

The 1st Baltic Osseointegration Academy and Lithuanian University of Health Sciences Consensus Conference 2016. Summary and Consensus Statements: Group III - Peri-Implantitis Treatment

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ABSTRACT

Introduction: The task of Group 3 was to review and update the existing data concerning non-surgical, surgical non-regenerative and surgical regenerative treatment of peri-implantitis. Special interest was paid to the preventive and supporting therapy in case of peri-implantitis.

Material and Methods: The main areas of interest were as follows: effect of smoking and history of periodontitis, prosthetic treatment mistakes, excess cement, overloading, general diseases influence on peri-implantitis development. The systematic review and/or meta-analysis were registered in PROSPERO, an international prospective register of systematic reviews: <http://www.crd.york.ac.uk/PROSPERO/>. The literature in the corresponding areas of interest was searched and reported using the PRISMA (Preferred Reporting Item for Systematic Review and Meta-Analysis) Statement: <http://www.prisma-statement.org/>. The method of preparation of systematic reviews of the literature based on comprehensive search strategies was discussed and standardized. The summary of the materials and methods employed by the authors in preparing the systematic review and/or meta-analysis is presented in Preface chapter.

Results: The results and conclusions of the review process are presented in the respective papers. The group's general commentaries, consensus statements, clinical recommendations and implications for research are presented in this article.

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RESULTS

The following reviews were prepared for publication as a result of work of Group 3:

1. The Efficacy of Supportive Peri-Implant Therapies in Preventing Peri-Implantitis and Implant Loss: a Systematic Review of the Literature (Ramanauskaite and Tervonen [1])

General commentaries

Evidence that microorganisms are essential in the aetiology of peri-implantitis, an inflammatory process in peri-implant soft tissues and alveolar bone, has been well documented. There is also strong evidence that preventive therapies targeting the removal of soft and hard microbial deposits are effective in maintaining the periodontal health of natural teeth. Likewise, there is a common consensus that peri-implant mucositis and its progression to peri-implantitis are largely preventable via patient-administered plaque control and professional intervention comprised of oral hygiene instructions and mechanical debridement. As regards the prevention of peri-implantitis and implant loss, a few studies have shown positive effects of supportive peri-implant therapies (SPTs) on the long-term success of implant treatment. Of note is that a majority of the studies were planned for purposes other than studying the effects of SPTs on peri-implant conditions. While efforts have been made to define the frequency of recall visits, it is currently recommended that supportive maintenance be established according to individual needs, based on diagnosis and risk profiling.

Consensus statement

A lack of poor adherence to SPTs results in significantly higher frequencies of implant sites with mucosal inflammation and peri-implant bone loss as well as more frequent implant loss. Implementation of regular SPTs to prevent the above complications is crucial to ensure the long-term success of implant therapy.

Clinical recommendations

In light of the microbial aetiology of peri-implant infections, SPTs targeting the removal of soft and hard microbial deposits at implant sites are needed. Individually tailored SPTs based on patient motivation

and re-instruction in oral hygiene measures combined with professional mechanical debridement should be an integral part of implant therapy.

Implications for research

Prospective longitudinal studies using various treatment protocols/modes of therapies for SPT and study samples of appropriate size that enable risk profiling of individuals are needed.

2. Non-Surgical Therapy for Peri-Implant Diseases: a Systematic Review (Suárez-López del Amo et al. [2])

General commentaries

Peri-implant mucositis is characterized by an inflammatory process around a dental implant without loss of supporting bone beyond biological bone remodelling. On the other hand, peri-implantitis is characterized by both, inflammation of the surrounding peri-implant tissues and loss of supporting bone beyond initial biological bone remodelling. However, multiple interpretations of such diseases exists and there is still no agreement on how to clearly define peri-implantitis. Consequently, elaboration of an effective and predictable treatment protocol for a still not completely understood disease seems arduous if not impossible. Some studies evaluated the effect of self-performed hygiene care while more studies looked into different adjunct treatment modalities that can be performed in combination to mechanical debridement, which may be a more feasible option for treating peri-implant mucositis or peri-implantitis. Non-surgical treatments for peri-implant mucositis and peri-implantitis mostly include supramucosal/submucosal mechanical debridement in conjunction with laser, photodynamic therapy and air-abrasive devices, and results demonstrated that the most prominent change is the decreases of probing depths and the percentage of bleeding on probing. However, most of the studies fail to provide information regarding influencing local and systemic factors including implant position and implant systems/surfaces, which are significant contributing factors influencing the prevalence, severity as well as the clinical outcomes of different treatment modalities.

Consensus statement

Non-surgical treatment (mechanical debridement with or without adjunct therapy) for peri-implant

mucositis seems to be effective while modest and not-predictable outcomes are expected for peri-implantitis lesions. The absence of adequate oral hygiene care in individuals with pre-existing mucositis may contribute to a higher incidence of peri-implantitis.

Clinical recommendations

There is currently no consensus on protocol for treating mucositis or peri-implantitis mainly due to the heterogeneous features of different implant systems, implant position and other patient related factors. Hence, no particular treatment option may be recommended at this time as well as how to manage implants with different severity of diseases extent. It has only been agreed and concluded the following:

- Non-surgical treatment seems be more effective for treating peri-implant mucositis than peri-implantitis.
- Peri-implantitis treated with non-surgical therapy result mostly in the decrease of bleeding on probing and probing depth (usually less than 1 mm).
- Self-performed hygiene care or professional maintenance program have positive effect on preventing peri-implant mucositis proceeding into peri-implantitis.

Implications for research

The greatest limitation for the studies was the varying definitions for peri-implantitis, and this may lead to the heterogeneous results of different studies. To perform a more comprehensive and unbiased evaluation of different treatment modalities, implant location (buccal/lingual, mesial/distal and apical/coronal position), implant system (implant surface, implant system) and prosthetic features (fixed appliance/removable) should be reported, as well as standardized radiographs should be applied if applicable in the studies. Also, standardized documentation of all the clinical parameters should also be achieved in future investigations.

The effectiveness of non-surgical therapy for peri-implant mucositis has been repeatedly reported, hence future investigations should focus on the local and systemic factors affecting incidence and severity of peri-implant diseases. A comprehensive understanding of such factors will lead to significant improvements in prevention and effectiveness of treatment approaches for the peri-implant diseases.

3. Surgical Non-Regenerative Treatments for Peri-Implantitis: a Systematic Review (Ramanauskaite et al. [3])

General Commentaries

The surgical non-regenerative therapy is effective in maintaining the health of peri-implant soft tissues. Few studies have shown positive effects of implantoplasty and systemic administration of antibacterial adjunct to mechanical debridement. As regards the radiographic parameters, there is a common agreement that surgical non-regenerative treatment is not predictable. Implemented surgical therapy is crucial to ensure the long-term success of surgical therapy.

Consensus statement

Based on this systematic review, it was concluded that surgical non-regenerative therapy results in significantly lower frequencies of implant sites with mucosal inflammation and arrest the progression of peri-implantitis. Due to inconsistent findings between studies, additional evidence is needed to assess the benefit of different methods of surgical non-regenerative therapy on clinical parameters and peri-implant bone level.

Clinical recommendations

Surgical non-regenerative therapy shall be established based on diagnosis and risk profiling. In light of the microbial aetiology of peri-implantitis, patient motivation and instruction together with surgical therapy shall be an integral part of the peri-implantitis treatment. No specific clinical recommendation can be made as which specific method of surgical non-regenerative therapy shall be implemented.

Implications for research

Prospective longitudinal studies using various treatment protocols/modes of surgical non-regenerative therapies on the long-term with study samples of appropriate size are needed.

4. Surgical Regenerative Treatments for Peri-Implantitis: Meta-analysis of Recent Findings in a Systematic Literature Review (Daugela et al. [4])

General Commentaries

In case of evident bone loss and pocket formation

deeper than 5 mm, the surgical treatment seems to be the only effective one in managing peri-implantitis defect. Surgical regenerative treatment results in predictable improvement of peri-implant clinical and radiographic parameters, however this statement is limited and can only be based on available studies without proper control arm, as at the time there is a lack of controlled studies comparing effectiveness of surgical regenerative and non-regenerative procedures to support scientific evidence if regenerative procedures provide better outcomes.

Currently there is a lack of clear recommendation regarding choice of biomaterials for peri-implant bone regeneration due to high heterogeneity among the studies. Meanwhile, the meta-analysis of the available literature showed, that the membrane application over the bone graft as well as submergence of the implants during healing phase seems not to be fundamental in order to gain hard and soft tissue after the surgical regenerative treatment.

From the clinical point of view, surgical regenerative treatment is relevant treatment option of intrabony defect component in addition to pre- and postsurgical hygiene maintenance phases and successful implant surface decontamination. At the same time it should be emphasized, that there is no available scientific proof in the literature that regenerative procedures with the use of bone grafts and/or membranes provide superior treatment outcomes compared to non-regenerative procedures.

Consensus statement

Regenerative procedures, with the application of bone graft materials in combination or not with barrier membranes seem to give consistent results in the term of hard and soft tissues healing of the peri-implantitis defect. No conclusions can be drawn regarding the superiority among surgical regenerative or non-regenerative treatment due to the lack of scientific evidence in the literature.

Clinical recommendations

There is currently no consensus on particular protocol or selection of biomaterials in surgical regenerative treatment of peri-implantitis due to high heterogeneity and bias among investigated studies. However, several clinical recommendations could be drawn according to available data in the current literature:

- Predictable improvement of clinical parameters applying surgical regenerative treatment of peri-implantitis can be expected.
- Evaluation of systemic and local factors of the patients affected by peri-implantitis should be taken into consideration applying surgical regenerative treatment.
- Surgical regenerative treatment might be chosen for intrabony defect reconstruction, whereas non-regenerative approach and implantoplasty of the supracrestal implant component is recommended.
- Proper pre- and postsurgical hygiene maintenance phases and successful implant surface decontamination are mandatory for successful surgical regenerative procedure.
- There is no fundamental advantage of membrane use for bone graft coverage on final outcome of peri-implant defect regeneration.
- Submergence of the implants during healing period seems not to influence the final outcome of the regenerative treatment.

Implications for research

Most studies investigating surgical regenerative treatment of peri-implantitis have no proper control arm on non-regenerative treatment; therefore well designed RCT comparing long-term outcomes of surgical regenerative and non-regenerative treatment are needed. Controlled studies, investigating the impact of defect configuration, implant surface decontamination methods, application of different grafting materials, and various surgical protocols on final outcome of the regenerative procedure are also demanded.

For the future perspectives, various bioactive materials including stem cells, growth factors and other bioactive modifiers are also on the line for investigation to improve clinical outcomes of surgical regenerative treatment.

DISCLOSURE STATEMENTS

All group members were asked to sign a Panel Member Agreement (PMA). This agreement requires individuals to maintain the highest level of integrity and avoid all actual, perceived, and potential conflicts of interest. The authors reported no conflicts of interest related to this study.

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