

A Review On Preventive Prosthodontics: An Asset In Preventive Dentistry

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Abstract:

“Dentistry isn’t costly, negligence is”. Preventive dentistry is defined as procedures employed in practice of dentistry and community dental health programs, which prevent the occurrence of oral diseases and oral abnormalities. Its goal emphasizes on importance of any delay or eliminates future prosthodontic treatment, focuses on various objectives such as delaying the residual ridge resorption, which is aided by fabrication of complete denture as well as partial denture whether removable or fixed, to assess the need for early prosthodontic replacement of lost tooth/teeth, to design prosthesis not interfering with normal oro-dental hygiene procedures, plan and preserve what already exists than replacing what is missing. The various prevention philosophies in dentistry are Initiation of diseases (primary prevention), disease progression (secondary prevention), loss of function (tertiary prevention). Preventive dentistry emphasizes the measures to conserve tooth and maintain the natural masticating mechanism such as the state/ condition of general health should not be endangered. Through the test of time prosthodontics has evolved a specialized field in the replacement of missing oral structures as well as in maxillofacial aspects. With an emphasis on DeVan’s maxim, “Prevention of what is remaining rather than meticulous replacement of what is lost”, preventive prosthodontic procedures should be used as normal operating practice at every dental appointment. Instead of focusing on and treating a patient’s immediate concerns, comprehensive treatment that prioritizes the entire mouth, stomatognathic system, and complete body should be taken into consideration.

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I. Introduction

Prosthodontics, being the fundamental pillar of dentistry looks after the aim of preventing conditions leading to extraction or various periodontal diseases consecutively resulting in tooth loss.¹

‘Prevention is better than cure.’ However, is only applicable if the population is educated about the debilitating signs and symptoms of some oral conditions and their consequences on their general health. In various studies we have seen there is a vast difference in the understanding for general and oral health concern seen in people living in urban and rural areas.¹

In Indian population it is observed that people living in low economic conditions tend to be more ignorant towards their general as well as oral health.

Oral health fairly gets ignored in Asian population especially in rural areas, they usually report with a symptom only when they suffer from any excruciating painful sign. The preventive campaigning measures taken by governmental and non-governmental organization in order to educate people usually go to waste ears falling into the pit of ignorant bliss as we might call it.

DeVan’s dictum: “Perpetual preservation of what remains, rather than painstaking restoration of what is gone.” is barely taken into consideration while following one’s own mindset for the preservation of their health.¹In this review article we will be going through the conditions and modalities taken to prevent tooth loss

and measure to be taken to prevent further alveolar bone resorption if one suffers from existing edentulous space.

Prevention: prevention is defined as “actions taken prior to the onset of disease, which removes the possibility that a disease will ever occur”. (according to leavell and clark. 1975).¹

Preventive dentistry is defined as procedures employed in practice of dentistry and community dental health programs, which prevent the occurrence of oral diseases and oral abnormalities. (according to gerrine n.f. Journal of phd)² Preventive prosthodontics emphasizes the importance of any procedure that can delay or eliminate future prosthodontic problem.

Preventive dentistry being the philosophy of dentistry; it knows for various procedures which are used professionally by dentists, dental hygienists and nurses.³

Phases stated otherwise for prevention and progression of diseases:

- Initiation of diseases (Primary prevention)
- Disease progression and recurrence (Secondary prevention)
- Loss of function (Tertiary prevention)

All these above given phases accordingly emphasize on various goals which are considered for disease prevention.

The Goals Of Prevention Are:

- To delay the resorption of alveolar ridge.¹
- To fabricate fixed or removable denture and complete denture to preserve existing residual ridge.¹
- The assessment for the need of early prosthodontic replacement of lost tooth/teeth.¹
- Select treatment in consultation with patient and implement it judiciously.¹
- The prosthesis not interfering with the normal oro-dental hygiene procedures.¹
- Successful planning to preserve what remains rather than replacing what’s missing.¹

Levels Of Preventive And Prosthodontic Dentistry¹:

Primary Level	Techniques and treatments to delay the onset of illness
	Slow or stop the progression of illness
Secondary Level	Uses methods to stop a disease's progression at its early stages and avoid consequences.
Tertiary Level	After secondary prevention fails, steps are taken to replace lost tissues and rehab patients so that their physical capabilities and/or mental attitudes are as close to normal as feasible.

Prevention At Primary Level¹:

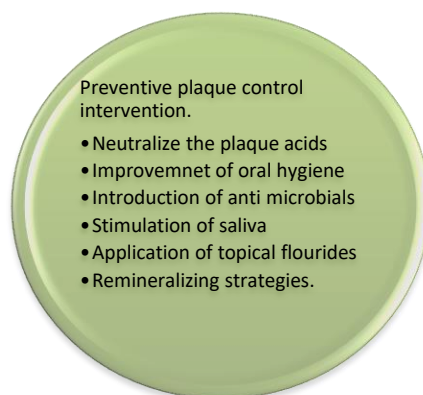
it is regarded as action taken prior to the onset of disease/which removes the possibility that a disease will ever occur. It includes intervention pre-pathogenic phase of a disease, also inclusive of steps like health promotion and specific protection.

Primary Level Promotional Modalities	prevention of dental caries
	maintaining proper oral hygiene
	practising flossing
	control of accumulation of plaque and calculus
	regular check up for caries activity
	diet and nutrition counselling
	caries vaccination, recall and check up
	reinforcement of maintaining oral hygiene measures.

Dental Caries Prevention:

Saliva contains the necessary nutrients for bacteria to flourish as well as antibacterial proteins and electrolytes for remineralization. However, the food that we consume is what supplies the dietary carbohydrates that are quickly converted to energy and the acids that cause the bacteria to dissolve tooth hard structures².

The disaccharides sucrose and the monosaccharides glucose, a component of sucrose are most cariogenic with frequent ingestion, can cause severe damage to the tooth. (fig. 1)



Regular Check Up For Caries Activity:



Nutritional Guidelines:

- To offer a well-balanced diet suitable for the patient's physical, social, psychological wellbeing.^{2,8}
- To administer a transient nutritional support regimen, aimed at definite objectives, such as carries control, surgical recovery, or training of soft tissues.²
- To examine factors particular to the denture age group. It might relate to or make the care and nutrition treatment more difficult.^{2,8}

Using Of Mouth Guards:

It is possible to prevent or reduce injuries such tooth fractures, concussions, crown root fractures, TMJ fractures, dento-alveolar fractures, and soft tissue injuries, especially when they are tend to be sports related.⁶ (fig.3)

Preventive Prosthodontics At Secondary Level:

Procedures performed at this level of prevention are⁷:



Occlusalinterference: muscle hypertrophy, weariness, spasm, migraines, cranio-mandibular dysfunction syndrome, worn facets, broken cusps, and tooth movement are all caused by occlusal interference. Therefore, early occlusal interference treatment is advised. Occlusal correction must be done carefully because failure to do so could make the condition worse.⁶

Bruxism: this condition gives classical symptoms of tmj problems, alveolar bone loss, mobility, muscle hypertrophy, occlusal facets, and attrition. Periodontitis, overcontoured repair, psychological and physical stress, sleep disorders, cns problems, and alcohol use can all contribute to this.⁶ (fig.4)

Obstructive sleep apnoea: it is characterized by the stoppage of upper airway outflow while the diaphragm is still moving. It can be brought on by retrognathism, expanded soft palate, huge tongue, and swollen tonsils. Dentistry is playing a bigger part in treating sleep disorders, particularly in co-managing patients with mild to severe obstructive sleep apnea and simple snoring.^{6,7} common features in patients with sleep apnoea:



Preventive Prosthodontics At Tertiary Level:

Rehabilitation and limiting the patient's impairment are involved. Rehabilitation in prosthodontics includes operations including extractions, root canal therapy, removable partial dentures, fixed partial dentures, implants, and post and core therapy.^{1,8}

Prosthodontic Option in Disability Limitation and Rehabilitation by W.Kalk vanwaas (1990) presented the "Preventive Prosthetic Treatment Strategy" which includes:^{2,5}

- Restoration of the teeth,
- Timing of extraction,
- Preservation of occluding pairs of teeth,
- Avoidance of contact between the teeth and the opposite edentulous jaw.
- In rehabilitation phase: planning for the immediate dentures, treatment dentures or interim dentures, complete dentures and provisional restorations can be done.

Interim Dentures:

Interim dentures can be used as preventive measures in the early loss of permanent teeth if the ultimate treatment cannot be carried out for a variety of reasons (fig.6). These dentures serve as space maintainers to avoid improper jaw habits and to prevent tooth migration/drift, supra eruption, and contact with the alveolar ridge. They also restore function and aesthetics while restoring muscular tonicity, vertical height, and jaw health.⁴

Immediate Dentures:

According to GPT “A complete or removable partial denture constructed for insertion immediately following the removal of natural teeth.”⁴ (fig.7)

Immediate dentures as discussed by Richardson (1860), are planned if the dentition is severely damaged and requires total extraction. Better recovery is encouraged (immediate dentures serve as surgical stents). These stents exert very little pressure on the soft tissues, promote healing, and guard against cicatrization or tissue collapse. Protect the blood clot and promote quick recovery and encourage improved ridge form.⁴

Complete Denture:

They are recommended when the patient has gone through extraction or loss of all their teeth and now have edentulous alveolar ridge. (fig.8) The complete dentures are provided with various occlusal schemes such as balanced occlusion, lingualized occlusion, neurocentric concept and others depending upon the condition of the patients.^{1,8}

Overdentures:

Barker in 1861 first reported the use of overdenture to the American dental association. An overdenture is a removable dental prosthesis that rests on dental implants, the roots of natural teeth, and one or more remaining natural teeth. The overdenture is supported, stabilised, and retained to a greater extent by the implants or modified natural teeth than by the edentulous ridges alone.^{1,8} It is also known as Hybrid dentures or tooth-supported complete dentures. Retaining natural teeth as abutments for dentures can considerably reduce the progress of residual ridge resorption.¹³

Overdenture	Immediate overdenture	Insertion immediately after the removal of some natural teeth of which many hopeless abutment teeth
	Transitional/ additive overdenture	Is obtained by converting an existing removable partial denture to over denture.
	Remote overdenture	Usually constructed for insertion at some time “remote” from the removal of hopeless natural teeth.

Obturator:

It is the prosthesis used to close a congenital or acquired tissue opening, primarily of hard palate and contiguous alveolar tissues.⁸ (fig.10)

- *Interim obturator:* Following the removal of the surgical packing, an interim obturator is administered.⁸
- *Surgical obturators:* they are implanted immediately following surgery, either with or without surgical packing. It is fixed in place with screws or wires, it restores the curves of the mouth, prevent the fluids from being regurgitated into the nasopharynx, protect the wounds and provide painless recovery, prevent shrinkage or cicatrization.⁸

Preventive Philosophy In Fixed Prosthodontics:

One of the fundamental ideas of restorative dentistry is to preserve as much tooth structure as is consistent with the mechanical and aesthetic principles of tooth preparation. This is accomplished through the fabrication of fixed partial dentures. This will mitigate the detrimental effects of various techniques and materials on the pulp.^{9,11}

Use of restorations with partial coverage rather than full coverage:

1. Making teeth with the axial walls' smallest practicable convergence angle.⁹
2. The occlusal surface is prepared so that the reduction follows the anatomic planes to give the restoration a uniform thickness.⁹
3. Preparation of the axial surfaces to remove tooth structure uniformly; teeth should, if necessary, be realigned using orthodontics.⁹
4. Conservative margin selection that is compatible with the other dental preparation guidelines.⁹
5. Avoiding apical preparation extension that is not necessary.⁹

Rationale For The Placement Of Dental Implant:

When opposed to employing detachable prostheses or a fixed partial denture that uses natural teeth as an abutment, using dental implants to support prostheses has an array of positives.

In lieu of serving as an anchor for the prosthetic device, the dental implant placed within the bone serves as one of the greatest preventive maintenance techniques in dentistry. When the dental implant is placed and working, the amount and density of bone trabeculae grow. As long as the implant is in good condition, it can preserve the width and height of the bone. Implant-supported prostheses perform better during chewing than any other type of traditional detachable prosthesis.

Preventive Implant Therapy:

Little to no attention is paid to the prevention of alveolar bone loss in preventive dentistry, which focuses primarily on the prevention of cavities and periodontal disease. The goal of preventive implantology is to protect the (edentulous) jaw's alveolar ridge. After tooth extraction, implants supporting an overdenture or a fixed mandibular prosthesis can stop or delay the atrophy of edentulous lower jaws. In comparison to conventional mucosa-supported dentures, studies have revealed that when the mandibular ridge is loaded by an implant-supported prosthesis, overall resorption pattern is slower.^{9,17}

Role Of Maintenance And Recall In Prevention:

“The dentist of the future will not be judged by the excellence of his margins, but by how well he motivates his patients to practice correct oral hygiene. The dentist's success will be favourable only if the patient returns in six months, and then regularly, and returns each time with an absence of plaque.” – Boitel.^{9,10}

Avoiding negligent handling or dropping of a removable prosthesis should be the primary concern. It may put detrimental pressure on the teeth if it is twisted. Appliances can occasionally sustain damage. By keeping the prostheses free of plaque and maintaining them properly utilising a variety of physical and mechanical techniques like brushing with gentle brushes and cleaning with cleansing solutions, one can improve tissue health.¹⁷

II. Conclusion:

The final level of prevention is the main focus of prosthetic dentistry. To provide a long-term prosthetic service while simultaneously safeguarding the oral tissues, the various preventative principles should be applied to all dental patients seeking prosthetic rehabilitation. Keep in mind that "prevention is always better than cure" and make every effort to conserve what nature has to offer. The clinical management of dental patients receiving ongoing preventive therapy may be accomplished through the use of preventive prosthodontics.

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