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implants

international magazine of oral implantology

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The Implant Protection Plan

case report
The Stable Tissue Concept

events
50 plus one years into the future

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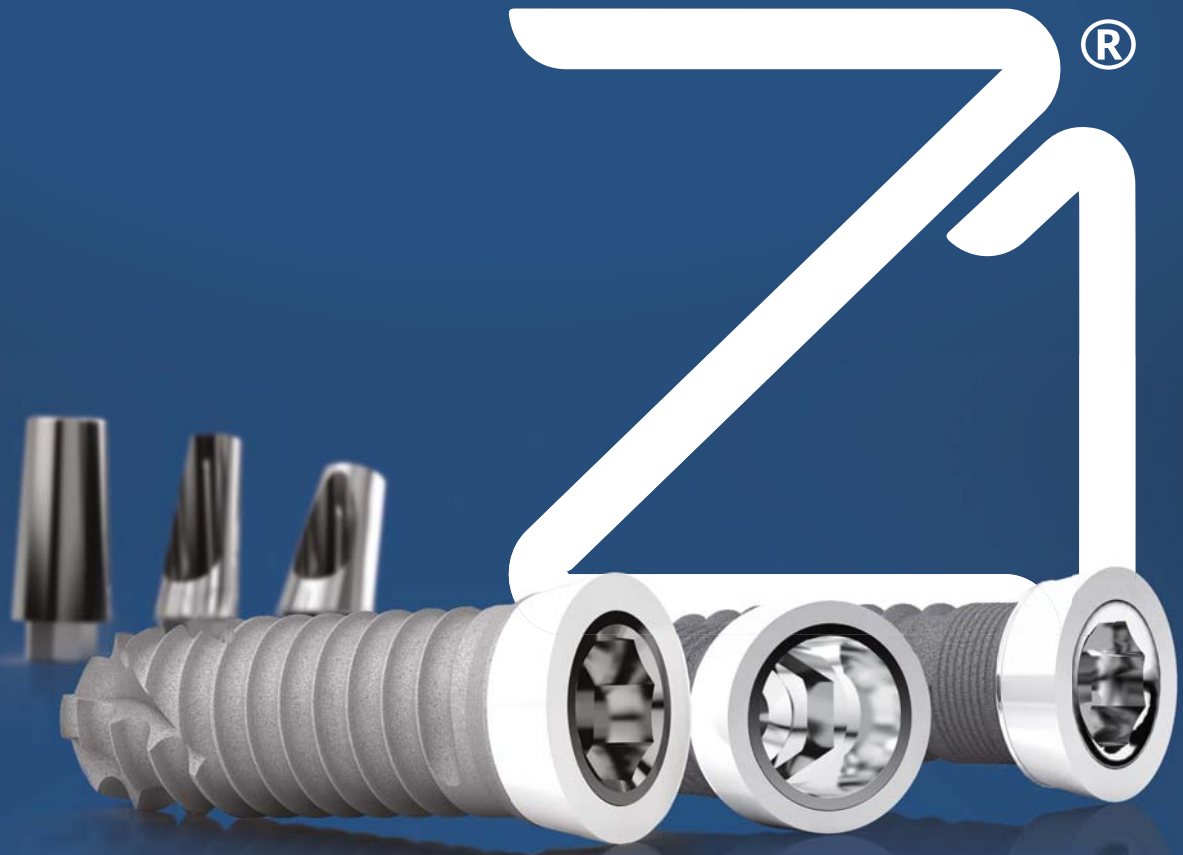

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Dr Rolf Vollmer

First Vice President and Treasurer of DGZI

50 years of DGZI—a strong indicator for European dental implantology

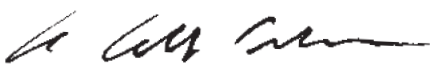
In celebration of the 50-year anniversary of the German Association of Dental Implantology (DGZI), its third Future Congress for Dental Implantology was held in Cologne in Germany in early October. Owing to coronavirus-related travel and other restrictions imposed by governments worldwide, we had to celebrate our anniversary with a delay of one year, but this did not hinder its success in any way. We can proudly look back on a beautiful and worthy celebration of half a century of European implantology and a multifaceted, exciting congress. All in all, this one-of-a-kind event did full justice to the unique occasion.

As the oldest implantological expert society in Europe, celebrating 50 years of our existence was truly a milestone for us. We used the special event in Cologne as an occasion to reflect on the incredible developments that dental implantology has undergone in the past 50 years since our foundation by the visionary group led by Prof. Hans Grafelmann. DGZI has accompanied and helped to shape these developments from their very beginnings until today. Moreover, through our anniversary congress, we have succeeded in providing a visionary outlook of what future implantology might offer in five to ten years from now in terms of new clinical techniques and new approaches to implantology in general.

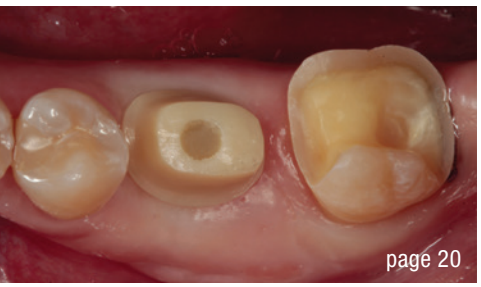
We can proudly say that our valued guest speakers were indeed the who's who of European implantology and contributed greatly to the scientific programme. Against this background, I would like to express my most sincere gratitude to the presidents and board members of the German Society for Implantology (DGI), the German Society of Oral Implantology (DGOI) and the other specialist societies who accepted our invitation to address our congress participants and delivered truly insightful lectures. Despite the undoubtedly competitive situation between the various professional associations, the 2021 event in Cologne revealed something quite important: on certain topics and in certain situations, those at the forefront of German—and on a broader scale of course European—dental implantology are united in their vision of the future orientation of implantology. This is a strong indicator for us!

In this spirit, I would like to extend warm and friendly greetings to you and wish you enjoyable reading of the last issue of this anniversary year of implants—**international magazine of** oral implantology, as well as a reflective time ahead of the Christmas season!

Sincerely yours,



Dr Rolf Vollmer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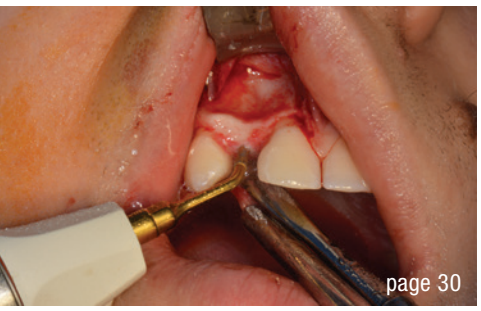
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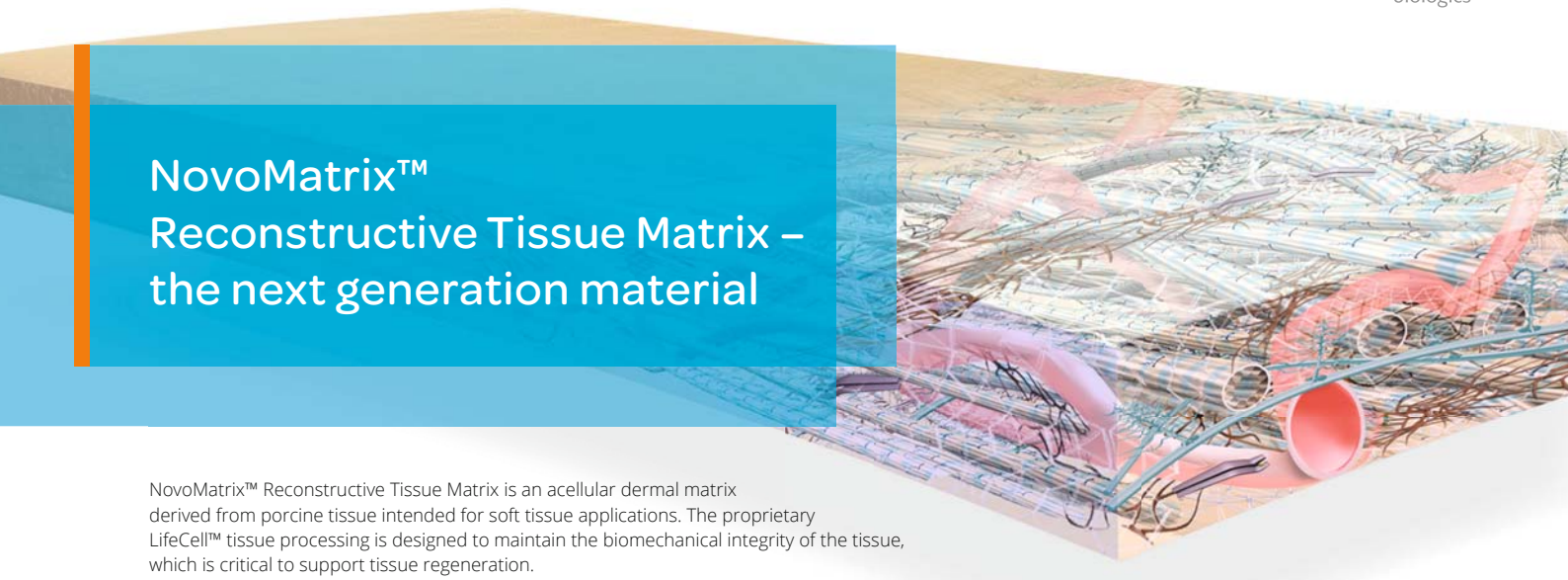

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[1] Wen et al. J. Periodont. 2019, 1, 734.
[2] Schmitt et al. Clin Oral Implants Res. 2013, 24, 576.
[3] Kloss et al. Clin Oral Implants Res. 2018, 29, 1163.
[4] Solakoglu et al. Clin Implant Dent Relat Res. 2019, 21, 1002-1016.
[5] Kloss et al. Clin Case Rep. 2020, 8, 5.
References available at: www.biohorizonscamlog.com/references_minerossa

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The Implant Protection Plan (I.P.P.)

Innovative implant and periodontal maintenance protocol

Drs Tiziano Testori, Giordano Bordini & Matteo Basso, Italy

Introduction

The last 30 years of world dentistry have undoubtedly been characterised by the exponential growth of implantology, which has gone from being a discipline in the hands of a few experts "to being a field of treatment at many dental practices. There are several reasons for this increase: firstly, surgical and prosthetic techniques have been simplified over the years, repeatable protocols being certified by decades of literature, reducing costs for the patient and limiting invasiveness and postoperative discomfort. In addition, many patients want an aesthetic and functional restoration by means of fixed implant prostheses as their first choice, rather than resorting to solutions such as removable prostheses or fixed prostheses on natural teeth involving the prosthetic preparation of healthy teeth. Ultimately, it should not be under-estimated that implantology has also increased because it represents a source of income for the economic balance sheet of many healthcare facilities that have decided to specialise in this field. However, the implementation of an oral implant rehabilitation, be it a single tooth or a complex solution, cannot and must not today represent the end point either for the patient or for the dentist and his or her team. Nowadays, thanks to our knowledge, we have no difficulty in achieving implant-based rehabilitation even in cases of severe bone atrophy using regenerative techniques.

> "... modern implantology is trying to address the possibility of guaranteeing a clinical result that endures over time ..."

The critical point that modern implantology is trying to address, not always successfully, is the possibility of guaranteeing a clinical result that endures over time. To achieve this ambitious goal, it is crucial to design an effective and feasible implant and periodontal maintenance protocol. We know that home maintenance around implants can be more difficult than around natural teeth because the techniques and instruments to be used, in many clinical cases, are inevitably different from those used for natural teeth. In addition, we may be confronted with the typical pathologies of implants, represented by mucositis and peri-implantitis, subtle pathologies that are difficult to control and whose differences from gingivitis and periodontitis we have learnt about.[1] According to studies on the prevalence of peri-implant disease,[2] 45% of patients show, after an average of nine years, signs of mild peri-implantitis and 14.5% medium to severe. In recent times, we have gained knowledge about oral biofilm, discovering that the biofilm changes in its characteristics when a pathology is established and that some pathologies, such as mucositis and peri-implantitis, are characterised by a repetitiveness in the type of pathogenic microorganisms present.[3] Implant maintenance protocols, however, have not evolved alongside knowledge, sometimes only introducing new instruments or technologies, such as laser therapy or phototherapy, and some new antiseptic principles.

The concepts of periodontal and peri-implant eubiosis and dysbiosis

One of the key points for the long-term success of a patient rehabilitated with implants, which is no different from that of a patient treated for periodontal disease, is to establish a correct programme of supportive therapy and periodic follow-up that includes differentiated recalls based on an analysis of risk factors and consequent classification into risk categories. The literature and our decades of clinical experience have shown that patients with treated periodontal disease are at risk of having setbacks and developing a new disease process.[4] Thus, the implant patient or the periodontal therapy patient should not and must not be considered a patient who after treatment, however successful, can return to being normal and be low risk. Based on this scientific and clinical evidence, we can begin to plan the future of our therapies, starting with the biological basis of the problem and the new assump-

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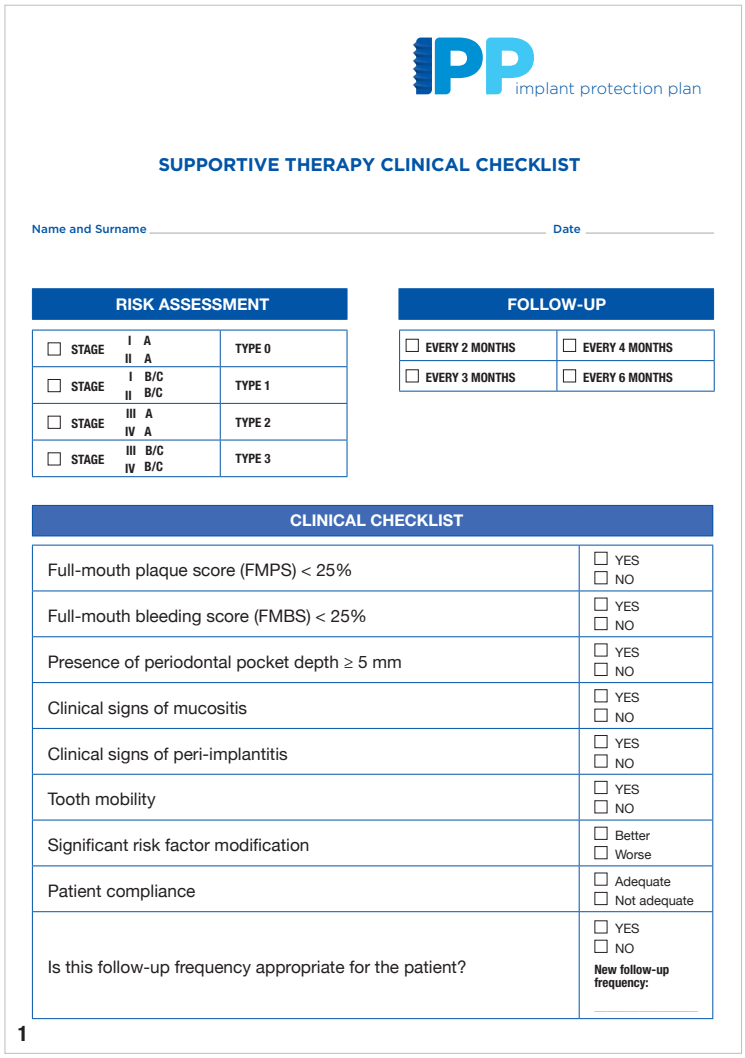


IPP implant protection plan

SUPPORTIVE THERAPY CLINICAL CHECKLIST

Name and Surname _____ Date _____

RISK ASSESSMENT	
☐ STAGE I A, II A	TYPE 0
☐ STAGE I B/C, II B/C	TYPE 1
☐ STAGE III A, IV A	TYPE 2
☐ STAGE III B/C, IV B/C	TYPE 3

FOLLOW-UP	
☐ EVERY 2 MONTHS	☐ EVERY 4 MONTHS
☐ EVERY 3 MONTHS	☐ EVERY 6 MONTHS

CLINICAL CHECKLIST	
Full-mouth plaque score (FMPS) < 25%	☐ YES ☐ NO
Full-mouth bleeding score (FMBS) < 25%	☐ YES ☐ NO
Presence of periodontal pocket depth ≥ 5 mm	☐ YES ☐ NO
Clinical signs of mucositis	☐ YES ☐ NO
Clinical signs of peri-implantitis	☐ YES ☐ NO
Tooth mobility	☐ YES ☐ NO
Significant risk factor modification	☐ Better ☐ Worse
Patient compliance	☐ Adequate ☐ Not adequate
Is this follow-up frequency appropriate for the patient?	☐ YES ☐ NO New follow-up frequency:

1

Fig. 1: Operational checklist for maintenance sessions.

tions linked to a more accurate knowledge of the oral microbiota.

The oral microbiota is the set of microorganisms that live and coexist in the oral cavity. It should be distinguished from the concept of oral microbiome, which is the collective genomes of the microorganisms present. The microbiota is made up of more than 700 different bacterial species, as well as numerous other microorganisms, and in a healthy state it is in perfect balance with the host, causing no harm and providing numerous benefits through the predigestion of food, antibacterial action, and the secretion of enzymes. This state of equilibrium is called "eubiosis". It is important to emphasise that a eubiotic microbiota may also contain species that are considered pathogenic but which as part of a balanced biofilm are not capable of inducing pathology. Thus, the mere presence of periodontopathogenic species or implant pathogens is no longer considered a sign of pathology, as it was in the past; they can at most be considered risk factors to which more attention should be paid.

However, when a pathological process of either periodontitis or peri-implantitis occurs, the oral biofilm changes and a picture of dysbiosis[5] of the oral microbiota emerges, there being a change in the relationships between the present species and that can trigger an immune and inflammatory response. It is precisely the inflammation created by the bacterial trigger that feeds and often maintains the dysbiosis itself, leading to chronicity of the condition. This alteration in the balance leading to the onset of disease is affected by many variables or risk factors which can affect the patient's clinical situation at several levels.[6] There is a solid body of literature on the most important risk factors for periodontal disease, drawn from many clinical trials and a smaller number of longitudinal studies.[7,8] This has made it possible to identify some of these factors as being strongly correlated with periodontal disease and, at least regarding the current state of research, to suggest for others a correlation whose nature has yet to be validated in detail.[9–14]

Risk factors include some that are modifiable and others that are not. Among the most important modifiable factors are smoking, stress and diabetes, which we know cannot yet be eliminated but is treatable and therefore modifiable. Among the non-modifiable factors is genetic predisposition, a generic and imprecise term that refers to a host's ability to modulate the quality of the immune and inflammatory response differently and thus favour the onset of disease. Other risk indicators whose correlation with implant and periodontal disease has yet to be fully clarified include obesity, metabolic syndrome, hypertension, cardiovascular disease, and osteopenia/osteoporosis.

A cooperative patient–professional plan

Once the biological bases currently considered valid for a more scientific and modern understanding of peri-implant pathologies have been clarified, other much more practical and organisational aspects of maintenance need to be investigated. First of all, not all patients are the same: the selection of a good candidate for periodontal treatment or implant therapy should always be made *a priori*, excluding those patients in whom the risk factors described, or even who display an unsuitable propensity and attitude regarding adhering to the practitioner's requests and prescriptions (patients defined as having a low degree of cooperation or compliance), are not considered satisfactory. Sometimes it is not possible to select only ideal candidates, and even these, in the course of their lives, may suffer a disease setback if not properly motivated and followed up. Although a number of periodontal and peri-implant risk assessment tools have existed for years to assist clinicians in setting up the most suitable maintenance programme possible,[15,16] there is no uniformity even among the most experienced

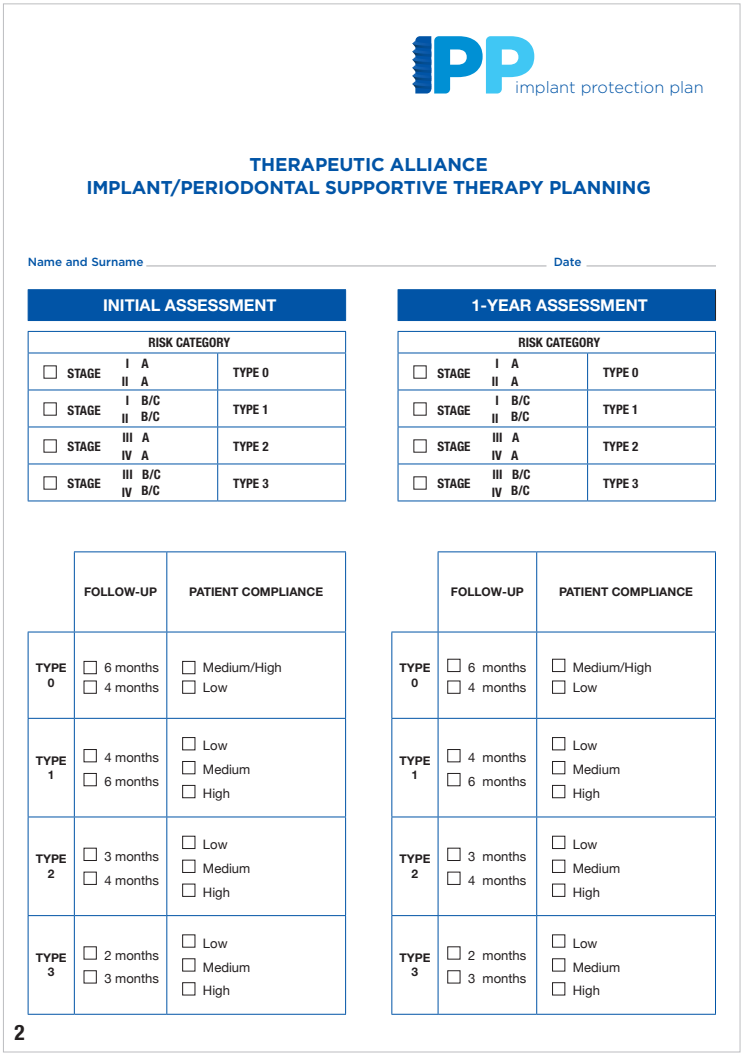
professionals.[17] Furthermore, the patient undergoing implant and periodontal rehabilitation often requires a guarantee of duration of treatment, a need which goes far beyond what medicine can offer but to which, nowadays, we cannot fail to provide a satisfactory answer.

The aim of this scientific contribution is to suggest a protocol, the implant protection plan (IPP), that establishes a therapeutic alliance between the treating dentist, the dental hygienist and the patient at the end of the active phase of periodontal or implant therapy. The IPP protocol provides for a shared maintenance pathway which starts with the initial assessment of the patient and periodic re-evaluations, which are not an end in themselves or a mere collection of clinical data, but determine actions and changes in the dental professional's attitude or that of the patient in order to optimise the periodontal and implant prognosis. The patient himself or herself should feel involved in the IPP, share its purpose and not play a passive role (Figs. 1 & 2).

The protocol also includes an operational checklist with all the factors that the hygienist has to check during the session. This tool is designed to monitor the clinical situation and alert the dental practitioner to any worsening of the patient's clinical condition compared with the baseline and to make consequent adjustments to the current supportive therapy (e.g. shortening recall times; Fig. 3).

The true innovation is to ensure that the patient does not have to give up compliance because, in return for a personalised maintenance programme set out in a contract signed by both parties, he or she will be guaranteed specific treatments or interventions, such as prosthetic replacement treatments, without any financial cost should any biological problems occur, but only if he or she has complied with the maintenance sessions agreed with him or her beforehand.

The first step in implementing the protocol is to assign a periodontal or peri-implant risk profile. The dentist determines a specific risk class on the basis of systemic and local risk factors, the presence or absence of implants (patient with only natural teeth, patient with natural teeth and implants, or patient with only implants) in order to plan the frequency and manner of individualised maintenance therapy. The assessment of the risk profile is therefore divided into a periodontal profile, if the patient still has natural teeth, and a periodontal framework in order to combine the two classifications into a single patient risk class assignment. Assigning a prognostic risk for a patient who has a partial natural dentition is a process that requires cross-referencing anamnestic information and elements from the objective examination and interpreting this data through prognostic assessment. It is necessary to include in the


IPP implant protection plan

THERAPEUTIC ALLIANCE
IMPLANT/PERIODONTAL SUPPORTIVE THERAPY PLANNING

Name and Surname _____ Date _____

INITIAL ASSESSMENT

RISK CATEGORY	
☐ STAGE I A II A	TYPE 0
☐ STAGE I B/C II B/C	TYPE 1
☐ STAGE III A IV A	TYPE 2
☐ STAGE III B/C IV B/C	TYPE 3

	FOLLOW-UP	PATIENT COMPLIANCE
TYPE 0	☐ 6 months ☐ 4 months	☐ Medium/High ☐ Low
TYPE 1	☐ 4 months ☐ 6 months	☐ Low ☐ Medium ☐ High
TYPE 2	☐ 3 months ☐ 4 months	☐ Low ☐ Medium ☐ High
TYPE 3	☐ 2 months ☐ 3 months	☐ Low ☐ Medium ☐ High

1-YEAR ASSESSMENT

RISK CATEGORY	
☐ STAGE I A II A	TYPE 0
☐ STAGE I B/C II B/C	TYPE 1
☐ STAGE III A IV A	TYPE 2
☐ STAGE III B/C IV B/C	TYPE 3

	FOLLOW-UP	PATIENT COMPLIANCE
TYPE 0	☐ 6 months ☐ 4 months	☐ Medium/High ☐ Low
TYPE 1	☐ 4 months ☐ 6 months	☐ Low ☐ Medium ☐ High
TYPE 2	☐ 3 months ☐ 4 months	☐ Low ☐ Medium ☐ High
TYPE 3	☐ 2 months ☐ 3 months	☐ Low ☐ Medium ☐ High

2

Fig. 2: Programming of periodontal and implant maintenance sessions.

analysis the patient's medical and dental history, oral and extra-oral radiographs and the main periodontal variables (plaque index, bleeding on probing, probing depth, recessions, furcation involvement, pathological tooth mobility, bone profile) and to give the patient the correct periodontal disease diagnosis (in terms of stage and grade).[18]

Today, there are several tools and algorithms that help us to plan the correct timing of maintenance sessions and, indirectly, to predict the patient's prognosis. It should also be pointed out that some of these collected variables, besides having a greater relative weight (odds ratio) than others in influencing prognosis, offer more information as indicators of disease progression. The most important of these are smoking, diabetes and a history of periodontitis.

In a recent review of the scientific evidence supporting periodontal maintenance planning, the following was emphasised:[19]