



## PREVENTIVE PROSTHODONTICS – A REVIEW

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**ABSTRACT** One of the main foundations of dentistry is prosthetic dentistry. Preventing the causes of tooth extractions may be the most effective prosthetic prophylaxis. Prevention should be the primary goal of a dentist, and this includes preventing residual alveolar bone loss following tooth extractions as well as periodontal disease and dental caries.

**KEYWORDS** : Preventive prosthodontics, Preventive stage, Restorative stage, Recreative stage

**INTRODUCTION**

Prosthodontic approaches that aid in preventing parameters that negatively impact orofacial tissues, including the periodontium, alveolar bone, basal bone, and surrounding musculoskeletal structures, such as the masticatory muscles, the temporomandibular joint, and the salivary glands, are commonly referred to as preventive prosthodontics. Patients must be informed and allowed to make decisions on evidence-based strategies and prosthetic designs that will preserve the health of their remaining teeth and the tissues which support them.<sup>1,2</sup>

**Stages In Preventive Prosthodontics**

1. Preventive stage
2. Restorative / Corrective stage
3. Recreative/ Rehabilitative stage

**A. Preventive Stage**

This stage is pre-pathogenic. The primary prevention level of the health promotion phase includes dental caries prevention, plaque control, routine caries checkups, nutrition counselling and other related measures. Topical fluoride application and pit and fissure sealant application are examples of specific protection.<sup>3,4</sup> Additionally, the patient receives education on proper tongue postures for better occlusion maintenance, chewing habits, and prosthesis care<sup>5</sup>. In addition, the key preventive measures include radiation shielding for patients receiving radiotherapy and mouth guards for individuals participating in contact sports to protect the dentoalveolar structures<sup>6</sup>.

**Prenatal Stage:**

Prenatal care and clinical evaluation come paramount. Prenatal fluoride therapy, avoiding some medications that could impair dento-facial growth, and promoting oral health care for expectant mothers are all crucial when it comes to dental development.

**Postnatal Stage:**

At this point, the goal of preventive prosthodontics is to preserve the integrity of the normally developing dentition by including anticipatory guidelines, such as home dental care, and clinical assessments of oral growth and development, pathology, and/or incidents<sup>7</sup>.

**i. Diet counselling**

Oral tissues are dependent on nutrition and diet just like all other parts of the body. Nutrition and diet counselling's primary goals are to promote healthy eating habits that fend against disease and to identify and treat food-related oral abnormalities<sup>8</sup>.

**ii. Caries preventive measures**

When fluoride is insufficient, other effective methods can be utilized, such as antimicrobial therapy, salivary stimulation, raising intraoral calcium and phosphate ion concentrations, etc<sup>9</sup>.

**iii. Feeding plate**

An extremely frequent congenital orofacial abnormality is cleft lip and palate (CLP). Pathogenesis arises from the failure of many frontal processes to fuse together during embryonic development. The typical

level of suction and compression needed for bottle and/or breast feeding is not generated by newborns with CLP<sup>10</sup>. There is a serious nutritional deficit as a result of the current situation. A feeding plate is used to temporarily aid with prosthetic obturation of the defect<sup>10,11</sup>.

**iv. Mouth guards**

In contact sports, mouth guards should be worn to prevent dental and dentofacial injuries. It is possible to prevent or reduce injuries such as tooth fractures, concussions, crown root fractures, TMJ fractures, dentoalveolar fractures, and soft tissue injuries.<sup>12</sup>

It is classified into three categories (By American Society for testing and materials).<sup>13</sup>

1. Prefabricated/ Ready made/ Stock mouth guards.
2. Mouth formed/ Boil and bite type
3. Custom made.

**v. Socket shielding**

By keeping a portion of the uninfamed buccal root in place (Socket shield technique, Root Submerge Technique), and eventually preserving the natural periodontium, bone loss after extraction is prevented. GBR like the use of filler graft materials and membranes, have been used to retain the original dimension scale of bone even after extraction.

**vi. Radiological stents**

During radiotherapy, the surrounding tissues are shielded from secondary and dispersed radiation by radiation stents or shields. Despite improvements in radiation techniques, this procedure is often linked to a wide range of oral complications, including radiation caries, trismus, erythema, mucositis, taste loss, xerostomia, and osteoradionecrosis, all of which substantially decrease the person's standard of life.

**vii. Regular care of prosthesis**

There are numerous safe and efficient commercial cleaning options available to maintain oral prostheses hygienically. It is advised to soak the prosthesis overnight to provide the underlying tissues enough time to recover.

**B. Preventive Prosthodontics At Secondary Level**

Some of the preventive prosthodontics procedures that can be carried out at this level are occlusal interference correction, bruxism treatment, treatment for occlusion-related trauma, plunger cusp correction, and treatment for obstructive sleep apnea.<sup>7</sup>

**a. Eliminating occlusal interference**

They produce mandibular deviation during closure to maximum intercuspation (MIC) position or may hinder the smooth passage to and from MIC position<sup>7</sup>. So, correction of occlusal interference is recommended in the early stages<sup>7</sup>. The plunger cusps are shortened and rounded as part of preventive prosthetic therapy. Protecting the opposing interproximal space is another benefit of splinting the nearby teeth<sup>7</sup>.

**b. Bruxism:**

When there are occlusal interferences, the patient tries to adjust the occlusion on his own, which leads to the development of a clenching or grinding habit. Treatment of bruxism involves controlling the psychological stress, occlusal correction, coronoplasty and occlusal splints or intraoral orthoses.

#### c. Management of trauma from occlusion

Trauma From Occlusion is the term used to describe tissue damage that occurs when the occlusal force surpasses the periodontium's adaptive capacity. It is a treatable ailment that can manifest as either primary or secondary, acute or chronic.

#### d. Management of obstructive sleep apnoea

Dental care is becoming increasingly important in the treatment of sleep disorders, particularly in individuals who are co-managing mild to moderate obstructive sleep apnea and simple snoring. A piece of the soft palate and uvula may need to be removed surgically, or prosthetic mandibular advancement appliances such as soft palate lifters, tongue retainers, mandibular repositioners, snoring guards, etc., may need to be made.

#### Restorative procedures on decayed tooth

The level of tooth damage determines the restorative method. Any dental technique that focuses on restoring or repairing damaged oral components is considered restorative dentistry. This covers a broad range of procedures, from basic fillings, inlays, onlays, crowns, bridges, veneers, to intricate operations like implants, and so on. Restoring the structure, integrity, and health of teeth without compromising their natural beauty is the aim of restorative dentistry.<sup>1</sup>

#### e. Provisional restoration

Protecting pulp and periodontal health, encouraging guided tissue healing to provide a satisfactory emerging profile, assessing hygiene practices, stopping abutment migration, offering a suitable occlusal scheme, and assessing maxillomandibular relationships are its primary goals.<sup>1</sup>

#### C. Restorative/Rehabilitative Stage

Tertiary level prevention involves limiting the disability of the patient and rehabilitation. Prevention at tertiary level comes in action once the disease has progressed and surpassed the prevention at secondary level.

#### Prosthodontics Option in Disability Limitation and Rehabilitation

A "preventive prosthetic treatment strategy" was proposed by several writers in 1990 as a means of treating young patients whose dentition has been severely damaged. Planning for urgent dentures, treatment dentures, interim dentures, complete dentures, and provisional restorations can be done throughout the rehabilitation period.

#### a) Preservation of strategic tooth/ teeth - thoughtful timing of extraction

The accelerated resorption of the alveolar ridges can be halted by planned extraction of severely damaged teeth. Third molar extraction is postponed until middle adulthood because it affects tuberosity growth. The preservation of arch stability, prevention of supraeruption of the opposing tooth if it is present, and planned rehabilitation of the site to stop additional harm to the neighboring tooth, underlying mucosa, and alveolar bone are all achieved by planned extractions carried out following a comprehensive treatment plan.<sup>7</sup>

#### b) Immediate Denture:

When permanent teeth fall out too soon to be treated definitively, immediate or interim restorations are planned and can be used as a preventive prosthesis to save the remaining structures and stop additional trauma or damage to the location. The immediate dentures exert functional forces within the physiological range, improving the shape and resilience of the soft tissue covering of the edentulous ridge.

#### c) Fixed Partial Denture:

The preservation of the periodontium, protection of the tooth preparation margins, and prevention of pulpal inflammation are all achieved by adhering to the principles of tooth preparation while preparing teeth for fixed prostheses. As a result, it is feasible to give a fixed, practically reversible tooth replacement for lost teeth that preserves the abutment tooth.

#### d) Removable Partial Denture:

A removable partial denture may be used as a long-term solution for a few lost teeth, or as a temporary measure until a fixed prosthesis is designed. By adhering to the principles a well-designed prosthesis can be prevented from rotating unintentionally around the fulcrum line and from causing additional unwanted stresses and forces on neighboring teeth and underlying tissues.

#### e) Overdentures:

An overdenture can lessen the effects of some of the negative effects of wearing a full denture, such as residual ridge resorption, loss of occlusal stability, reduced masticatory function, and weakened esthetics (Garg S et al., 2016).

#### f) Single Complete Denture/Complete Denture:

When teeth are missing entirely from an arch, a single or complete denture should be made to avoid the teeth coming into touch with the alveolar ridge, to restore function, vertical dimension, and aesthetics, and to stop the formation of parafunctional habits.

#### Implants:

Preserving the alveolar ridges is the focus of preventive implantology. After the tooth is extracted, the use of implants to support an overdenture or a fixed mandibular prosthesis can stop or slow the edentulous lower jaw's atrophy.

#### Obturator

Obturator are used to seal tissue openings that are either congenital or acquired, usually in the alveolar and hard palate structures. It also keeps the mouth from cicatrizing or shrinking.

#### CONCLUSION

Prosthodontics is a specialized area that deals with replacing lost teeth and related structures, but it is impossible to overlook its association with other preventative dentistry measures. By correctly implementing preventative prosthodontic procedures in accordance with the degree or level of prevention required to fix it, potential issues can be avoided and treated.

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