



# Modern Methods of Odontopreparation for Metal- Ceramic for Beginner Prosthodontists

**Akhmadov Inomjon  
Nizomitdin**

Samarkand State Medical University

**ABSTRACT**

The paper describes modern ideas about the preparation of teeth. Theoretical foundations and practical methods for achieving the best marginal fit of a metal-ceramic crown are presented. Various aspects of odontopreparation for crowns are described. The paper presents a technique for preparing teeth.

**Keywords:**

odontopreparation, preparation without ledge, round ledge, ledge with beveled edge, Shoulder, Chamfer.

**Introduction:** Experienced orthopedic dentists have long developed their own algorithms for approaching the preparation of teeth for all types of orthopedic structures they use; changing this approach is difficult and hardly necessary. Why fix what works well?

The situation is different among beginners. The question "how to sharpen?" still remains one of the most relevant for recent graduates of dental faculties at various postgraduate courses and seminars, sometimes not even directly related to the topic of odontopreparation; Accordingly, the importance of detailed coverage of this issue is beyond doubt.

**The concept of odontopreparation:**

Under odontopreparation is understood the process of removing or grinding off the hard tissues of the tooth in order to create the most favorable conditions for its subsequent restoration by various types of orthopedic structures.

*Features and principles of preparation of hard tissues of teeth:*

1. Tooth preparation is intermittent

2. Preparation is carried out using diamond and carbide burs of various shapes, lengths and degrees of abrasiveness of the working part

3. The preparation is carried out under air-water cooling (*Air-water cooling of the turbine handpiece*)



4. The principle of the maximum possible preservation of healthy tooth tissues is used



5. The principle of gentle treatment of tooth tissues is used

6. The control of the thickness of the removal of hard tissues of the tooth is applied (*Using a silicone template to control the removal of hard tissues of the tooth*)



7. To prevent injury to soft and hard tissues, the dental handpiece with bur is turned on after insertion into the oral cavity and turned off before removal.

The basic principles of modern odontopreparation have remained unchanged for many years and undergo minimal changes, rather receiving additions and improvements.

The preparation of an abutment tooth is one of the most important manipulations performed by an orthopedic dentist, which precedes the receipt of an accurate cast and determines the precision of the orthopedic structure.

*Principles, rules and tasks of preparation:*

1. The main task of an orthopedic dentist in the process of preparation is the removal (grinding) of a sufficient and reasonable volume of tooth or tooth tissues in order to manufacture a functionally and aesthetically high-quality construction.

2. All manipulations should be painless for the patient.

3. The preparation should be minimally traumatic for the tooth and its surrounding tissues.

4. Careful observance of aseptic and antiseptic measures is required

5. Knowledge of anatomy required to prepare vital teeth within safe areas

6. It is necessary to carefully monitor the patient's condition during work, take breaks if necessary.

The preparation of teeth for orthopedic structures, in particular for artificial crowns, includes several stages.

*Stages of tooth preparation for an artificial crown:*

1. Anesthesia

2. Separation of proximal contact surfaces

3. Preparation of the chewing surface (or cutting edge)

4. Preparation from the oral and vestibular sides

5. Gum retraction

6. Scarp formation

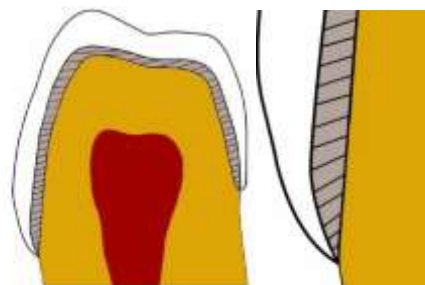
7. Finishing, polishing

### **Types of ledges**

If everything is more or less clear with most preparation stages - practitioners adapt, change the order, supplement and somewhat modify them in accordance with their preferences and specific clinical cases, then with the formation of ledges the situation is not so unambiguous and simple.

Below is a classification of types of ledges, as well as a variant of tooth preparation without creating a ledge, and explanations are given on the possibilities of using these types of preparation in certain cases.

*Preparation without ledge (knife preparation)*



*Schematic representation of a metal-ceramic crown on a tooth in section. The tooth is processed for a crown without a ledge, with the so-called "knife" preparation*

This type of preparation is considered somewhat outdated, but in some cases, it can be used according to indications, which should

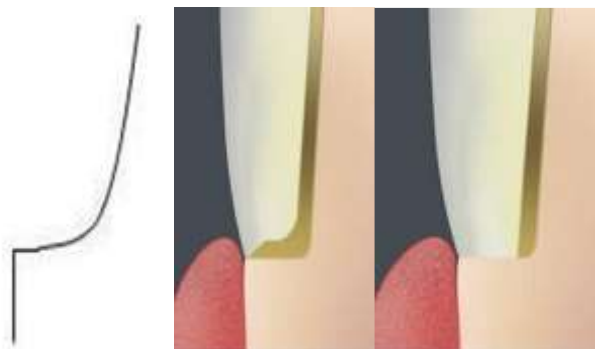


include an initially small amount of tissue of the prepared tooth, when there is simply no room to

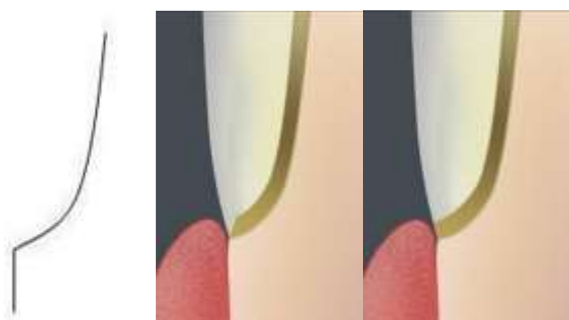
create a ledge, and there is also a threat of pulp injury during preparation.

Moreover, the concept of shoulder preparation is now undergoing a number of changes and additions, in which there is a place for the elements of knife preparation.

*Shoulder ledge.* Can be positioned at 90, 110-120 and 135 degrees to the lateral wall of the stump. A ledge at a 135-degree angle requires the creation of a circular metal garland. Such a ledge can be blocked by a shoulder mass or metal.



*Rounded ledge (Chamfer).* This type of ledge has a shape corresponding to half of the gutter. Most often, the gum is covered with metal of the crown frame, but there are exceptions. *Option with overlapping at the gingival margin with ceramic mass*



This type of ledge is most often used in cases of deficiency of hard tissues of the tooth, when the creation of a full-fledged shoulder ledge is impractical. Suitable for prosthetics using classic metal-ceramic structures.

From the point of view of aesthetics, it loses somewhat to the shoulder, especially in the case without the use of a shoulder mass, however, its formation implies a smaller volume of prepared tooth tissues.

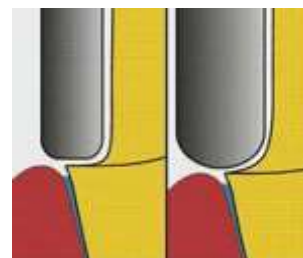
*Ledge with a beveled edge (Beveled shoulder),* usually shoulder.



Requires crafting a circular metal garland. As a rule, it is used for low clinical crowns of teeth to create additional retention.

The shoulder is covered with metal and ceramics. Recommended on the vestibular surface to create a more aesthetic appearance of the crown.

*Rounded ledge with a bevel, covered with metal.*



*Types of ledges suitable for preparation for all-ceramic crowns: shoulder ledge - shoulder, and a pronounced rounded ledge - pronounced chamfer.*



### Conclusion

At the current stage of the development of dentistry as a dynamically developing medical science, it is becoming increasingly important for practitioners to know the basic laws and principles of certain sections of dentistry, in the context of a constantly changing approach to their subtleties and nuances.

Modern methods of odontopreparation, on the one hand, are the result of scientific and practical research by leading dentists over

many years, on the other hand, being used in everyday practice at a medical appointment, they are *individualized* by each individual doctor to achieve the best result, taking into account the specific characteristics of the patient's dental system and, accordingly, competent approach to treatment.

In other words, it is worth noting that the way the doctor prepares the patient's teeth is not of paramount importance. Really important - knowledge of the basic principles of preparation in order to avoid harm to the health of the patient and to carry out a reasonable intervention, as well as a consistently positive result of treatment, as such, in general, for the longest possible time.

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