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## CLINICAL EXPERIENCE OF USING IMPROVED METHODS OF MAKING REMOVABLE PROSTHESES USING SELF-CURING ELASTIC MATERIAL

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**Abstract.** *Offered advanced technology of fabrication of two-layer removable prosthetic devices with using the rubber-band base material to cool vulcanizes.*

*Offered strategy of fabrication of clasplless removable prosthetic devices with use of selfhardening rubber-band material at presence of single teeth on the mandible and is given its evaluation on results of clinical observations.*

**Keywords:** *wax-abrasive occlusion platens, individual occlusion surface, two-layer prosthetic devices, soft lining, clasplless prosthetic devices, selfhardening rubber-band material, single teeth.*

In prosthetic dentistry one of the hardest sections is the restoration the function of the masticatory apparatus with removable dentures. The quality of the prosthesis is largely dependent on the choice of the most rational design of dentures, depending on the individual patient's prosthetic field, namely the state of alveolar processes, their ratio in the mouth; state of the oral mucosa; periodontal status [1].

There are numerous messages where the author, speaking of improving the quality of dentures, pay attention to articulation, occlusion, constructing artificial dentition that affect the fixation and stabilization of dentures [2, 3, 4 etc.].

Known methods of constructing artificial dentition on an individual occlusal surface, which is obtained grinding wax-abrasive rollers in the oral cavity of the patient [2]. The authors believe that the use of this technique is best suited for displayed features of chewing muscles and movements of the lower jaw of the patient. Prostheses in which artificial teeth set in individual occlusal surface are more resistant require fewer adjustments, more evenly transmit chewing pressure on the underlying tissues and thus prevent atrophy of the alveolar processes. This prompted us to use method of obtaining an individual occlusal surface in the manufacture of two-layer removable lamellar dentures use self-curing flexible base materials.

Some authors suggest that individual teeth that prevent the creation of a continuous circular valve should be removed [6]. But this position recently reviewed by many authors for numerous reasons. First, when an isolated tooth has an antagonist, it should be left to save intraalveolar height. But if the tooth is isolated and has no antagonist, it is desirable to save for people who dentures will be manufactured for the first time. Especially should keep isolated teeth on the lower jaw, even if they have the II and III degree of mobility [1]. Indications for removal or preservation of individual teeth should be considered in connection with future prosthetics, to provide best conditions for fixing dentures [1, 5 etc.].

M.I.Kyrylyuk [6] proposes to use a isolated teeth when his designed elastic root attachments for cover prosthesis. But this method requires a special therapeutic and prosthetic tooth preparation. In addition, his proposed structure is quite complicated to manufacture. N.V.Kalinina [1] indicates that at presence of single tooth advantages the telescopic bonding system of prosthesis as when using mechanical fasteners for prosthesis combined with the effect of continuous circular valve executed using functional tests, providing more reliable fixation of the prosthesis.

But, in our view, a telescopic mounting of prosthesis is pretty tough. Because of its use, especially when moving the teeth, can lead to overloading of the supporting teeth, subsequent loosening and rapid loss. For these reasons we suggest the presence of single teeth, make clasplless removable partial dentures special design of the plate, using for fixing a layer of self-curing flexible base material.

#### **MATERIALS AND RESEARCH METHODS.**

The material for the study were 20 patients with toothless jaws that could not use previously made them removable lamellar dentures with a solid base. They were made by us double layer removable full lamellar dentures using self-curing elastic material offered by our advanced technique.

Also, we conducted survey and prosthesis of 18 patients aged from 55 to 75 years with the availability of individual teeth. Was produced 18 clasplless removable partial lamellar dentures, including 10 double Layer for patients with unfavorable prosthetics conditions in bony protrusions, uneven atrophy of the alveolar ridge and mucosa.

All patients were subject to thorough clinical examination before prosthetics and at control examinations in 3 and 6 months after prosthesis. Within examination we pay special attention to the status of individual teeth and prosthetic bed. For an objective assessment of functional usefulness made prostheses we used chewing physiological tests of I.S.Rubinov improved by S.E.Helman. When manufacturing prostheses we used our developed self-curing elastic material "Malaksil" together with the laboratory "Stoma-technology".

#### **METHODS OF DENTURES MANUFACTURE AND RESULTS OF USING THEM.**

When manufacturing prostheses for patients with toothless jaw we produced individual spoon-bases with wax- abrasive occlusion rollers. Wax-abrasive rollers were made such way. First, was determined the height of physiological rest anatomy-physiological method. Using a spoon, bases was fixed on the height 2-3 mm above the height of the central occlusion. Then in the distal parts of lower roller we stuck a ball of soft wax with quartz sand and ask the patient to close the mouth in the position of the front occlusion. In this case, once the wax is pushed away, as part of its fill so-called Hrystensen triangle. After cooling wax, bottom spoon-base is again placed in the mouth and the upper shaft distal warmed and ask the patient to close the jaw in the position of the central relationship. Due to wax of the lower roller, wax squeezed in the distal upper platen is formed into sagittal occlusal curve. Excess of wax was cut off. Spoon-bases after occlusion were injected into the patient's mouth and he grind them, performing a variety of chewing movements of the lower jaw to the establishment of a central height ratio. During grinding rollers spoon-bases periodically removed from the mouth and were cooled.

We offer the following manufacturing technology of complete removable lamellar dentures lined with soft elastic self-curing base material:

- obtaining full anatomical prints of jaw with alginate impression materials;
- making spoons-bases with wax-occlusion abrasive rollers;
- determining the height of physiological rest, receive individual occlusal surface by grinding wax-abrasive rollers and fixing a central value of jaws;
- obtaining functional chewing prints under pressure;
- setting artificial teeth in the individual occlusal surface;
- check the wax denture compositions and setting the teeth;
- plastering wax composition of the prosthesis in the cell, smelting wax;
- packing basic plastics, polymerization, grinding and polishing the prosthesis;
- receiving an elastic layer directly in the mouth of the patient using the way of relocation chewing pressure;
- finishing and imposition the prosthesis.

According to this method we made 40 double-layer complete removable lamellar dentures for 20 patients with unfavorable conditions for the prosthesis in the form of uneven atrophy of the alveolar ridge and mucosa. Made prostheses have good fixation and were stable during chewing function. Correction of prosthesis was not conducted to any of the patients. Chewing efficiency according chewing physiological samples averaged:

- the date of making the dentures - 69-71%;
- after 3 months - 73-74%;
- after 6 months - 79-82%.

In control examinations after 3 and 6 months, increasing atrophy alveolar ridge and mucosa were not observed.

Method of manufacturing clasplless removable partial lamellar dentures we offer is simple, but requires a self-curing elastic material. It differs from conventional methods of manufacturing complete removable lamellar dentures that:

- spoon-base with occlusive rollers made by limits of fully removable lamellar prosthesis so that it covered an isolated tooth of the four sides to the height of the crown;

- base of prosthesis was modeled by the limits of full lamellar dentures so that it covered a single tooth crown. If this is an isolated tooth incisor, canine or premolar, that teeth are visible when talking or smiling, the basis is modeling of the oral surface - at 2-3 mm above the equator, the vestibular - at 1-2 mm above the anatomic neck of the tooth. If an isolated tooth is molar, the basis is modeling from the oral and vestibular surfaces 2-3 mm above the equator. Basis around a single tooth's made a little thicker.

Basis of the finished prosthesis carefully adjusted on the area around a single tooth so that it lies tightly enough to the crown. On the inside of the prosthesis in place thickened base around a single tooth, a layer of plastic is cut about 1 mm in the area of 4-5 mm, departing at 1-1.5 mm from the edge of the hole for the crown. Onto this place self-curing elastic material is applied to, the prosthesis is placed upon the prosthetic bed and ask the patient to close the jaw. In the manufacture of dentures dual-layer elastic material is applied to the entire inner surface of the prosthesis, including the area around a single tooth. After curing the elastic material cut its surplus and finish the prosthesis.

All patients for whom were made clasplless prostheses by our proposed method had a good fixation of prostheses and their high functional efficiency. Objectively we observed functional suction of clasplless prostheses in all patients. Chewing efficiency of the clasplless prosthesis according to chewing physiological samples averaged:

- the date of making the dentures - 66-69% (two-layer prosthesis - 71-73%);

- after 3 months - 75-77% (two-layer prosthesis - 78-81%);

- after 6 months - 82-86% (two-layer prosthesis - 87-91%).

In control examinations after 3 and 6 months after prosthetic increase the mobility of individual teeth were not noted.

#### **CONCLUSIONS.**

1. Method of manufacturing two-layer complete removable lamellar dentures using self-curing elastic materials that we offer provides a functionally complete denture under adverse conditions of prosthetic bed, maximum considering the individual characteristics of prosthetic bed and movements of the lower jaw of the patient.

2. When using our proposed technology, it's greatly facilitates the work of dental appliances in designing of artificial dentition, there is no need to use facial arcs and articulators, also reduced the number of visits for patient.

3. The proposed simple technique can produce fairly stable in the presence clasplless prosthetic single teeth, reaching the suction of functional prosthesis.

4. The dual layer clasplless prostheses have advantages over dentures clasplless with a solid base, because they at our observations were more stable and had more chewing efficiency.

5. Clasplless dentures do not contribute to undermining the individual teeth.

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