

DESCRIPTION OF A CLINICAL CASE OF TREATMENT OF A PATIENT WITH DISTAL OCCLUSION, TAKING INTO ACCOUNT THE VERTICAL COMPONENT OF JAW GROWTH

Rasulova Shakhnoza Rasulzhanovna
Tashkent State Dental Institute, assistant, 103 Makhtumkuli str., Tashkent, 100047,
dr.rasulova91@gmail.com, +998935990585, <https://orcid.org/0000-0002-7060-2168>

Nasimov Elbek Elkhonovich
Tashkent State Dental Institute, Associate Professor, 103 Makhtumkuli str., Tashkent, 100047,
dr.nasimov@gmail.com, +998909774600, <https://orcid.org/0000-0001-5532-078>

Aripova Gavkhar Erkinovna
Tashkent State Dental Institute, Associate Professor, 103 Makhtumkuli str., Tashkent, 100047,
dr.nasimov@gmail.com, +998909765316, <https://orcid.org/0000-0002-7374-9827> Tashkent,
Uzbekistan.

Arifdjanova Madinaxon Abdug'ofur qizi
Master's student, Tashkent State Dental Institute 103 Makhtumkuli str., Tashkent, 100047,
robiya.karimova60@gmail.com <https://orcid.org/0009-0001-2453-7342> Tashkent, Uzbekistan.

ABSTRACT	KEYWORDS
The aim of our study was to observe and identify the features of the course during treatment with the Twin-Block apparatus in a patient with distal occlusion, taking into account the growth of the jaw bones. Research material. We examined 10 patients with distal occlusion of the dentition at the age of 9 to 12 years. 1 patient was selected, aged 10 years. Clinical, anthropometric, photometric were used, cephalograms were studied in the lateral projection. Results. In a patient with a distal occlusion and a tendency to a horizontal type of growth, with a low angle and counterclockwise rotation of the lower jaw before treatment, the cephalometric data of the Kim analysis were APDI 78.5, ODI 76.8, CF 155.3, respectively. (Fig. 2a). Treatment tactics were chosen based on the analysis of anthropometric, cephalometric and photometric data. The treatment was carried out using the Twin Block apparatus. As you know, when wearing a Twin-block, we expect a deepening of the Spee curve, and we prescribe this device, most often with a vertical type of jaw growth, with a reverse Spee curve, but knowing all the features of the patient's bone structure, their direction of growth and possible side effects from the Twin-block apparatus, we were able to prevent the predicted deviations. Conclusion. Thus, by assigning the Twin Block apparatus with a horizontal type of jaw growth and following the orthodontist's stage-by-stage actions,	Distal occlusion, Twin-block apparatus, class II anomalies.

we can obtain extrusion of the lower chewing teeth, flattening of the deep occlusal plane, which helps to stimulate the anterior positioning of the lower jaw and improve the anterior-posterior relationship of the jaw bones and dentition. For further correction of the occlusion, fixed equipment should be used - a bracket system.	
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Introduction

It was only in the last 20 years that attention began to be paid to determining and forecasting the direction of human growth. To select the optimal period for the start of orthodontic treatment of sagittal and vertical malocclusion, the data from such studies are of great theoretical and practical importance in determining the treatment plan, choosing its methods and predicting the results

The frequency of dental anomalies according to literature sources ranges from 76-82%. In recent years, there has been an increase in the number of class I anomalies and a decrease in class III anomalies, which may be due to a significant decrease in the chewing load of modern humans.[3,4,6] The prevalence of class II malocclusion remained unchanged, reflecting a certain independence of distal occlusion from evolutionary processes. [11].

The prevalence of distal occlusion among dental anomalies is quite high from the moment of birth and increases further due to many endogenous and exogenous factors. According to various researchers, distal occlusion may be due to the predominance of the growth of the upper, the lag in the growth of the lower or due to both jaws (E.E. Nasimova, 2019), the anomaly may worsen or its clinical picture may positively (but "falsely") change due to the type of growth of the maxillary system, etc. Many foreign and domestic scientists such as: Zhulev E.N., 2000; Mvakatobe Ambege D., Nikolaeva E.Yu., 2014; Trezubov V.N., 2001, combined occlusion anomalies were studied. An objective assessment in such situations allows for a thorough analysis of cephalometric parameters in patients with distal occlusion, taking into account the vertical component.[1,7,10,12]. Pronounced clinical manifestations of distal occlusion, complicated by various anomalies of the jaw bones, contributes through a violation of facial aesthetics and has a negative effect on the patient's psyche, causes speech and breathing disorders, impaired chewing, functional changes in the work of vital organs [2,5,8,9].

The purpose of our study was to observe and identify the features of the course during treatment with the Twin-block device in a patient with distal occlusion, taking into account the growth of jaw bones. Research materials and methods. 10 patients with distal occlusion of the dentition aged from 9 to 12 years were examined. 1 patient was selected, aged 10 years, female, with a horizontal type of jaw bone growth, with clinical signs of a "shortened" face: low angle of the jaw, shortened height of the lower part of the face, deepening of nasolabial and mental folds, with protruding lips. Anthropometric signs of a class II anomaly in canines and molars, as a rule, narrowing of the upper dental arch with extrusion and lingual inclination of the upper frontal teeth and the absence of cutting-tubercle contact with injury by the cutting edges of the lower frontal teeth of the mucous membrane of the anterior palate.

A clinical case:

Clinical, anthropometric, photometric, X-ray cephalometric methods and their statistical analysis were used as research methods.

The patient was examined using the above methods and the interrelationships of the sagittal and vertical components and their influence on the formation and course of problems were determined: the

correspondence of the type of structure of the facial skull, characteristic fundamental photometric differences – in the proportions of the parts of the face, the position of the lower jaw, the type of profile, the ratio of the lips and the severity of nasolabial and mental folds of the face. Taking into account these data, it is also planned to study their effect on the result of orthodontic treatment.

The patient was assigned a functional device used to correct the distal type of anomaly, the Twin-block device. (Fig. 1) This is a functional structure consisting of two base plates. The main active element is the expansion screw on the upper jaw. The principle of operation of the device forces the lower jaw to take a constructive position. The device is separate, so the patient quickly adapts to it and can constantly wear the device, even while eating. A constructive bite that holds the lower jaw in an extended position normalizes the aesthetics of the face. A constructive bite helps to hold the lower jaw, but at the same time occlusal pads give the intrusion of chewing teeth.



Figure 1. Intraoral images immediately after fixing the Twin block in the patient's mouth.

In Figure No. 1, you can see the incongruity of the dentition, the anterization of the position of the teeth, and an improvement in the ratio of the occlusion key immediately after fixing the device.

Despite the fact that the patient had a horizontal type of jaw growth, this type of device was prescribed. The design has overlays in the upper part of the device, which can contribute to the intrusion of the lower chewing teeth, which negatively affects the cephalometric and aesthetic parameters due to a decrease in bite, where the lower third of the face may shorten, nasolabial folds become deep, the corners of the mouth drop. (Fig.2) As a result, during the wearing of the device, we sanded the occlusal pads from the upper part of the structure to eliminate side effects.



Figure 2. The appearance of the patient when storing the device in the mouth.

The results of the study.

In a patient with distal occlusion and a tendency to horizontal growth type, with a low angle and counterclockwise rotation of the mandible before treatment, the cephalometric data of the Kim analysis

were APDI 78.5, ODI 76.8, CF 155.3, respectively. The treatment strategy was chosen based on the analysis of anthropometric, cephalometric and photometric data. The treatment was carried out using the Twin Block device. Stage I. A Twin-block device was stowed away. It is prescribed to wear at least 16 hours a day. The patient visited an orthodontist every 4-6 weeks. At the 4th and 6th months of wearing, a photo puncture was performed. (Fig. 3)



Figure 3. Intraoral photographs of the patient in the month of March.

Stage II. The occlusal overlays were partially sanded to eliminate the cause of dental intrusion. To control this procedure, we performed a photocall after 2 months.



Figure 4. Intraoral photographs of the patient in the month of May

Stage III. The occlusal linings were completely sanded to eliminate the cause of dental intrusion. (Fig.4). The flattening of the Spee curve was noted due to the unobstructed extrusion of the chewing group of teeth in the lower jaw. A photo protocol was carried out, appointments were given regarding the wearing of the device.



Figure 5. Intraoral images in August without the Twin-block.

Stage IV. During the reception, it was possible to see anterization of the lower jaw, which was predicted when the Twin-block device was prescribed.

As you know, when wearing a Twin-block, we expect a deepening of the Spee curve, and we prescribe this device, most often with a vertical type of jaw growth, with an inverse Spee curve, but knowing all the features of the patient's bone structure, their direction of growth and possible side effects from the Twin-block, we were able to prevent the predicted deviations. Thus, we can see the extruded lower

lateral teeth, the flattening of the deep occlusal plane, which helps to stimulate the anterior positioning of the lower jaw and improve the anteroposterior relationship of the jaw bones and dentition. For further correction of the bite, non-removable equipment should be used - a bracket system. Aesthetically satisfactory maxillofacial, dentofacial and soft tissue parameters are noted and with cephalometric characteristics closer to normal.

Conclusion

As is known, the Twin block prescribed for distal occlusion is made according to the constructive bite of the lower jaw retention. But, at the same time, the pads give the intrusion of chewing teeth, contributes to the deepening of the Spee curve, and we prescribe this device, most often with a vertical type of jaw growth, with an inverse Spee curve, but knowing all the features of the patient's bone structure, their direction of growth and possible side effects from the Twin-block device, prevent the predicted deviations. Thus, by assigning the Twin Block device for horizontal jaw growth and following the stages of the orthodontist's actions, we can obtain extrusion of the lower chewing teeth, flattening of the deep occlusal plane, which helps to stimulate the anterior positioning of the lower jaw and improve the anterior-posterior relationship of the jaw bones and dentition. For further correction of the bite, you should use non-removable equipment - a bracket system.

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