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Regenerative therapy for the treatment of Peri-Implantitis in patients with type 2 Diabetes Mellitus

Gagik Hakobyanl¹, Hakob Khachatryan²

¹Yerevan State Medical University, Armenia

²Central clinical Military hospital, Armenia

Introduction: Rehabilitation of patients diagnosed type 2 diabetes mellitus complete and with partial adentia, dental implantation improves chewing function and quality of life. Diabetes has been considered a risky condition for dental implants with the fact that it is associated with delayed wound healing and impaired response to infection.

Due to the high risk of implant complications, past diabetes mellitus has made implant placement a relative contraindication because it is associated with delayed wound healing and impaired response to infection. Patients with diabetes mellitus have a high risk of peri-implantitis.

Various treatment methods are suggested in the treatment of peri-implantitis, non-surgical machining debridemen, chemotherapeutic disinfection, use of antibacterial agents, resective and regenerative surgical procedures, laser therapy, the employment of combination of lasers and surgical treatment. However, there is no standard approach for the treatment of peri-implantitis, since with any of the treatment options complete elimination of inflammation is not achieved.

The high prevalence of peri-implantitis reflects the lack of effectiveness of treatment methods, which makes the search for new therapeutic approaches relevant.

Objectives: To evaluate the outcome of regenerative therapy of peri-implantitis in patients with type 2 diabetes mellitus. Materials and methods; Study included 53 patients with type 2 diabetes mellitus diagnosed peri-implantitis. 38 implants with early peri-implantitis, 23 implants with moderate peri-implantitis. The diagnostic parameters used for assessing peri-implantitis include clinical indices, Probing Pocket Depth (PPD), Bleeding On Probing (BOP), peri-implant radiography, data at the re-examination were retrospectively compared to baseline data.

Patients underwent treatment with HbA1c levels <7.2% or less than 154 mg/dL.

Treatment including systemic antibiotics (amoxicillin 500mg and metronidazole 200mg) with duration of 7-10 days.

Regenerative surgical procedures for treatment peri-implantitis including.

The flap of full thickness was raised to provide access to the defect of the peri-implant and the open surface of the implant. Granulation tissue was carefully removed in the bone defect with titanium instruments. The implant surface is decontaminated with successive topical applications of citric acid, 0.12% chlorhexidine, sterile physiological saline and adjunctive magneto-laser therapy with a wavelength of 810nm power density of 100mW during 30 seconds.

After degranulatin and antiseptic preparation, Bone loss was evaluated intrasurgically.

Bio-Oss had mixed with hyaluronic acid (Gengigel) and the periimplant bone defect was filled. A membrane Bio-Gide was placed over the filled defect, flaps were repositioned and sutured, wound healing was performed in a submerged. Local applications Elzylol dental gel.

Patients were instructed to rinse twice a day for 1 minute for 2-3 weeks with chlorhexidine 0.12%. Healing periods occurred

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without complications, and with minimal postoperative discomfort. The sutures were removed 7-10 days after the surgery.

To monitor healing, patients were observed for the first 4 weeks, and then at a three-month interval. Cover plugs of the implants were replaced with prosthetic abutments after 3 months of submerged healing and prosthetic components were installed after 1 week of soft tissue healing. Professional hygiene was conducted every six months.

Effectiveness treatment was evaluated by the following criteria: (1) the absence of progressive loss of bone mass, (2) the absence of suppuration, (3) bleeding when probing for $\leq 50\%$ of sites and (4) Probing pocket depth $< 5\text{mm}$.

The diagnostic parameters of the two groups were comparable at baseline and after treatment. Radiologically increased or stable levels of the marginal bone compared with the baseline periapical x-rays is considered to be a treatment success.

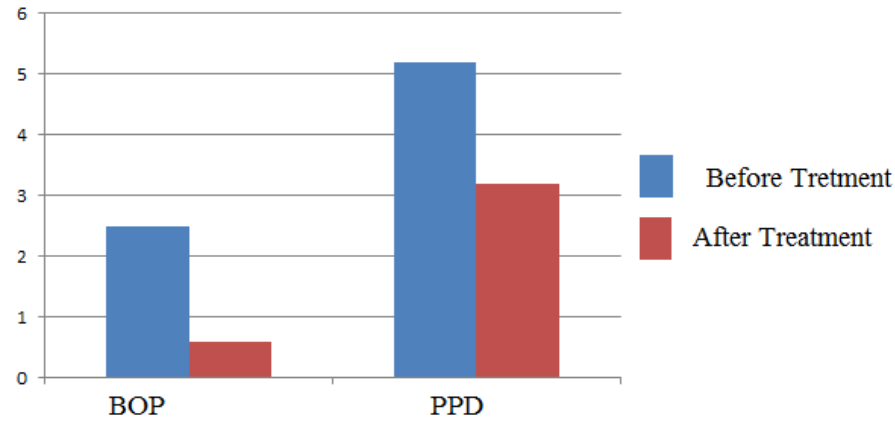
Results: A statistical significant reduction in both PPD and BOP were seen at all-time points as compared with the baseline clinical measurements. Stable clinical measurements PPD and BOP were demonstrated after 1 year the initial treatment, remaining stable during the following three years. The mean BOP in patients before treatment of peri-implantitis was 2.5 ± 0.31 , after 6 months treatment month treatment 0.6 ± 0.1 .

The mean PPD in patients before treatment of peri-implantitis was 5.2 ± 0.24 . after 6-month treatment pocket was 3.2 ± 0.1 .

DIAGRAM The mean BOP and PPD in patients before and after 6-month treatment treatment of peri-implantitis.

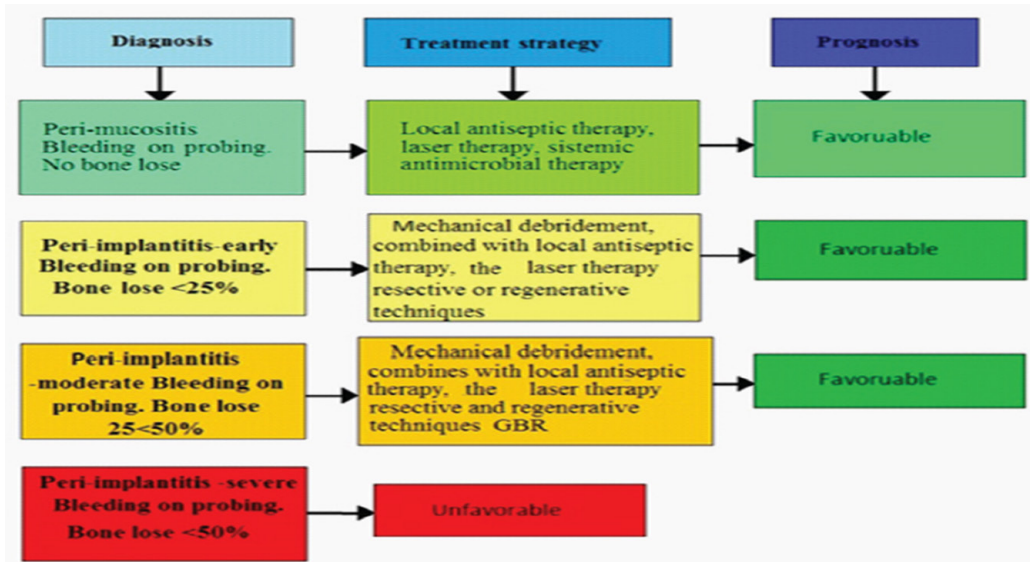
Based on the clinical experience developed by us Algorithm for the treatment of peri-implantitis at different stages.

Conclusion: Surgical regenerative treatment combined with systemic antibiotics, on pocket elimination, detoxification of the implants' surface, bone grafting with grafts materials and hyaluronic acid Gengigel, magnetolaser therapy was an effective therapy for treatment of peri-implantitis in patients with type 2 diabetes mellitus.



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Recent publications

- Gagik Hakobyan et al. Simultaneous endoscopic endonasal sinus surgery and sinus augmentation with immediate implant placement Journal of Cranio maxilla- facial Surgery <https://doi.org/10.1016/j.jcms.2019.04.004>
- Hakobyan Gagik, Jilavyan, Ashot, Khachatryan Gagik, Mathevosyan Davit, Tunyan Gekham, Ghambaryan Naira Gagik Hakobyan et al. Evaluation of the survival rate of short implants placed in the posterior atrophic mandible: 5-year clinical study; 2022/06/08 Quintessence international ;DOI-10.3290/j.qi.b3095013
- Hakobyan Gagik, Boyadjian Astghik, Boyadjian Mgrditch, Harutyunyan Armen, Tunyan Gegham, Khachatryan Gagik. Clinical advantages of improving the excessive gingival SSdisplay (EGD) by surgical repositioning of the upper lip; Clinical Oral Investigations 2022/08/20, VL - 26; DO - 10.1007/s00784-022-04687-4

Biography

Gagik Hakobyan, a Doctor of Medical Sciences and PhD holder, is a prominent figure in the field of dentistry. He completed his education at the Yerevan State Medical Institute, Faculty of Stomatology, from 1978 to 1983, where he developed a strong foundation in oral surgery, implantology, and general dentistry. Currently, Professor Hakobyan holds the prestigious position of Head of the Department of Surgical Stomatology and Maxillofacial Surgery at Yerevan State University after M. Heratsi. In this role, he not only imparts his extensive knowledge to the next generation of dental professionals but also plays a crucial role in shaping the future of dental medicine.

E: hakob.surgeon@gmail.com