# MEDICAL SCIENCES

## OBTAINING AN IMPRESSION WITH AN INDIVIDUAL SPOON IN THE TREATMENT OF PARTIAL ABSENCE OF TEETH

**Babayev Ay.**
*Doctor of Philosophy in Medicine,* Assistent
*Azerbaijan Medical University,Department of Orthopedic Dentistry*
*Baku, Azerbaijan*
**Huseynova Çh.**
*Doctor of Philosophy in Medicine,* Assistent
*Azerbaijan Medical University,Department of Orthopedic Dentistry*
*Baku, Azerbaijan*
**Abdulazimova G.**
*Azerbaijan Medical University,*
*Department of Orthopedic Dentistry Assistent*
*Baku, Azerbaijan*
**Ismayilova H.**
*Azerbaijan Medical University,*
*Department of Orthopedic Dentistry Assistent*
*Baku, Azerbaijan*
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**Abstract**

Among the main problems of orthopedic dentistry, the treatment of partial absence of teeth occupies one of the most important places. The manufacture of dentures with optimal functional efficiency provides, as a mandatory step, obtaining an impression from the dentition and alveolar processes of the jaws. The impression is an information link between the doctor and the dental technician, and the accuracy of the impression largely determines the quality of orthopedic treatment.

**Keywords:** individual spoon, partial adentia

Currently, one-piece cast combined (consisting of fixed and removable parts) prostheses are widely used. Their production is traditionally carried out in two stages. At the first stage, a fixed part of the cast structure is made to obtain a refined impression and a working model cut into fragments. On such a model it is impossible to make a removable part. In addition, when taking an impression, the underlying soft tissues of the prosthetic bed are pressed out, which leads to their distortion. Therefore, after the manufacture of a non-removable structure, the stage of re-obtaining an impression and manufacturing a new working model with a non-removable part installed on it is mandatory. Such a repetition of the clinical and laboratory stages is inconvenient, stretched in time and requires an increase in the number of visits to the dental clinic by the patient. PURPOSE OF THE WORK In connection with the above, there was a need for a method for obtaining an impression simultaneously for both the fixed and removable parts of the combined prosthesis. The impression in this case should perfectly display the elements of the abutment teeth, the gingival margin and the ledge, the relief of the mucous membrane of the prosthetic bed and the functional state of the mobile tissues of the oral cavity adjacent to the prosthesis. This can be solved by taking an impression using an individual tray [1].

The variety of clinical situations encountered in the oral cavity dictates the need for a differentiated approach to the choice of material and technique for obtaining an impression. Traditionally, for the treatment of patients with modern one-piece cast structures, methods are used: two-layer one-stage, one-layer one-stage, injector, etc. But all of them involve the use of standard spoons. Individual ones are traditionally used in the treatment of complete absence of teeth. However, in the case of treating patients with combined structures, it becomes necessary to transfer the functional state of the tissues of the prosthetic bed, which is possible only when using an individual spoon. Therefore, we have proposed a method for obtaining a refined impression using an individual spoon in the orthopedic treatment of partial absence of teeth.

**RESEARCH METHOD** To create a uniform layer of impression material, we perform isolation with a base wax plate (thickness 2 mm). To create a differentiated pressure on the tissues of the prosthetic bed, we make perforations in an individual spoon. We make an individual spoon on a diagnostic plaster model with a drawing of the future design.

We outline the boundaries of the individual spoon: from the vestibular side in the region of the supporting teeth and the edentulous alveolar process along the transitional fold, bypassing the frenulum of the lips and the bands of the buccal mucosa, in the remaining teeth at the level of the necks; on the oral side - on the upper jaw it covers the entire sky, on the lower one - in the region of the edentulous part of the alveolar process and supporting teeth, it passes along the transitional fold, and in the remaining teeth below the level of the necks by 10-15 mm. Then we outline the "contact zones", retreating from the border of the prosthesis by 2-3 mm, and "stop points". "Stop points" are specially created contacts in the area of the edentulous part of the alveolar process of the jaw. They are necessary for the orientation of the spoon on the tissues of the prosthetic field, which is carried out by contact of its inner surface with areas free from elements of the future prosthesis, or with “stop points”. Next, we isolate the undercuts of the teeth and the alveolar process with wax (Fig. 2). We crimp the softened base wax plate (2 mm) over the entire surface of the model. The areas of "contact zones" and "stop points" are cut out. We add wax to the model.

Spoons are made from self-hardening plastic or by light curing from a glass-containing composite using traditional methods.

To obtain an impression, we fit an individual tray in the patient's mouth, specifying the boundaries and correct location on the prosthetic bed. The edge of an individual spoon in the area of the edentulous part of the alveolar process is formed using Herbst's samples. In the area of "contact zones" and "stop points" in the spoon, we make holes for the purpose of decompression in these areas (Fig. 4). We carry out the expansion of the gingival sulcus to provide horizontal and vertical access to the impression material and to prevent bleeding and reduce the release of gingival fluid. Next, we apply an impression mass on the dried gingival sulcus and teeth from a special syringe. At the same time, the doctor's assistant prepares and places the same material in the individual impression tray. Then the spoon is inserted into the mouth and centered. With the help of passive and active movements with soft tissues, we shape the edges of the impression and then hold the impression on the prosthetic bed without pressure.

The technology for manufacturing a combined denture in one impression can be considered complete only if techniques are used for the manufacture of the model, when the interdental papillae are not destroyed during the processing of the model, the level and volume of the gums are preserved, for example, Modell-Tray [3]. The use of an individual tray in the treatment of partial absence of teeth, in combination with a correctly selected impression material, allows obtaining differentiated pressure on various parts of the prosthetic bed, functionally designing the edge of the artificial base of the removable part of the prosthesis, and reducing the adaptation time [2].

**RESULTS AND DISCUSSION** As an illustration of the application of the proposed method, we present a clinical example. The teeth were removed due to complications of caries and trauma. Based on the examination data, a treatment plan was drawn up: to make a combined prosthesis for the upper jaw, consisting of: a fixed part - ceramic-metal bridges for 17, 16, 15 and 23, 24, 25, 27 teeth and with a male part of the locking system of fixation in the area of 14 and 26 teeth; removable part - clasp prosthesis with a locking system of fixation. For the manufacture of a high-quality prosthesis, the patient needs to obtain an accurate imprint of the supporting teeth, gingival margin and ledge, the relief of the mucous membrane of the prosthetic bed and the functional state of the mobile oral tissues adjacent to the prosthesis, so we use an individual spoon. The technique for obtaining an impression is a one-stage single-phase with retraction of the gingival margin. The impression material can be a silicone material of group A-silicones of a liquid consistency.

The treatment was carried out according to the generally accepted method. Received a diagnostic model. Using a parallelometer, the structural features of the prosthesis were determined. Teeth were prepared for the manufacture of ceramic-metal bridges, and temporary dentures were made on the same visit. Further, on a diagnostic plaster model with a drawing of the future design, the boundaries of the individual spoon, the “contact zone” and the “stop points” were outlined, departing from the border of the prosthesis by 2–3 mm. We make an individual rigid spoon from self-hardening plastic according to the traditional method, with a thickness of at least 2-3 mm. On the next visit, an individual spoon was placed in the patient's mouth, specifying the boundaries and correct location on the prosthetic bed. The edge of an individual tray in the region of the edentulous part of the alveolar process was formed using Herbst's samples. And in the area of \u200b\u200b"contact zones" and "stop points" holes were made in the spoon. The impression was obtained by a one-stage single-phase technique, with Coral Light material (medium viscosity). Retraction - by mechanochemical method using a retraction thread impregnated with a buffer solution of aluminum chloride. The impression material was brought with a syringe to the gingival grooves and abutment teeth (Fig. 6). A collapsible combined model was made.

The model was obtained with the preservation of the level and volume of the gums. This model is working for the manufacture of both fixed and removable parts of the prosthesis. Next, a combined prosthesis was made according to the traditional method. During the manufacture of the removable part, the canopy was isolated on the vestibular slope in the frontal area using a light-cured composite.

When fitting and applying the prosthesis, there were no difficulties and the need for correction

The patient was scheduled for examination on the 3rd and 7th day after the fixation of the prosthesis. There were no complaints. On examination, the prosthesis is adjacent to the surface of the prosthetic bed, and is stable during function. There are no signs of trauma or inflammation on the mucous membrane. Analysis of the results of treatment of patient G. for one year showed the effectiveness of the treatment. X-ray and clinical control confirmed the high-quality fitting of the structure and the absence of pathological changes in the area of the preserved teeth. The patient is quite satisfied with the restoration of functions and aesthetic requirements.

**CONCLUSION Thus**, our proposed technique for obtaining an impression in the treatment of partial absence of teeth with combined all-cast prostheses, in combination with a correctly selected impression material, allows us to obtain differentiated pressure on various parts of the prosthetic bed, functionally shape the edge of the artificial base of the removable part of the prosthesis, reduce the duration of adaptation and, in general, to improve the quality of orthopedic treatment.

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## FUNCTIONAL FEATURES OF PHENOTYPIC MANIFESTATIONS OF OSTEOARTHRITIS

**Aliakhunova M.**
*Professor, Head of the Rheumatology Department, Republican specialized scientific practical medical centre of therapy and medical rehabilitation, Tashkent, Uzbekistan*
**Khan T.**
*MD, Rheumatology department, Republican specialized scientific practical medical centre of therapy and medical rehabilitation, Tashkent, Uzbekistan*
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**Abstract**

Introduction. Osteoarthritis is a joint disease characterized by cellular stress and degradation of the extracellular matrix, developing with macro- and micro-damage, which activate an abnormal adaptive repair response, including pro-inflammatory immune mechanisms.

Objective. To study the features of the functional state of patients with osteoarthritis by phenotypic signs.

Materials and methods: 80 patients diagnosed with osteoarthritis who are on inpatient treatment for the period from January to April 2022 in the State Institution "RSSPMCTandMR" were examined. Verification of the diagnosis according to ACR diagnostic criteria. The distribution of patients by phenotypes was based on classification criteria.

Results and discussion. According to the results of the study, there was a significant increase in the indicators of fibrinogen and C-reactive protein in all groups, with the exception of patients with a biomechanical phenotype. These changes reflect a close positive relationship (r=0.252, p0.05) between the systems of inflammation and coagulation processes.

According to the results of the study, a comparative analysis of the algofunctional Leken index shows the highest value in patients with the CP phenotype, which is explained by the consequence of the altered phenotype of chondrocytes mediated by various autocrine and paracrine signals, which leads to the synthesis of many inflammatory mediators and degradation.

Conclusions: Morphological features of both acute and chronic inflammation are observed and are characterized by recurrent episodes of inflammation. At a late stage, fibrosis may dominate, which is confirmed by an increase in the amount of fibrinogen.

**Keywords:** ostheoarthritis, phenotype, clinical features.

**Introduction.** Osteoarthritis is a joint disease characterized by cellular stress and degradation of the extracellular matrix, developing with macro- and micro-damage, which activate the restorative abnormal adaptive response, including pro-inflammatory immune mechanisms according to the definition of the International Society for the Study of Osteoarthritis (osteoarthritis research of the International Society of OARSI) in 2015 [1]

Changes that initially develop at the molecular level (abnormal metabolism in the tissues of the joint), subsequently lead to anatomical and physiological disorders (degradation of cartilage, bone remodeling, formation of osteophytes, induction of subclinical inflammation and loss of normal joint function) and the formation of clinical symptoms of the disease.

To date, the etiology and pathogenesis of osteoarthritis have not been fully studied [2], and currently there is no therapy that fully eliminates the disease. It is reported that biochemical changes in the subchondral bone, articular cartilage and synovial membrane play an important role, and changes in extra-cartilaginous tissues can also serve as primary initiators of the disease preceding cartilage damage.

The process of inflammation and the coagulation system are interconnected and stimulate each other. The coagulation system leads to the activation of thrombin and the formation of fibrin. Fibrinogen refers to acute phase proteins, a protein, a glycoprotein (340 kDa) produced in the liver, consisting of 2 identical subunits, each of which consists of three polypeptide chains AA-, Bß - and γ. The normal level of fibrinogen in plasma is from 200 to 400 mg / dl Its plasma level rises with inflammation in response to the action of pro-inflammatory agents, such as IL-6 and other cytokines, by activating gene transcription.

In a recently published systematic review, six phenotypes of OA were identified [3]: 1) the phenotype of minimal joint disease with minor symptoms and discomfort over a long period (modified Julian day); 2) the phenotype of chronic pain (CP); 3) the phenotype of biomechanical disorders (MV); 4) inflammatory phenotype (I); 5) metabolic phenotype (MD); 6) phenotype of altered bone and cartilage metabolism (HCM).