



## EARLY DETECTION OF DISEASES OF THE TEMPOROMANDIBULAR JOINT IN PATIENTS UNDERGOING DENTAL TREATMENT

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### Abstract

The problem of early diagnosis of temporomandibular joint dysfunction remains important in dentistry today. The prevalence rate of diseases of the temporomandibular joint ranges from 35% to 83% according to various researchers.

**Keywords:** Temporomandibular joint, dysfunction, early diagnosis.

### Introduction:

The problem of early diagnosis of temporomandibular joint dysfunction remains important in dentistry today. The prevalence rate of diseases of the temporomandibular joint ranges from 35% to 83% according to various researchers.

**The aim of the study was:** to measure the maximum opening of the mouth in young patients at a dental appointment, increase the effectiveness of early diagnosis and improve the results of treatment of patients with temporomandibular joint dysfunction.

**Materials and methods of the study:** The object of the study was 100 patients aged 12-20 years with temporomandibular joint dysfunction, which accounted for 60% of all those who sought dental care. Standard examination schemes (survey and examination) were used. The patient's survey began with finding out the complaints. Most often, patients complained of pain in the TMJ area with movements of the lower jaw, crunching or clicking in the joint, and restriction of mouth opening. Many patients noted discomfort in the joint, muscle pain and along the branches of the trigeminal nerve, tinnitus, hearing impairment, dizziness, general weakness, difficulty chewing food, frequent headaches, irritability, dizziness, general discomfort, decreased performance and other disturbing phenomena.

During the course of treatment, during repeated visits, when interviewing patients, they found out by how many percent, from their point of view, pain sensations decreased. After identifying complaints and evaluating them, the prescription of their occurrence and the dynamics of the severity of symptoms were clarified. Then the presence or absence of concomitant diseases was revealed. Special attention was paid





to systemic pathology, in which joints are affected. Diseases have also been identified, the presence of which limits the use of methods and tools used in the treatment of TMJ diseases. There was an absence or presence of curvilinear movement, or deviation (deviation from the midline during its movement) of the lower jaw. These phenomena are observed quite often and are caused by chronic dislocation of the heads of the lower jaw or subluxation and dislocation of the articular discs, as well as other morphological changes in the joint.

During the examination of the oral cavity, the type of bite was determined, dental defects, diseases of the teeth of the mucous membrane, bone and soft tissues of the face were revealed. Disorders of occlusal relationships, along with morphofunctional changes in the muscles of the maxillofacial region, as well as trauma to the maxillofacial system, are considered by experts to be among the main causes of dysfunction of the temporomandibular joint. Therefore, special attention was paid to the bite assessment, if necessary, the condition of the dentition, occlusion and occlusal contacts were evaluated on plaster models of the jaws in the articulator.

The examination and measurements were carried out when the patients were comfortably sitting in the dental chair in an upright position. The maximum opening, right-left extension, and protrusion movement were determined using an electronic digital vernier caliper that has been pre-calibrated to perform these procedures in the same way (Figure 1)

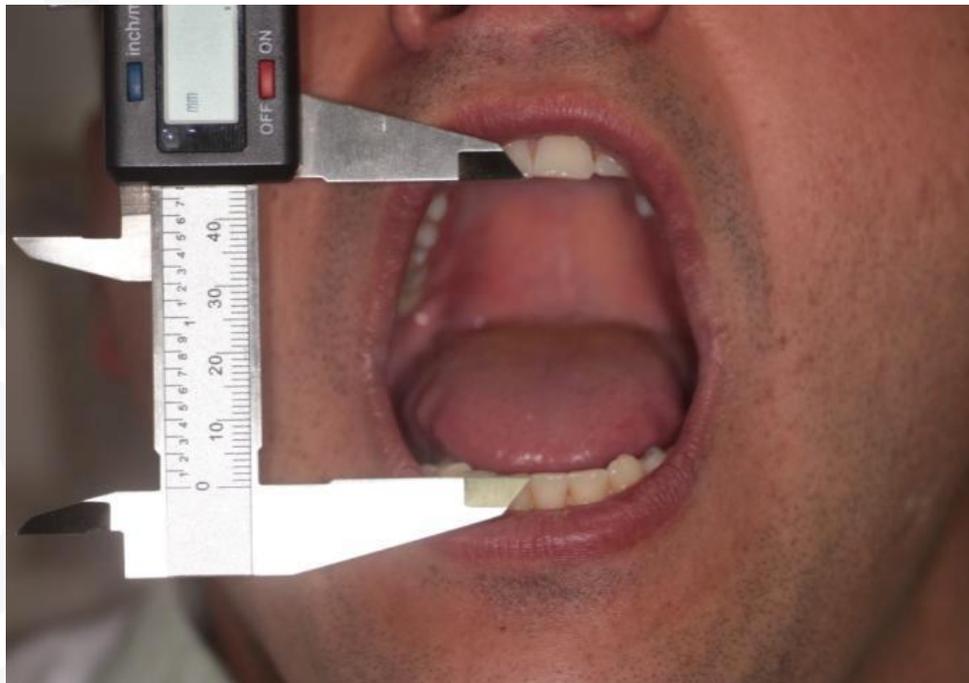


Figure 1 Digital Vernier caliper



Fig. 2 Measurement of the maximum opening of the mouth, performed using a digital vernier caliper.

The maximum opening of the mouth was recorded when each subject was asked to open his mouth as wide as possible, while the maximum distance from the cutting edge of the upper central incisors to the cutting edge of the lower central incisors at the level of the median incisor was measured during the maximum opening of the mouth to the painless limit (Figure 2).

The degree of mouth opening was measured using a caliper and recorded in a map with an accuracy of one tenth of a centimeter and was defined as the distance between the cutting edges of the central incisors of the upper and lower jaws at maximum mouth opening.

A 16-year-old patient A. came to the clinic complaining of pain in the parotid-chewing region on the left. A large amount of objective information was obtained by palpation of the TMJ and muscles involved in the movements of the lower jaw. Palpation of these formations was performed using known techniques on both sides with both the mouth closed and open, since painful points or areas are more often detected with the mouth open or the movement of the lower jaw. The joint was palpated through the skin anteriorly from the tragus of the ear and through the anterior wall of the external auditory canal. With the help of external and internal palpation, the nature of the extension of the mandibular heads, their configuration, soreness, synchronicity and volume of movements were determined. The condition of the muscles involved in chewing was assessed by surface and deep palpation at rest and during function. In addition, sometimes, in order to exclude errors, patients were additionally asked to palpate these anatomical formations themselves and confirm the presence of pain points or areas. (Fig.3)

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Fig.3 Patient A. 16-year-old primary examination to determine the form of TMJ dysfunction.

After the initial examination, the patients were diagnosed with K07.6 – TMJ disease (ICD-10), K02.1- Dental caries . K04.5-Chronic periodontitis.

The result of the study: Among the participants, 42 (42.0%) were men, and 58 (58.0%) were women. Among the participants, 27 (27.0%) were aged 12-14 years, 59 (59.0%) were aged 15-17 years and 14 (14.0%) were aged 18-20 years. The average maximum mouth opening was 49.35 (4.5) mm and 47.11 (4.7) mm for men and women, respectively. The differences in mouth opening between the sexes were compared, and it showed that the men's mouth was wider, but the difference was not significant, P-value = 0.019. As for the age of the participants, the average maximum opening of the mouth in the age group from 12 to 14 years was 45.10 mm, in the age group from 15 to 17 years – 47.37 mm, and in the age group from 18 to 20 years – 51.60 mm. There was a significant difference in the opening of the mouth in different age groups. The treatment of patients with BPH based on the algorithm of early diagnosis contributed to the return of the lower jaw to its physiological position , restoration of occlusal balance , uniform distribution of chewing load throughout the dentition , reduction of bioelectric activity of the chewing and temporal muscles proper , increase in hemodynamics of the superficial temporal artery , compared with the initial data.

Conclusion: Practice shows that a large number of young patients with functional disorders of the temporomandibular joint and masticatory muscles, but with preserved dentition and physiological bite, remain undiagnosed and do not receive the necessary treatment recommendations. The socio-economic side of the issue is extremely important, since this problem of dental health concerns people of working age, military age and fertile age, which leads to a decrease in their quality of life and a restriction of professional choice. In this regard, the object of our study were patients with functional disorders of the TMJ and masticatory muscles with preserved dentition. The variety of concepts and approaches to the analysis of the etiopathogenesis of TMJ and masticatory muscle dysfunction causes increased interest in the search for diagnostic methods with a focus on identifying early preclinical manifestations. Based on the continuous improvement of the technical component of diagnostic equipment and trends in the choice of diagnostic methods towards highly informative technologies that allow recording changes in the stage of disease compensation, it is reasonable to search for algorithms to identify detailed features of each link in the pathogenesis of TMJ dysfunction. It is possible that the use of modern information technologies in the development of this problem will open up



prospects for establishing new approaches in the diagnosis of TMJ and masticatory muscle dysfunction to improve the effectiveness of treatment in young patients .

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