix retainer. The Distalizer is made of moldinjected, nickelfree stainless steel.[3]

It is bonded to the canine and first molar as follows: the canine pad, which allows distal movement of the canine along the alveolar ridge with out tipping, provides a hook for the attachment of Class II elastics to the lower first

molar. The Carriere Motion appliance is a technology that first addresses the patient's sagittal dimension to establish a Class I platform prior to comprehensive orthodontic treatment. [3] This is accomplished the initial 3-6 months of treatment.[4]

Stage one with the Carriere motion appliance is to involve the malocclusion II class one platform by distalizing each maxilar segment. Protocol is called 'Sagittal First'. [4] Sagittal First eliminates competing force vectors inherent in traditional methodologies when traction is employed concurrent with fixed appliance treatment. After reaching a Class I platform in the buccal segments starts stage two finishes therapy with brackets or another finishing appliance, including Invisalign.[3]

## CLINICAL CASE

Twenty-five-year old male patient presented for treatment exhibiting a skeletal Class II, malocclusion with a severely retrusive mandibular. skeletally patient had a retroposition of the mandible, overbite 6 mm. His chief complaint was chewing difficulty and he expressed a strong desire to

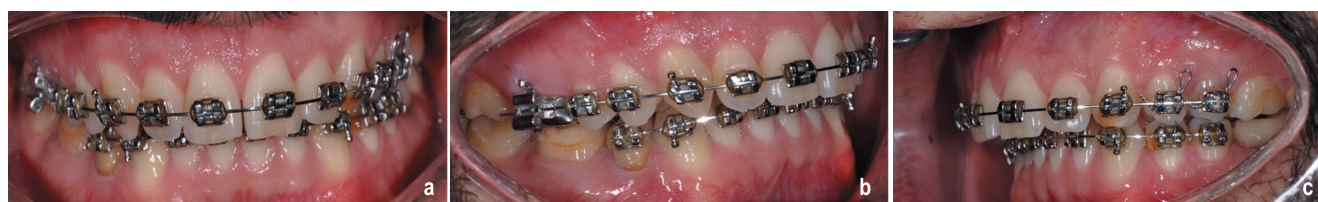


Fig. 1. Intraoral patient photos in occlusion in the first appointment. a – front view; b – left view, c – right view.



Fig. 2. Overjet before treatment.



Fig. 4 Frontal view after Carriere motion treatment before stage 2.



Fig. 3. Initial view. Right side with fixed Carriere Motion.

improve his esthetic appearance. The patient had had previous orthodontic treatment with extraction of the lower right premolar. In consultation with other orthodontists, orthognathic surgery was recommended, which he wanted to avoid (Fig. 1, 2).

After removing old braces, bonded Carriere motion appliance size 25mm, to the upper canines and first molars with "Force 1" 6oz, ¼ intraoral elastics for the first and second month, arch wire in mandibular 014/025 And "force 2" 8oz, 3/16 elastics for the third and fourth months. fifth month.

Arch wire on mandibular 017/025 and intraoral elastics "force 1" plus "force 2." (Fig. 3,4).

5 months of sagittal correction, the occlusal lock of the Class I platform had been accomplished (Sagittal First) and the case was ready to progress to the next stage. The carrier Motion appliance was removed and brackets were bonded.

Treatment followed the archwire sequence:

- .014 Cu Nitantium
- .014 x .025 Cu Nitantium
- .017 x .025 Cu Nitantium
- .019 x .025 Cu Nitantium

The first wire, 014 round Cu Nitantium wire, corrected the rotations of the incisors. Power chain was used to close the spaces between the incisors with the .014 x .025 Cu Nitantium wire,. After these spaces closed, the .017 x .025 Cu Nitantium wire would begin torque control with the final

archwire, the .019 x .025 Cu Nitantium wire, to finalise the axial angulations of the anteriors. When the upper .019 x .025 archwire was engaged, three links of power chain were run bilaterally from the 2nd premolar to the 1st premolar and from the 1st premolar to a crimpable hook attached to the wire distal to the lateral incisor to retract the anterior segment, bringing it into the final desired position.

Five months of sagittal treatment with Carriere Motion appliance and second stage 10,3 month of fixed appliance treatment the case finished to a harmonic occlusal and facial result. The result exhibits an excellent repositioning of the mandible held in position by the occlusal lock of the class 1 platform (Fig. 5).

## DISCUSSION

The aim of the study was to evaluate opportunity and effectiveness of Carriere motion appliance for correction sagittal component of malocclusion skeletal class 2 within the first half year of treatment, with Non extraction and nonsurgical. The treatment plan was to reposition the mandible forward, placing the case into a Class I occlusion (Sagittal First) using the Carriere Motion Appliance. By the end of the first month of sagittal correction, there was already evidence of some derotation of the upper first molar and movement of the buccal segment toward a Class I occlusion. Space was also beginning to open between the upper incisors. After 5 months of sagittal correction, the occlusal lock of the Class I platform had been accomplished (Sagittal First) and the case was ready to progress to the next stage. after the fixed appliance treatment the case was finished to a great occlusion and facial signs. After changes in molar relationship the most obvious skeletal change was an increase in lower anterior facial height.

## CONCLUSION

Carrier Motion appliance is effective and efficient for correction class 2 malloclusion. Carriere Motion fixed appliance has shown good and predictable results as the first phase of skeletal 2 class treatment, thus confirming its effectiveness as a non-surgical orthodontic method. Ease for doctors to fix and a very comfortable for patients in everyday life.

## REFERENCES:

1. Kim-Berman H, McNamara JA Jr, Lints JP, McMullen C, Franchi L. Treatment effects of the Carriere® Motion 3D™ appliance for the correction of Class II malocclusion in adolescents. Angle Orthod. 2019;89(6):839-846Madurantakam P. Fixed or removable
2. Baumrind S, Molthen R, West EE, Miller DM. Distal displacement of the maxilla and the upper first molar. Am J Orthod. 1979;75:630-640.

3. Sandifer CL, English JD, Colville CD, Gallerano RL, Akyalcin S. Treatment effects of the Carriere® distalizer using lingual arch and full fixed appliances. J World Fed Orthod. 2014;3: e49-e54.
4. Thurzo, A., Urbanová, W., Novák, B., Waczulíková, I. and Varga, I., 2021. 3D Printed Orthodontic Distalizer with Individual Base for Tooth-Borne Hybrid Approach in Class II Unilateral Malocclusions Treatment.





Fig. 5. Patient after stage 2 at the end of the treatment. a – front view; b – maxilla, c – left view; d – mandibula.

#### AUTHOR INFORMATION:

*Mariam M. Shubitidze* – postgraduate student of the Department of Pediatric Dentistry and Orthodontics, ORCID ID: 0000-0002-1928-8310.

Peoples' Friendship University of Russia" (RUDN University). 6 Miklukho-Maklaya st, Moscow, 117198, Russia.

#### AUTHOR'S CONTRIBUTION:

*Mariam M. Shubitidze* – has made a substantial contribution to the concept or design of the article; the acquisition, analysis, or interpretation of data for the article; drafted the article or revised it critically for important intellectual content; approved the version to be published.

**Координаты для связи с авторами / Coordinates for communication with authors:**  
***Mariam M. Shubitidze, E-mail: mariamdentist12@gmail.com***