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Review Article

Periodontal prosthesis in contemporary dentistry

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Abstract In the last 5 decades, the developments of osseointegrated titanium implants (since 1965) have led to the success of contemporary dentistry. Endosseous implant-supported restorations delivered in accordance with the traditional Branemark protocol have proven to be highly predictable. Today, implants are becoming increasingly common in dental care and provide more therapeutic options, but treatment planning and the sequencing of therapy are critical in implant-assisted and implant-supported cases. Implant prostheses give patients and dentists more options in treatment planning, but also present challenging decisions regarding implant surgery. In essence, the emerging thought is that teeth are expendable, as we now have implants to solve these problems. The fact that peri-implantitis is no simple problem to treat does not seem to affect many who hold that thought. In this article, the authors explain how to properly apply the periodontal prosthesis philosophy, concepts, principles, and techniques in contemporary dentistry. (This article is an update from the article was published in 2005) [1].

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Introduction

It is interesting to look back upon the past sixty years spent in the study, practice, and teaching of dentistry after the

Periodontal Prosthesis Program was founded by Drs. Morton Amsterdam & Walter Cohen in 1955. As we reflect on where we were and where we are at present, we begin to see in perspective how and why we evolved as we did.

Our own introduction to dentistry was definitely prosthodontically oriented. We were given a sound and intense program of study in the basic sciences, but there was little if any correlation to that which we did in preclinical and clinical dentistry. Not only was that correlation lacking but there was little if any correlation between the various aspects of clinical dentistry. We wonder just how

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far we have come today in solving this problem (Dr. Morton Amsterdam) [3].

The principles of periodontal prosthesis developed in the 1950s–1970s by Drs. Amsterdam, Abrams, and Weisgold explained in *Periodontal Therapy*, edited by Drs. Goldman and Cohen, provide relevant diagnostic and therapeutic criteria and guidelines that apply to teeth as well as implants.

The technique of periodontal prosthesis allows multiple pontic replacement in fixed bridge often on severely mobile, compromised and reduced number of abutment teeth. The science is overwhelmingly in favor of this type of bridge in certain situations where conventional dentures and implants are not possible for whatever reasons. The technique relies on good oral hygiene and periodic maintenance, a reduced but healthy periodontal condition, multiple cantilevers often with couple pontics cantilevered off the last remaining abutment, subgingival (75–80%) and/or supra-gingival (20%) margins, acrylic, composite or porcelain veneering material on a metal framework and with a narrower occlusal table and shorter/shallower cusps to reduce horizontal force and occlusal trauma. Full arch splinting design can stabilize the mobile abutment teeth. This type of bridge has increased but not increasing mobility and excellent long term success rates. The principles in the past are still valuable and do apply to contemporary dentistry including implant restoration.

For these situations, occlusal, restorative, surgical, esthetic, biomaterial, pharmacologic, and psychologic skills must be carefully combined for optimal results [4].

The first osseointegrated titanium implant was inserted into a human jaw by Branemark in 1965 [5,6]. Endosseous implant-supported restorations delivered in accordance with the traditional Branemark protocol has proven to be highly predictable. This type of restoration is becoming more and more popular today. Implant-supported prostheses have been used for fully edentulous, partially edentulous, and single-tooth implants, and surgical and restorative approaches for implant prostheses have greatly improved in the past 50 years [1,7–9]. In essence, the emerging thought is that teeth are expendable, as we now have implants to solve these problems. The fact that peri-implantitis is no simple problem to treat does not seem to affect many who hold that thought.

The dilemma for the ethically oriented professional is whether to save the natural dentition or to replace it with an implant. In 2011, “Three diagnostic criteria” for single-rooted teeth have been suggested from a periodontal point of view to solve this problem by Dr. Ricci’s group and direct the clinician toward the proper biologically and ethically oriented treatment [10].

Three diagnostic criteria are as follows

1. Tooth stability

From a periodontal point of view, stability, vitality, and integrity (*The SVI rule: stable, vital, intact*). Of a tooth are definitive indications to maintain it and to proceed with regenerative therapy, even in a very compromised situation.

2. Type of osseous defect

If the tooth is contained within the envelope of the residual bony walls, the same good prognosis will apply to an immediate implant placed within the envelope of bone in an extraction socket.

3. Decontamination of the natural root

A decontaminated root surface must be obtained to achieve new attachment. As it compares with the use of a sterile implant in implant therapy.

As a consequence, there is no reason to proceed with placement of an artificial tooth, such as an implant, as a substitute for a natural tooth if the potential for repair and the surgical treatment of the site are the same for both procedures (Table 1).

“Periodontal Prosthesis” is defined as those restorative and prosthetic endeavors that are essential in the treatment of advanced periodontal disease. It refers to the treatment of the dentition mutilated by periodontal disease, including the concepts, principles, and techniques that may be used in any restorative or tooth replacement procedure involving the natural dentition [3].

These practices are just as applicable to implant restorations, from diagnosis, treatment plan, esthetics, periodontal/peri-implant perspectives, periodontal biotype, surgical perspectives, restorative perspectives, orthodontic perspectives, occlusal concepts and splinting perspectives, failures and complications management, maintenance, sequence of therapy, to the emergence profile of the abutment restoration [7].

In this article, the authors explain how to properly apply the periodontal prosthesis philosophy, concepts, principles, and techniques to contemporary dental therapy.

Indication for implant placement

One of the great uses for implants is when individuals have lost all their teeth. Another is when replacing bridges; the pontic area can now be restored with an implant. But with all of the wonderful restorative materials today, teeth that have broken down many times can be treated and maintained indefinitely.

Since the advent of bonded composite resins in the late 1980s, the success rate of restoring tooth surfaces in comprehensive perio-restorative cases has seen a major improvement; and due to the continuing evolution of wonderful restorative materials [11,12], every day we get

Table 1 Requirements for regenerative periodontal therapy on natural teeth vs requirements for immediate implant placement [10].

Tooth	Implant
Stable	Primary stability
Contained within envelope of bone	Contained within envelope of bone
Decontaminated	Sterile implant

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