ORTOPEDIA FUNCIONAL DOS MAXILARES: MÁ OCLUSÃO CLASSE II. INTERVENÇÃO ORTOPÉDICA COM BIONATOR E SEUS BENEFÍCIOS. UMA REVISÃO

FUNCTIONAL ORTHOPEDICS OF THE JAW: CLASS II MALOCCLUSION. ORTHOPEDIC INTERVENTION WITH BIONATOR AND ITS BENEFITS. A REVIEW

ORTOPEDIA FUNCIONAL DE LOS MAXILARES: MALOCLUSIÓN DE CLASE II. INTERVENCIÓN ORTOPÉDICA CON BIONATOR Y SUS BENEFICIOS. UNA REVISIÓN

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ABSTRACT

Among existing malocclusions, Class II malocclusion has increased and become more recurrent, accounting for a significant proportion of patients seeking orthodontic treatment. Treatment can be conducted in different ways, with the two-stage approach being the most commonly used in cases requiring early intervention. It consists of the use of an orthopedic appliance, followed by a fixed appliance for occlusal refinement. The tooth-supported Bionator orthopedic appliance stimulates and accelerates mandibular growth through neuromuscular adaptation. The appliance acts by pushing the jaw forward, reestablishing a new mandibular position. The research addresses the effects and benefits provided by the use of Bionator, such as correction of mandibular retrognathism, correction of overjet, correction of space and lingual posture, as well as assistance in clearing the airways and stimulating nasal breathing. In addition, the study discusses possible issues related to its use, such as the ideal age for intervention, adaptation, patient collaboration, and long-term stability. The results indicate that when diagnosed and performed at the right time, the appliance is highly effective for Class II correction, especially for patients with mandibular retrognathism, with benefits that can be seen in dental and aesthetic aspects.
OBJECTIVE: To present the Bionator appliance and the benefits it provides when diagnosed and performed early.

Keywords: Bionator. Malocclusions. Class II. Orthopedic appliances.

RESUMO

Diante das más oclusões existentes, a má oclusão de classe II apresentou um aumento e uma frequência recorrente, representando uma boa parcela de pacientes que buscam

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tratamento ortodôntico. O tratamento pode ser conduzido de diferentes formas, sendo o mais utilizado em casos que necessitem de intervenção precoce, o de duas etapas. Consiste no uso de um aparelho ortopédico, seguido do aparelho fixo para refinamento oclusal. O aparelho ortopédico Bionator, dentosuportado, atua estimulando e acelerando o crescimento mandibular por meio da adaptação neuromuscular. O aparelho age impulsionando a mandíbula para frente, reestabelecendo uma nova posição mandibular. A pesquisa aborda os efeitos e os benefícios proporcionados pelo uso Bionator como, correção do retrognatismo mandibular, correção do overjet, correção do espaço e da postura lingual, além do auxílio na desobstrução das vias aéreas e estímulo da respiração nasal. Além disso, o estudo discute as eventuais problemáticas relacionadas ao seu uso, como idade ideal para intervenção, adaptação, colaboração do paciente e a estabilidade à longo prazo. Os resultados apontam que quando diagnosticado e realizado à intervenção no momento correto, o aparelho é altamente eficaz para correção da Classe II, em especial para pacientes com retrognatismo mandibular, com benefícios que podem ser vistos na parte dental e estético.
OBJETIVO: Apresentar o aparelho Bionator e os benefícios proporcionado quando diagnosticado e realizado à intervenção precocemente.

Palavras-chave: Bionator. Maloclusões. Classe II. Aparelhos ortopédicos.

RESUMEN

Entre las maloclusiones existentes, la maloclusión de clase II ha presentado un aumento y una frecuencia recurrente, representando una buena parte de los pacientes que buscan tratamiento ortodóntico. El tratamiento puede realizarse de diferentes maneras, siendo el más utilizado en casos que requieren una intervención temprana, el de dos etapas. Consiste en el uso de un aparato ortopédico, seguido de un aparato fijo para el refinamiento oclusal. El aparato ortopédico Bionator, soportado por los dientes, actúa estimulando y acelerando el crecimiento mandibular mediante la adaptación neuromuscular. El aparato actúa impulsando la mandíbula hacia adelante, restableciendo una nueva posición mandibular. La investigación aborda los efectos y beneficios que proporciona el uso del Bionator, como la corrección del retrognatismo mandibular, la corrección del overjet, la corrección del espacio y la postura lingual, además de ayudar a desobstruir las vías respiratorias y estimular la respiración nasal. Además, el estudio analiza los posibles problemas relacionados con su uso, como la edad ideal para la intervención, la adaptación, la colaboración del paciente y la estabilidad a largo plazo. Los resultados indican que, cuando se diagnostica y se realiza la intervención en el momento adecuado, el aparato es muy eficaz para la corrección de la Clase II, especialmente en pacientes con retrognatismo mandibular, con beneficios que pueden observarse en la parte dental y estética.
OBJETIVO: Presentar el aparato Bionator y los beneficios que proporciona cuando se diagnostica y se realiza la intervención de forma precoz.

Palabras clave: Bionator. Maloclusiones. Clase II. Aparatos ortopédicos.

INTRODUCTION

Functional jaw orthopedics (OFM) is the area of Dentistry, responsible for monitoring and correcting the development of the jaws and ensuring adequate dental occlusion. Its main objective is to ensure the balance of the musculoskeletal system, considering interactions between tooth, muscle, cranial base and temporomandibular joint. Its function is to identify and intervene early and/or in mixed dentition, problems that are related to the growth of bone structures. (VENÂNCIO, H. et al, 2024)

Class II malocclusion is one of the most common classes found today, as it occurs in about one-third of the population. This type of alteration is widely studied regarding cranial morphology, dental arch and its possible forms of intervention (PAVONI C. et al 2018). Class II, division 1 malocclusion may present discrepancies in all dimensions; in the form of a narrow maxilla, high palate, sagittal discrepancy, together with mandibular skeletal retrusion. (GAZANNI, F. et al, 2018).

Several factors can contribute to the development of Class II malocclusion, and a differential diagnosis is necessary for therapeutic decision-making. (ABBING et al 2024). The treatment for Class II malocclusion with functional appliances is a therapy capable of reorganizing the normal growth and development of the face with effects seen in the skeletal and dentoalveolar parts. (SANTOS PINTO, P. R et al, 2008)

As the appearance of the facial profile in patients who have Class II, subdivision 1 mallusion with mandibular retrusion is quite convex, one of the main objectives is related to the harmony of the face as well as the prevention of risks to dental trauma. (LANDAZURI, D. R. et al, 2013)

For cases of Class II patients, the treatment method can be conducted in different ways, with two-stage treatment being one of the most used. It consists of the use of an orthopedic appliance in the prepubertal phase, followed by the use of fixed appliances in the permanent dentition. (ABBING A. et al 2024)

The continuous use of the device favors biomechanical modifications in the masticatory muscles and the morphology of the temporamandibular joint (TMJ). With progressive mandibular advancement, it is possible to improve the facial profile, the existing corrected overjet; in addition to tongue and lip reeducation. (BIGLIAZZI, R. et al, 2015).

The Bionator has become a functional device widely used for Class II cases, standing out in treatments that present some mandibular deficiency. This type of device incites a new positioning of the jaw, and a new lower postural position is reestablished, stimulating the muscles of the face. (RAMIREZ, L. et al, 2019).

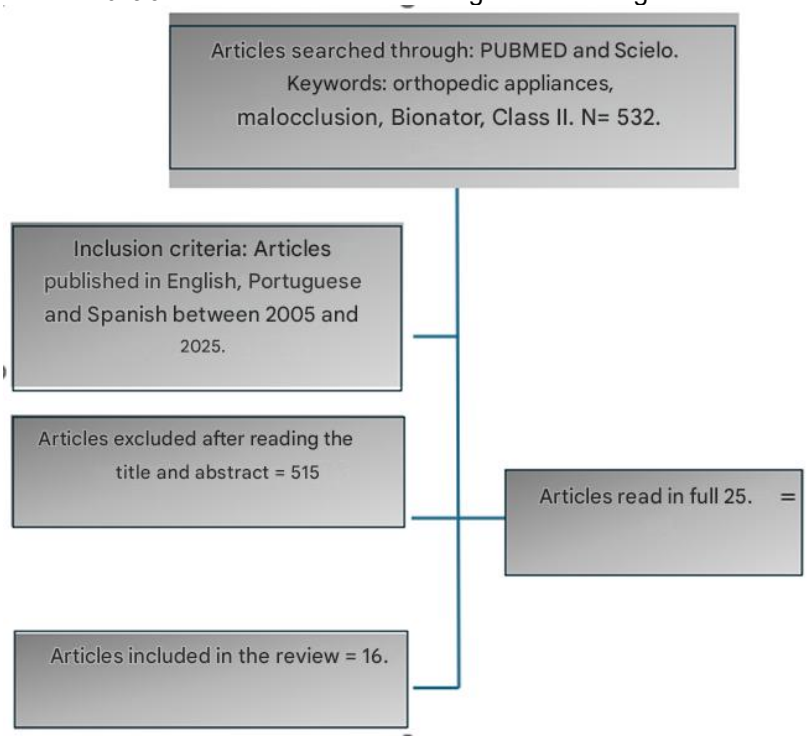
Thus, the general objective of this literature review is to present both to dental professionals and to the general population, about the importance of functional Jaw Orthopedics and the possibilities of interventions when diagnosed in childhood; highlighting the use of Bionator de Balters for treatments for class II Malocclusion and its occlusal, aesthetic and functional benefits, which impact the individual's quality of life.

METHODOLOGY

The bibliographic research can be interpreted as a literature review on the main theories that drive scientific work. Its bibliographic survey can be carried out in books, magazines, scientific articles, newspapers, Internet sites, among other means of knowledge and information. (PIZANNI et al. 2012).

For the planning and design of this study, data and information were collected through Scielo and PUBMED, using the keywords: orthopedic appliances, malocclusion, Bionator, Class II. For selection criteria, articles were collected between 2005 and 2025, in the following languages: Portuguese, English and Spanish. Initially, a total of 532 articles were found, of which 515 were discarded after reading the title and abstract, due to the deviation of the theme addressed and relevance on the subject. Thus, for the elaboration of this work, 16 articles were selected, and in total, 25 articles were read in full.

Chart 01 – Flowchart for searching and selecting articles



Source: The authors (2025)

Chart 2 – Synthesis of related articles.

Authors	Goals	Methodology	Conclusion

RÉDUAS R. et al (2020)	To discuss treatment alternatives for class II correction divided into groups 1 and 2 in patients in the growth phase, using Bionator or extra-oral appliances.	Clinical Research	Treatment of class II, skeletal malocclusion, during growth using the Bionator or extraoral appliance, obtained predictable results, such as changes in facial growth pattern, occlusion, and long-term stability.
ABBING A. et al, 2024	To compare the skeletal and dentoalveolar effects of treatment with two types of appliances, Bionator and Activator.	Clinical study.	Similar dentoalveolar effects were observed overall with two-phase treatment with either appliance. Bionator being associated with a higher vertical increase compared to Activator.
BIGLIAZZI R. et al, 2015	To evaluate the long-term effects of standard Bionator Balters (Class II) in growth-stage patients with Class II malocclusion with mandibular retrusion using morphometry	Clinical research.	Bionator treatment for Class II malocclusion yields favorable long-term results with a combination of skeletal and dentoalveolar shape changes.
NABARRO, P. et al, 2008	To evaluate the effectiveness of the Bionator de Balters orthopedic appliance in the treatment of Obstructive Sleep Apnea Syndrome	Clinical research.	The use of the Bionator orthopedic appliance can be considered a method of treatment for OSAS in mild and moderate cases.
VENÂNCIO H. et al, 2024	Ensure the balance of the musculoskeletal system, considering the interactions between tooth, muscle, temporomandibular joint and bone bases.	Literature review.	Guide to the main appliances of functional jaw orthopedics.
SILVA FILHO O. et al, 2008	Evaluates the correlation between the sagittal morphological characteristics of the face (Pattern) and occlusion (Class) in the deciduous denture stage	Comparative study	Greater heterogeneity in the distribution of Classes was for Patterns I and III. In Pattern II, the Classes behaved more homogeneously, with more than 80% of the children exhibiting Class II.
DUTRA S. et al, 2020	To evaluate the impact of malocclusion on the quality of life of children aged 8 to 10 years attending public elementary schools in Belo Horizonte, Minas Gerais State, Brazil.	Cross-sectional study	Extremely severe malocclusion and pronounced anterior maxillary overjet have been associated with a negative impact on quality of life.
MENDEZ M. et al, 2005	To identify the advantages and disadvantages of this treatment for class II precosis and which appliances are used for this purpose.	Comparative study	Major advantages: increased patient self-esteem (78.5%) and reduced incidence of trauma to incisor teeth (63.6%), on the other hand, the main disadvantage was the patient's cooperation saturation (73.8%).

DOS SANTOS PINTO P. R. et al, 2013	Influence of skeletal maturation on mandibular and dentoalveolar growth and development during the correction of Class II, division 1 malocclusion with the Balters Bionator.	Clinical research	In dentoalveolar modifications, less mature children had a greater lip inclination of the mandibular incisors (1.86 mm) and more mature children had greater extrusion of the first permanent molar (4.8 mm).
LANDÁZURI, D. R. et al, 2013	to evaluate the changes in the facial profile induced by the Bionator Balters appliance in Class II, division 1 patients, in the mixed dentition phase.	Comparative study	The Balters Bionator appliance promoted a significant increase in the mentolabial angle, in addition to showing a tendency to reduce facial skeletal convexity, restrict maxillary growth, and increase the nasolabial angle and lower anterior facial height.
RAMIREZ, L. et al, 2019	To present the Bionator Functional Orthopedic Appliance, with regard to its manufacture, use and indications	Literature review	The Bionator is an orthopedic device whose action is aimed at muscle training
HAMIDREZ A P. et al, 2017	To compare dentoskeletal changes in patients with mandibular deficiency treated with Bionator and Farmand appliances	Comparative study	Both were successful in the treatment of class II, division 1 malocclusion in patients with mandibular deficiency.
PAVONI C. et al, 2018	To evaluate the role of treatment time on the long-term dentoskeletal effects of Class II treatment with removable functional appliances	Comparative study	Treatment with removable functional appliances (Bionator or Activator) followed by fully fixed appliances produced significant long-term skeletal changes when starting at puberty.
RODRIGUES G. et al, 2017	Achieving functional and aesthetic balance in a context of long-term stability	Case report	It proved to be efficient in achieving functional and aesthetic goals, which were kept stable five years after the end of treatment.
GAZZANI, F. et al, 2018	To evaluate three-dimensional (3D) maxillomandibular and dental response to Balters Bionator (BB) and Sander Bite Jumping Appliance (SBJA) in growing patients	Comparative study	Maxillomandibular and dental growth responses to BB and SBJA therapies are characterized by vertical ramus growth and jaw elongation that improve maxillomandibular relationship with adequate control of mandibular incisor position.
CUNHA T et al, 2021	The importance of digital technology for improving specialty performance and the still incipient incorporation of the digital flow in Orthodontics	Comparative study	The adoption of CAD/CAM technology in Orthodontics presents a higher financial cost and the need for professional training.

Source: The authors (2025)

RESULTS

As Dutra S. et al. (2020) reports, malocclusion is a health problem that needs great attention, being the third most prevalent oral disease, behind only dental caries and periodontal disease. As it has a high prevalence rate, it can be considered a public health problem that affects the quality of life of its carrier.

Class II Malocclusion is characterized by the distal relationship between mandibular and maxillary molars and may be associated with skeletal abnormalities, as stated in the study by Réduas R. et al (2020). Skeletal discrepancy is the result of several factors; such as maxillary protrusion, mandibular retraction, or the junction of both. For more than 100 years, this type of deformity has been treated with functional appliances (HAMIDREZA P. et al 2017). The treatment can be performed in three distinct stages: the first, during the prepubertal phase, being the most suitable for orthopedic interventions, the second, during pubertal growth, where it is possible to perform dentoskeletal movements; and the adult phase, which due to bone growth and maturation being already completed, extraction of maxillary premolars or a more complex surgical intervention, such as orthognathic surgery, is indicated. (MENDEZ, M. et al, 2005).

Angle Class II can be divided into two parts, 1st and 2nd subdivision, presenting different treatment plans and manifestations. In the 1st subdivision of Class II, it is possible to verify at the buccal inclination of the maxillary incisors, a marked overjet, unilateral malocclusion, midline deviation, overbite, among other manifestations. In the 2nd subdivision of Class II, there is no overhang or verticalization, the facial profile is straight or slightly convex and is characterized by the inclination of the maxillary central incisors to the "inside". (RAMIREZ, L. et al, 2019)

See images A and B. 1st and 2nd Division successively.

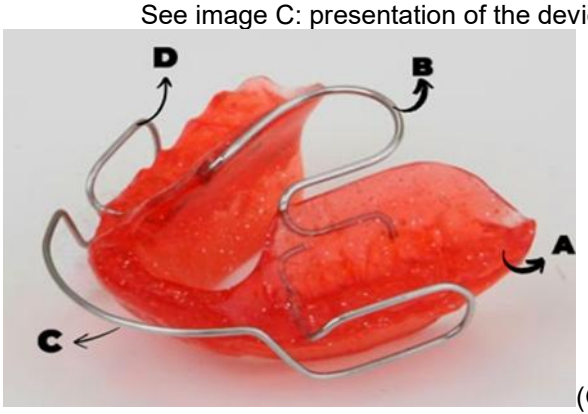
1

2

The Balters Bionator is a removable orthopedic appliance, developed in the 50s by Wilhelm Balters. The person responsible for its development believed that the inadequate

posture of the tongue, being placed in a retracted way later, was responsible for developing a cervical disorder, which caused changes in respiratory function, unusual swallowing, and as a consequence, the impairment of mandibular growth. (LANDAZURI, D. R. et al, 2013).

See image C: presentation of the device.



(Google image)

A-Acrylic Base C- Vestibular Arch
B- Palatine handle (conffin handle) D- Bucinating handles.

Bionator acts as an orthopedic appliance that has as its main indication, the treatment of Class II subdivision 1, being more common in cases associated with mandibular retrognathism. The device acts by propelling the jaw forward, generating a biomechanical force as the facial muscles seek to return it to its initial position. This type of activation provides an effect that restricts the growth of the maxilla while stimulating mandibular growth. In the lower incisors, the force is propagated by the contact of the appliance with the tongue and in the upper incisors by the contact with the buccal arch. (RAMIREZ, L. et al 2019)

See image D: Prepared by Réduas R. et al (2020)

Among the main advantages of the Bionator device, its low cost benefit, easy adaptation, being a non-invasive device; in addition to assisting in the regularization of the functions that are developed in the oral interior (NABARRO, P. et al 2008). As it acts by projecting the anterior position of the mandible, through a new mandibular postural positioning, it induces its forward and downward displacement, resulting in a new skeletal, muscular and dentoalveolar adaptation. (BIGLIAZZI, R. et al 2013). When a new mandibular position is developed, the physiologically intraoral space is increased, generating a new lingual positioning, favoring adequate lip sealing, risks of dental trauma in the region of almost null anterior hips, improved jaw ratio, if we consider the dental occlusion factor; correction of mandibular retrusion and along with that, an adequate facial harmony.

Guidelines on use may vary according to the conduct of each dental surgeon. The activation is performed at the moment it is placed in the mouth, through a constructive bite, that is, cusp to cusp with the incisors, (top to top) and the control performed according to the consultations. As for the treatment period, it can vary up to 18 months, or more, according to the complexity of the case; and the recommended use, between 12 and 18 hours a day. Its cleaning should be carried out daily with the help of a soft brush, neutral soap and running water, avoiding the use of abrasive pastes. After installation, if necessary, it is recommended to perform progressive wear on the acrylic that covers the posteroinferior teeth, according to the need to correct the spee curve. (RAMIREZ, L. et al 2013)

Mendez M. et. al (2005) reports that by performing treatment early, the risk of dental fractures in the anterior elements is minimized, the time of orthodontic treatment is reduced during the second stage, in addition to the indication of premolar extractions. Treatment started before or during the purberal phase has better results compared with a delayed intervention. The efficiency of the device depends on its proper use and the patient's cooperation. (BAGLIAZZI, R. et al 2013). The face normally grows preserving and obeying its pre-existing morphology (SILVA FILHO, O. et al 2008). Therefore, the evaluation of the facial pattern in children can be performed from the moment the deciduous dentition is completed. The orthodontist needs to have mastery over magnitude, growth direction and the influence of external factors that can contribute to stimuli in growth potential.

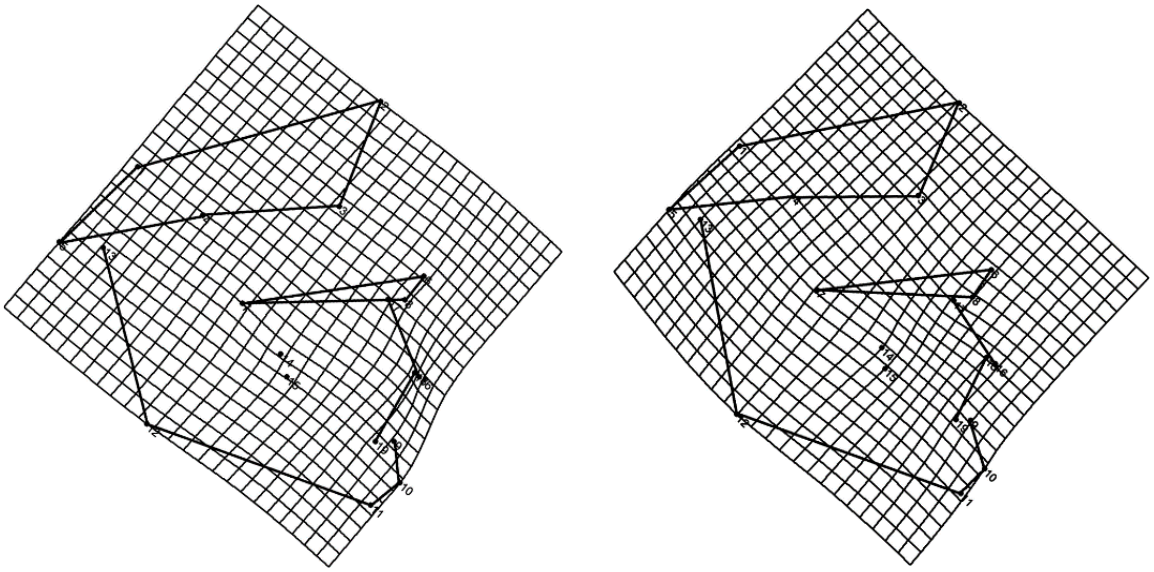
To determine skeletal age, lateral radiographic images can be taken, based on indicators of bone maturation of the cervical vertebrae. With the introduction of the Cephalostat in Dentistry, it was possible to perform and standardize radiographic exams such as lateral teleradiography; and the performance of more accurate dentoskeletal and

facial profile evaluations, making it possible to obtain functional stability and facial aesthetics. (LANDAZURI, D. R. et al 2020).

The advantages of treating class II patients during the bone maturation phase is the possibility of altering the facial growth pattern. Because they are patients with mandibular retrognathia; a shorter mandible along with maxillary protrusion, they are more predisposed to developing dental and respiratory problems (RÉDUAS, R. et al 2020). Santos Filho et al (2013) present a study where lateral radiographs were used in 23 patients divided into 3 groups, with the objective of evaluating mandibular growth and dental development stimulated by the use of Bionator. Using cephalometry, 16 points were established, distributed among the condyle, branch region, and lower border. The stitches were determined and digitized in two stages of treatment, in order to evaluate possible alterations. After the data were analyzed, it was possible to observe significant changes, especially Group 1, which corresponded to the group with lower bone age or younger age. The analysis showed significant changes in both study points. The condylar cartilage has the capacity for compensatory growth, that is, it allows the mandible to adapt to the cranial base, after the stimulation and advancement of the use of the device. After the use of Bionator, the evaluations of dental alterations showed a higher rate of extrusion of the first molars and permanent premolars and the vestibularization of mandibular incisors.

Digital dentistry has contributed to the development and improvement of more correct and accurate diagnoses. Cunha T. et al (2021), presents different means of application of the CAD/CAM (Computer-aided design/ Computer-aided manufacturing) system, software capable of manipulating images and 3D prints. The system allows the dentist to have full control over the stages of treatment, from the acquisition of images of the dental arches, to the projection of these images, as well as possible tooth movements; in addition to the printing of files or 3D models, from which orthopedic appliances and aligners can be planned and made. Bagliazzi R. et al (2013) presents another method of analysis for both recent and long-term bionator-induced modifications. The analysis of the TPS – THIN PLATE SPLINE allows the evaluation and visualization of deformations in the cranial structures of the face in a more detailed and easy-to-interpret way. TPS is a method that describes the shape or change of shape regardless of size, allowing an analysis of changes in relation to size and shape in an undefined space. The software calculates the logintudinal differences and orthogonal mean configurations of the cranofacial squares and reference points.

See the images below prepared by Bagliazzi R. et al (2013). Initial and after use of Bionator.



After analyzing the longitudinal alteration data, the use of Bionator showed significant changes. This variation can be represented by the extension in the horizontal axis in the mandible phase and in the mandibular middle portion, between condyle and synphase. The device was able to influence the mandibular extension, in addition to its forward and downward displacement, contributing to Class II correction.

Regarding respiratory problems with co-relation to intraoral anatomical structures; OSAS – Obstructive Sleep Apnea Syndrome – is a chronic disease that evolves gradually and affects daily life in general. It is characterized by changes in the upper airway (narrowing) due to posterior lingual positioning. There are several ways to treat OSAS, however, Orthopedics has shown great prominence and interest due to its easy manufacture and low cost. Treatment for OSAS with intraoral devices, especially the Bionator, which has its mechanism of action, boosting the advancement of the mandible and a new lingual positioning. With mandibular advancement, the lingual space is increased, inducing the separation of the tongue in the posterior wall region of the pharynx, thus increasing the caliber of the airways and reducing the resistance of the air passage. With neuromuscular reeducation, structures involved in breathing are cleared and stimulation of nasal breathing takes place. (NABARRO, P. et al 2008).

Another point to be analyzed; to facial aesthetics. The study by Silva Filho O. et. al (2008) also reports that orthodontics has been pointing to facial harmony as a therapeutic goal, along with ideal dental occlusion. Considering facial morphology in diagnosis and planning requires understanding the craniofacial growth process. Orthopedic mandibular advancement is indicated in Class II malocclusions with increased tooth overjet. By performing an early evaluation, with a qualified and appropriate professional, with

knowledge and mastery in the field of Orthopedics, it is possible to define a means of real and coherent treatments, with a promising and stable prognosis.

The concept of the ideal profile is still widely discussed, although there are variations due to differences between races, countries and culture; the straight or slightly convex profile is still synonymous with beauty (LANDAZURI, D. R. et al). The presence of malocclusion, especially in the anterior region, can interfere with the psychosocial well-being of children and adolescents (DUTRA, S. et al 2020). The orthopedic approach, combined with the patient's collaboration, enables a good response to treatment, resulting in a more harmonic and less convex profile, adequate lip sealing, reestablished canine guides and molars, in addition to correction of mandibular overbite and retrusion. (RODRIGUES, G. et al, 2017).

DISCUSSION

The use of the Bionator de Batlers appliance for the treatment of Class II malocclusion in Pediatric Dentistry and Orthodontics has shown good results when diagnosed and performed at the correct age. As it is a removable appliance with dental support, its main function is to act on mandibular growth. Therefore, its efficiency and effectiveness is directly linked to the morphoskeletal development of the patient. The study carried out by Landazuri, D. R. et al (2020), emphasizes that achieving an aesthetically pleasing face is one of the main objectives of orthopedic treatment. However, the specialist must have mastery over the continuous changes that happen during facial growth and development. Class II malocclusions are usually characterized by disturbances between the bone bases; that result in maxillary dentoalveolar protrusion and mandibular deficiency and retrusion; as described by Réduas, R. et al (2020) and Abbing, A. et al (2024). Landazuri, D.R. et al (2020) and Mendez M. et al (2005) indicate that the most favorable time to perform the intervention with the Bionator and/or another device would be before the growth peak of the pubertal period, determined through the analysis of bone maturation indicators of the cervical vertebrae. The rectangular shape with a straight lower edge would be indicative of the ideal stage. Early diagnosis and intervention allows the achievement of functional stability, in addition to enabling adequate tooth and skeletal movements; as pointed out by Venâncio, H. et al (2024). In addition to determining the stage of bone maturation, it is necessary to take into account the patient's psychological maturity and collaboration, as it is a removable appliance, interventions in very young children may present challenges regarding the success of the treatment, due to the lack of understanding and the degree of importance of the use of the appliance.

As it is a treatment in which some cases are necessary for early intervention and the patient needs to use it for a long time daily to ensure its effectiveness and stability in the treatment, a period of adaptation is necessary. Réduas R. et al (2020) in their clinical research, compares two types of braces, the Bionator and the extra-oral appliance. The author reports that with the Bionator, a time interval is essential for the patient to adapt to the device, as it can interfere with speech, influence saliva production, and successively, social routines. One of the main characteristics of the Bionator is that the device is loose in the mouth, acting and propelling the mandibular advance and in the lequal posture through a constructive bite. Therefore, the mouth receptors and lequals in contact with the device can undergo changes and influence excess salivary production. Some authors in the literature indicate a period of up to 2 weeks for adaptation. It is necessary for the orthodontist to be aware of these possible changes, and that they are related to the use of the appliance. If necessary, the dentist in charge can wear the acrylic, in addition to hygiene guidelines as a way to prevent oral structures. Ramirez L. et al (2013) points out the use of 14 to 18 hours a day or 12 to 14 hours, as described by Réduas, R. et al (2020). The variations are due to the degree of complexity and adaptation.

Another data to be analyzed is the long-term stability in patients who underwent Class II treatment with Bionator. As presented, the device, when used in the correct maturation phase, is capable of inducing changes in the mandibular bone growth pattern. In addition, orthopedic treatments are usually composed of two stages: the first, with the use of intra or extra-oral appliances; and the second, the use of fixed orthodontic appliances, responsible for occlusal refinement, as described by Pavoni, C. et al (2018) and Rodrigues G. et al (2017). The use of fixed braces provides adequate dental alignment, along with ideal functional occlusion, favoring its long-term stability. However, Bagliazzi, R. et al (2015) highlight that the efficiency of the device varies according to its use and the patient's cooperation. The Bionator, favors significant mandibular changes, with a forward and downward displacement, which results in a proper lip seal, correction of accentuated overjet, mandibular retrusion and tongue posture. Rodrigues, G. et al (2017) report that after a period of 5 years, it was possible to verify the stability of the results provided by the treatment and use of the device; primary objective of orthodontic-orthopedic therapy.

With the introduction of digital dentistry, the standardization and diversity of existing exams, it was possible to carry out evaluations, and analyze possible changes, according to the stage of treatment that the patient was in; as presented by Landazuri, D. R. et al (2020). As demonstrated by Gazanni F. et al (2018), the manufacture of the bionator appliance is usually carried out from an initial impression and for its manufacture, the use of a

constructive bite, that is, a tip-to-tip relationship between the incisors, allowing complete disocclusion of the posterior teeth. However, Cunha, T. et al (2021) report that the use of intraoral scans and 3D printed models contributed to the replacement of traditional molding, that is, the making of models from the digital flow, highly accurate and easy to adapt. Another benefit is the application of specific software systems for orthodontic treatments, which allows simulating and monitoring modifications promoted by Bionator. This type of approach has several advantages for both the patient and the dental surgeon, generating less inconvenience and complications, in addition to reducing the time of the clinical chair. However, Cunha, T. et al (2021) also points out the difficulties of orthodontists in adhering to these new techniques, due to the high cost-benefit and lack of technical preparation.

Orthodontic/orthopedic treatment should not be seen only as a therapy that involves functional and biomechanical effects, but consider that facial harmony offers emotional well-being, improves self-image and provides a better quality of life. Dutra, S. et al (2020) in their study, says that the presence of a malocclusion, especially in the anterior region, can interfere with the psychosocial well-being of children and adolescents, highlighting the accentuated maxillary overjet as one of the most impactful. Bionator, as it is a device that stimulates mandibular advancement, an adequate lip seal and consequently improves the relationship between the jaws, provides a significant change in the facial pattern. A disharmonious face tends to generate low self-esteem, discomfort in smiling, in addition to bullying, as pointed out by Abbing, A. et al (2024) as an indication for early intervention.

CONCLUSION

It is noticeable, therefore, that Functional Jaw Orthopedics is a specialty of Dentistry that can provide relevant impacts on the individual's life. The use of Bionator for the treatment of Class II Malocclusions when diagnosed at the right age, offers benefits in the dental and facial parts and also influences the respiratory tract. The Bionator is an orthopedic appliance capable of inducing and stimulating mandibular advancement, which as a consequence, generates benefits, such as correction of mandibular retrusion and tongue positioning, correction of accentuated overjet, creates favorable conditions for nasal breathing, adequate anterior lip sealing, among others. Its easy to make and low cost, helps and enables access to treatment, serving different economic classes. However, early diagnosis together with patient collaboration are crucial to obtain favorable results that can be seen immediately and later

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