

# Advantages and Hygienic Benefits of Partial Removable Dentures

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**Annotation.** The cast metal framework denture (metal removable partial denture prosthesis) belongs to the group of removable dentures and is considered more advanced and comfortable compared to alternative removable denture types. These dentures are convenient to use, do not interfere with eating, do not alter the sense of taste, and are both reliable and long-lasting.

A cast metal framework denture differs from standard acrylic dentures by having a more sophisticated framework made of metal. Artificial teeth and the main base, consisting of acrylic material, are attached to this metal framework. The unique feature of this construction is its minimal volume, which makes the prosthesis almost unnoticeable when worn in the mouth.

Main advantages of cast metal framework dentures:

- For the upper jaw, the prosthesis does not include a thick plastic plate that covers almost the entire palate. Instead, a thin metal arch is used. This design does not interfere with speech or affect the sense of taste.
- The lower jaw version of the framework denture also has minimal volume while providing stable fixation and not disturbing speech or taste.

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The recommended usage period for a cast metal framework denture is 5 years, while standard acrylic dentures are advised to be replaced every 2 years. The reason is that acrylic dentures exert greater pressure on the gum tissue, leading to faster atrophy and changes in the prosthetic bed. As a result, the denture no longer fits properly, causing discomfort, pain, and reduced retention in the oral cavity.

**Keywords:** Partial removable dentures; oral hygiene; dental health; prosthodontics; infection prevention.

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## INTRODUCTION

The durability of removable constructions is ensured by the strong metal base of the framework. This integral structure guarantees long-term use of the prosthesis.

Clasp-retained (clammer) framework dentures

Clasps are metal retainers that tightly embrace the abutment teeth, providing stable fixation. In some complex cases, clasps may extend to the visible surfaces of the front teeth, which can negatively affect overall aesthetics.

Attachment-retained (precision lock) framework dentures

In addition to clasps, the denture can be fixed using precision attachments (locks). The operating principle is quite simple: one part of the lock is located on the denture, while the other is on the abutment tooth. When the prosthesis is inserted, the locks automatically engage, ensuring secure fixation of the denture in the oral cavity.

Advantages of micro-attachment dentures:

- Highly aesthetic construction;
- Micro-attachments are not visible from the front surface of the teeth or the smile zone;
- Comfortable and convenient to use;
- Average service life of up to 7 years.

Naturally, attachment-retained framework dentures are high-tech constructions requiring professional skill from the dentist. It should also be noted that metal-ceramic crowns are used on the abutment teeth as a base for fixation. Therefore, during the fabrication of attachment-retained or even clasp-retained dentures, a greater number of teeth may need to be involved in the prosthetic process.

Indications for the use of cast metal framework dentures

A metal removable partial denture prosthesis (that is, a skeleton-supported partial removable denture) is used in the following cases:

Situations where metal removable partial denture prostheses are used

1. In cases of partial edentulism (partial tooth loss)

- Some teeth remain in the mouth, but several teeth have been lost.
  - A complete denture is not necessary because the remaining teeth can provide sufficient retention for the prosthesis.
2. To restore chewing function
    - Loss of posterior teeth can make chewing difficult.
    - A metal removable partial denture prosthesis helps restore proper masticatory function.
  3. To correct aesthetic problems
    - Used to restore appearance and speech when anterior teeth are missing.
  4. As an alternative to complete dentures
    - When healthy abutment teeth remain in the jaw, a metal removable partial denture prosthesis is preferred over a complete denture because it is more stable and comfortable.
  5. When implant treatment is not possible
    - If there is insufficient bone in the jaw to support implants, or
    - If the patient's general health condition does not allow for implant placement.
  6. When abutment teeth are available
    - Metal removable partial denture prostheses are attached to the remaining healthy teeth using special clasps (hooks) or precision attachments..

#### Cost of metal removable partial denture prostheses

The cost of metal removable partial denture prostheses varies depending on the method of fixation and the complexity of the construction. These dentures are becoming increasingly popular. On average, the price depends on the extent of the work, the degree of difficulty, and the quality of the locking (attachment) systems used. Accordingly, imported versions are more expensive than locally made ones.

If the prosthesis is fabricated using attachments, the total cost also includes the price of the metal-ceramic crowns used for fixation.

#### Care and maintenance of metal removable partial denture prostheses

To ensure the long-term durability and functionality of metal removable partial denture prostheses, proper maintenance and daily hygiene are essential.

Each user should remove the prosthesis daily and clean it using a special brush and cleaning solution designed for dentures.

It is recommended to remove the prosthesis during sleep and keep it in water. This helps preserve the shape of the prosthesis and reduces pressure on the oral mucosa.

Regular dental check-ups are necessary to monitor the condition of the prosthesis.

If pain, redness, or swelling occurs in the supporting teeth or surrounding tissues, the patient should immediately consult a dentist.

Proper care helps maintain oral hygiene and extends the lifespan of the prosthesis.

#### Clinical study results

Based on informed consent, 45 patients participated in a clinical examination, and the following findings were recorded:

- Number of metal removable partial denture prostheses fabricated for the lower jaw – 21
- Number of metal removable partial denture prostheses fabricated for the upper jaw – 24
- Clasp-retained metal removable partial denture prostheses – 15
- Attachment-retained metal removable partial denture prostheses – 17
- Combined metal removable partial denture prostheses – 13

Cast metal framework (metal removable partial denture) dentures – functional and hygienic advantages

Cast metal framework dentures (metal removable partial denture prostheses), which are partial removable metal-based dentures, have certain functional and hygienic advantages compared to other types of removable dentures. Their main hygienic advantages are as follows:

- Smaller base size – The metal framework of metal removable partial denture dentures is thinner and stronger, meaning it does not completely cover the palate. This reduces the accumulation of food debris and microorganisms.
- Open palatal mucosa – In acrylic dentures, the palate is fully covered, whereas in metal removable partial denture dentures, a large part of the palate remains open. This allows for normal breathing and natural self-cleaning of the palatal surface.
- Better oral hygiene maintenance – Due to the thin structure of the prosthesis, it is easier for patients to brush their natural teeth and gums, and less food residue accumulates.
- Preservation of bone tissue – metal removable partial denture dentures distribute the chewing load evenly, thereby reducing the risk of bone resorption (atrophy). This is important for maintaining long-term oral hygiene and health.
- Lower allergic potential – The metal framework replaces the wide plastic base used in acrylic dentures, thus minimizing the environment favorable for fungal and bacterial growth.
- Prevention of bad breath (halitosis) – As fewer food particles and microorganisms accumulate, the likelihood of unpleasant odor in the mouth is significantly reduced.

#### Summary

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Removable dental clasp prostheses (metal removable partial denture prostheses) are considered one of the most comfortable and durable types of removable dentures. Built on a metal framework, they are both compact and strong.

Advantages:

- Do not fully cover the palate, thus not interfering with speech or taste.
- Provide reliable fixation and long-term use (5–7 years).
- Protect bone and gum tissues.

Lower risk of allergic reactions and bad breath.

Types:

- Clasp-retained – fixed with metal clasps.
- Attachment-retained (precision/lock system) – more aesthetic and comfortable, but more expensive and complex to fabricate.

The cost of a metal removable partial denture prosthesis depends on the fixation method, design complexity, and materials used. Attachment-retained systems are more costly since they require additional metal-ceramic crowns.

Overall, metal removable partial denture prostheses are superior to other removable dentures in terms of functionality, aesthetics, and hygiene. Their durability, comfort, and ability to preserve oral health make them one of the most preferred removable denture options in modern dentistry.

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