Treatment of peri-implantitis with implantoplasty: a systematic review.

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Abstract

Background: Peri-implantitis is characterized by an inflammatory reaction that affects hard and soft peri-implant tissues, resulting in the loss of supporting bone and the formation of pockets around the osseointegrated implant. The concept of implantoplasty treatment was described by different authors, who proposed to polish the rough surface of the exposed implant, not only with the aim of decontaminating it, but also to reduce future bacterial colonization of the surface.

Aim: To assess the benefit of implant surface decontamination and polishing with the technique of implantoplasty in the peri-implantitis.

Materials and methods:The search strategy was performed using an electronic database (MEDLINE®; ScienceDirect; Cochrane Library). First, a search was performed on the following terms and keywords: "implantoplasty" AND “peri-implantitis”. Additionally, using limit strategies, it was also selected “full text”, with no geographical or language restriction and inclusion of all publications with date until April 2019. After this first search phase an evaluation of all the titles and abstracts of the selected articles was carried out. At this stage, a new selection of articles was performed according to the inclusion/exclusion criteria of the studies in the systematic review. Reporting has been guided by PRISMA protocol for systematic reviews.

Results: The first electronic search resulted in 48 citations. From 18 full-text articles eligible for review, 7 were included.The studies included present a follow-up time of 46,42 ± 32,94 months, with a minimum of 12 months. Through a total of 321 implants, 200 were treated with implantoplasty alone or in combination with another procedure. It was obtained 94,7% of success. The use of implantoplasty technique showed an improvement of the evaluated parameters such as BoP and plaque score in the groups treated either with implantoplasty alone or with the conjunction of other treatment option.

Conclusions and clinical implications: The literature shows advantages in the use of this technique in terms of peri-implantitis treatment and maintenance when compared with traditional resective surgery alone. More randomized controlled clinical trials with larger follow-up periods are needed to assess the long-term efficacy of implantoplasty therapy of peri-implantitits.

Results

Author	Matarasso, S	Romeo, E	Romeo, E	Pommer, B	Bianchini, M	Englezos, E	Dalago, H
Design	Prospective case series	Randomized clinical study	Randomized clinical study	Randomized clinical study	Retrospectiv e case series	Prospective case series	Prospective longitudina
Follow-up (months)	12	36	36	108	73	24	36
Number of patients	11	17	19	142	23	25	23
Treatment	Implantoplasty; Regenerative surgery.	Test group: Resective surgery with implantoplasty.	Test group: Resective surgery with implantoplasty.	Group B: Implantoplasty; Group C: Laser and implantoplasty.	Implantoplasty	Implantoplasty and osteoplasty.	Group 3: Implantoplasty and chemical decontaminatio n.
Variation of pocket depth (mm)	-4,1 ± 0,5	-2,58 ± 1,13	-	-	-	-5,4 ± 0,5	-2,25 ± 0,13
Variation of BoP (%)	-13,6 ± 16,1	-2,22 ± 0,2 *modified sulcus bleeding*	-	-	-89,3	-75	-3,25± 0,04
Variation of plaque score	-0,8 ± 0,4	0,67 ± 0,4	-	-	-	-	-0,63 ± 0,09 *modified plaque index*
Gingival recession variation (mm)	2,5 ± 0,85	1,46 ± 0,51	-	-	-	2,5 ± 0,85	-0,62 ± 0,13 *variation of keratinized mucosa*
Success (%)	100	100	100	Group B: 87; Group C: 83	87,5	100	Group 3: 100

Background and Aim

Peri-implantitis is a pathological condition, induced by plaque accumulation, that occurs in tissues around dental implants. It is characterised by inflammation in the soft peri-implant tissue and loss of supporting bone. A variety of treatment modalities have been proposed for its management. For textured implant surfaces, decontamination using implantoplasty could give favorable results when an osseointegrated implant is affected. The study aims to assess the benefit of implant surface decontamination and polishing with the technique of implantoplasty in the peri-implantitis treatment.

Conclusion

The literature shows advantages in the use of this technique in terms of peri-implantitis treatment and maintenance when compared with traditional resective surgery alone. Implantoplasty is a therapy indicated for cases in which the goals are to reduce the accumulation of plaque and to decrease bleeding of the peri-implant tissues. The decrease in peri-implant pockets occurs due to the increased gingival recession, limiting this surgical technique to aesthetic results. More randomized controlled clinical trials with larger follow-up periods are needed to assess the long-term efficacy of implantoplasty therapy of peri-implantitits.

Methods and Materials

The search strategy was performed using an electronic database (MEDLINE®; ScienceDirect; Cochrane Library). First, a search was performed on the following terms and keywords: "implantoplasty" AND “peri-implantitis”. Additionally, using limit strategies, it was also selected “full text”, with no geographical or language restriction and inclusion of all publications with date until April 2019. After this first search phase an evaluation of all the titles and abstracts of the selected articles was carried out. At this stage, a new selection of articles was performed according to the inclusion/exclusion criteria of the studies in the systematic review. Reporting has been guided by PRISMA protocol. The present systematic review was registered in the PROSPERO with the register number CRD42019125422.

Muthukuru M, Zainvi A, Esplugues EO, Flemmig TF. Non-surgical therapy for the mana- gement of peri-implantitis: a systematic review. Clin Oral Implants Res. 2012;23 Suppl 6:77-83.

de Waal YC, Raghoobar GM, Huddleston Slater JJ, Meijer HJ, Winkel EG, van Winkelhoff AJ. Implant decontamination during surgical peri-implantitis treatment: a randomized, double- blind, placebo-controlled trial. Journal of clinical periodontology. 2013;40(2):186-95.

Mahato N, Wu X, Wang L. Management of peri-implantitis: a systematic review, 2010-2015. Springerplus. 2016;5:105.

Schwarz F, Derks J, Morje A, Wang H-L. Peri-implantitis. Journal of Periodontology. 2018;89(S1):S267-S90.

Matarasso S, Iorio Siciliano V, Aglietta M, Andreuccetti G, Salvi GE. Clinical and radio- graphic outcomes of a combined resective and regenerative approach in the treatment of peri-implantitis: a prospective case series. Clin Oral Implants Res. 2014;25(7):761-7.

Roccuzzo M, Layton DM. Clinical outcomes of peri-implantitis treatment and supportive care: A systematic review. Clin Oral Implants Res. 2018;29 Suppl 16:331-50.

Ramel CF, Lussi A, Ozcan M, Jung RE, Hammerle CH, Thoma DS. Surface roughness of dental implants and treatment time using six different implantoplasty procedures. Clin Oral Im- plants Res. 2016;27(7):776-81.

de Souza Junior JM, Oliveira de Souza JG, Pereira Neto AL, Iaculli F, Piattelli A, Bianchini MA. Analysis of Effectiveness of Different Rotational Instruments in Implantoplasty: An In Vitro Study. Implant dentistry. 2016;25(3):341-7.

Englezos E, Cosyn J, Koole S, Jacquet W, De Bruyn H. Resective Treatment of Peri-implan- titis: Clinical and Radiographic Outcomes After 2 Years. The International journal of periodontics & restorative dentistry. 2018;38(5):729-35.

Figuro E, Graziani F, Sanz I, Herrera D, Sanz M. Management of peri-implant mucositis and peri-implantitis. Periodontol 2000. 2014;66(1):255-73.

Smeets R, Henningsen A, Jung O, Heiland M, Hammacher C, Stein JM. Definition, etiology, prevention and treatment of peri-implantitis--a review. Head & face medicine. 2014;10:34.