


# Further Research the Features of the Use of Metal-Ceramic Structures in Anomalies of Development and Position of Teeth

PhD Islamova Nilufar Bustanovna  
Samarkand State Medical University  
Assistant of Orthopedic Dentistry

Abdulaxatov Abdug'affor Abdusattor ugli  
Resident of 1st Course of Department of Orthopedic Dentistry

	<p><b>Abstract</b></p> <p><b>Anomalies of the maxilla are very common. According to various authors (1, 5), the prevalence in adults ranges from 28.8 to 37%. With regard to dental deformities, they are even more common, especially in patients with occlusal abnormalities complicated by dental defects. According to a number of studies (2), such deformities are found in 67.1 to 69.4% of patients with partial tooth loss. Various preparation methods for prosthodontics have been described in the dental literature (3, 4, 6). However, many problems remain unresolved. The purpose of this study is to identify appropriate preparation and prosthetic methods for the alveolar system in various types of abnormalities and developmental pathologies in adult patients.</b></p> <p><b>Keywords:</b></p>
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## Introduction

### Materials and methods:

A total of 162 patients (84 females and 78 males) aged 30-60 years were investigated and accepted for prosthodontics. Dental malformations were found in 102 patients (63.0%) and dental deformities in 60 patients (37.0%). Abnormal development and position of the anterior teeth were found in 32 (19.8%), occlusion of the anterior teeth in 31 (19.1%), prognathism in 5 (3.1%), and deep bite in 35 (21.6%). Vertical and horizontal deformities of the dentition were found in 42 and 18 patients (25.3% and 11.1%, respectively). The size and shape of the dentition defects differed in all patients. Patient examination included collection of anamnesis, examination of the face and oral cavity, examination of a plaster cast of the jaw, and radiography of the teeth and jaws.

### Results and discussion:

The pulp was preserved by slightly tilting the anterior teeth (up to 12°) in any direction (anterior, intraoral, mesial, and centric). After appropriate pre-treatment of the teeth and model fabrication of metal frames and ceramic crown veneers, the patient was corrected to achieve the desired esthetic effect. If the tooth inclination was greater than 15° or if the incisal edge was more than 2

mm from the contralateral tooth, appropriate orthodontic preparation was performed prior to prosthesis. The results showed that even partial correction of tooth position significantly improved the conditions for subsequent fabrication and placement of metal-ceramic crowns. In patients with somewhat pronounced dental rotation (central incisors at 30° and lateral incisors at 50°), such teeth were not extracted, but were repositioned with appropriate prosthetics and covered with metal-ceramic crowns or bridges, depending on the indications. If the maxillary central incisor was rotated more than 30° and the lateral incisor more than 50°, the tooth was preferentially depalated and then the remaining teeth in the dentition were cast pin tabs in the correct position. Ceramic metal crowns were used for coating. Orthodontic treatment of the adult patient's jaw deformity was planned taking into account jaw size, central incisor position, crown and periodontal tissue condition, and type of bite. Prior to fabrication of the metal-ceramic crowns on the anterior teeth, the lateral (premolars and molars) dental defects were restored and the alveolar bone was pre-prosthetized. If the central incisor had no significant inclination (convergence or divergence) and was a premolar (<2 mm), two metal-ceramic crowns were fabricated and no orthodontic treatment was performed. The peculiarity of the central incisor formation in this anomaly is that no more hard tissue is removed on the distal side of the central incisor than on the distal side of the central incisor; in the presence of diastema of 2 to 4 mm, central incisor inclination (convergence or divergence) greater than 15°, and partial crown destruction, these teeth were polished and an inlay was fabricated. Cast pin tabs were fabricated at different angles of incisor axis inclination. In cases in which the anterior jaw bone and trema were united, ceramic metal crowns were fabricated on all incisors or all anterior teeth, and the anterior jaw bone and trema were removed by appropriate model fabrication. Patients with large (3 or more teeth) encapsulated or endodontic defects were restored with orthodontics. Clasp prosthetics were used for the bicuspid and molars, and a combination of metal ceramic crowns and bridges were used for the anterior teeth to achieve high functionality and esthetics. The immediate and long-term results of the orthodontic treatment showed that the use of an inclined plane plate for the sagittal movement of the mandible in the process of proper preparation of the alveolar bone system for the prosthesis resulted in worsening periodontitis and loosening of the anterior teeth in four patients. Subsequently, no such complications were observed. Three patients with sagittal displacement of the mandible greater than 2 mm complained of discomfort and pain in the temporomandibular joint and masticatory muscles. In three patients with mild periodontitis, exacerbation of periodontitis occurred during placement of the bite plate for insertion of the incisor. Therefore, the device was removed and the erupting tooth was dislocated and shortened to the necessary limit. In all cases, the results were favorable immediately after prosthetic fabrication and the use of metal-ceramic prosthetics for jaw deformities and dental abnormalities. Patients were satisfied with the esthetics and functionality of the prosthesis and showed no dissatisfaction. Long-term results of 2 to 5 years were analyzed for 47 cases. Of these, 42 (89.4%) had no complications, and the patients were satisfied with their prosthetics and had no complaints. Clinical and radiographic examination revealed no functional traumatic overload of the periodontal ligament. The abutment tooth was stable and there were no signs of inflammation of the gingival mucosa around the abutment tooth. There was no bone resorption of the maxillary alveolar process at the abutment of the ceramic/metal prosthesis. According to our observations, complications occurred in only

five patients (10.6%). Two of them (40.0%) showed partial chipping of ceramic veneers in the area of individual crowns and facets, one (20.0%) showed non-fusion of crowns, and two (40.0%) had periodontitis detected in the area of individual supporting teeth on radiographic examination.

## Conclusions:

These favorable results recommend the introduction of orthodontic treatment modalities into the dental practice of adult patients with alveolar bone abnormalities and dental deformities.

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