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Effectiveness of adjunctive Implantoplasty in surgical treatment for Peri-implantitis: A Systematic Review

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Risk of bias assessment.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 4 February 2026 and was last updated on 4 February 2026.

INTRODUCTION

Review question / Objective Is adjunctive implantoplasty to surgical treatment effective in the treatment of peri-implantitis? The aim of the present review was to evaluate the effect of implantoplasty in the management of peri-implantitis.

Rationale Implant therapy is considered an effective and predictable approach for partially or completely edentulous patients . It has demonstrated satisfactory results in terms of both restoring function and aesthetics as well as long-term durability and survival . Albrektsson et al. 2012 reported a high 10-year survival rate, ranging from 92.8% to 97.1%.

However, dental implants are not miraculous devices and are not exempt from mechanical, surgical, or biological limitations or complications . With the increasing use of implants, knowledge of strategies for implant complication management has become crucial.

Peri-implantitis is a pathological condition characterized by inflammation of peri-implant soft tissues, accompanied by progressive bone loss . If left untreated, this can lead to implant failure.

Several procedures have been described for the treatment of Peri-implantitis, including non-surgical therapy, which is often insufficient, and surgical treatment. This can be resective, regenerative, or a combination of both. These approaches primarily aim to detoxify contaminated implant surfaces; hence, various chemical, mechanical, or alternative (laser) decontamination methods are used. Implantoplasty (IP), or mechanical modification of the implant surface, has been described as part of resective and combined therapies.

It is a complementary measure during the surgical treatment of peri-implantitis, which involves mechanical removal (using rotary instruments) of the threads and polishing of the rough implant surface to create a smoother surface that is less prone to plaque accumulation, and consequently, reinfection.

This technique is justified by the fact that exposure of the implant surface (initially treated for better osseointegration) to the oral environment creates a favorable niche for bacterial colonization and the initiation and progression of peri-implant diseases. Implantoplasty is indicated when the configuration of the bone lesion does not favor a regenerative approach or when regeneration can only be considered for the most apical portion of the lesion. In such cases, implantoplasty is performed in the coronal portion.

To determine whether implantoplasty procedure should be recommended for the decontamination of implant surfaces, we undertook this study with the aim of evaluating the effect of implantoplasty in the management of peri-implantitis.

Condition being studied Situations with periimplantitis (around dental implants), managed with or without adjunctive implantoplast.

METHODS

Search strategy The data collection for this review was obtained from the MEDLINE (PubMed) data-base.

The database was searched using the following keywords: Dental implant [Mesh Terms]; Peri-implantitis [Mesh Terms]; Implantoplasty; Implant surface modification; Peri-implantitis therapy; Implant surface decontamination; Implant surface detoxification

These keywords were combined using the following Boolean search algorithm.

1. ((Dental implant [Mesh Terms]) AND (Implantoplasty))
2. ((Dental implant [Mesh Terms]) AND (Peri-implantitis therapy))
3. ((Peri-implantitis [Mesh Terms]) AND (Implantoplasty))
4. ((Peri-implantitis [Mesh Terms]) AND (Implant surface modification))
5. ((Peri-implantitis [Mesh Terms]) AND (Implant surface detoxification))
6. ((Peri-implantitis [Mesh Terms]) AND ((Implant surface decontamination) AND (Implantoplasty)))

Publications not found through electronic searches were manually identified from the reference list of certain previously selected publications of interest.

Participant or population Population: Patients with peri-implantitis.

Intervention Intervention: Surgical peri-implantitis treatment with adjunctive implantoplasty.

Comparator Comparison: Surgical peri-implantitis treatment without adjunctive implantoplasty.

Study designs to be included Randomized controlled clinical trials - Retrospective studies - Prospective studies.

Eligibility criteria Studies were included if they met the following inclusion criteria:

- Clinical studies on humans
 - Randomized controlled clinical trials
 - Retrospective studies
 - Prospective studies
 - More than 1 subject included in study
 - Follow-up of at least 6 months
 - Studies including implantoplasty as adjunctive to surgical treatment of peri-implantitis
 - English language
 - Accessibility of the study full version
- Studies that did not meet all the above criteria were excluded.

Information sources The data collection for this review was obtained from the MEDLINE (PubMed) data-base.

Publications not found through electronic searches were manually identified from the reference list of certain previously selected publications of interest.

Main outcome(s) Evolution of clinical (bleeding on probing (BOP), suppuration (SOP), probing depth (PD), clinical attachment loss (CAL), recession (REC)), and radiological parameters (marginal bone loss (MBL)) after surgery.

Quality assessment / Risk of bias analysis For each RCT, we used the Cochrane Collaboration's Risk of Bias tool (RoB 1.0). This tool evaluates study quality through five separate domains: selection bias, performance bias, detection bias, attrition bias and reporting bias. Within each domain, risk of bias was judged as low risk, high risk, or unclear risk based on the information provided in the publication, and an overall risk-of-bias judgment was assigned accordingly.

For non-randomized studies, risk of bias was assessed using the Methodological Index for Non-Randomized Studies (MINORS). The MINORS tool includes 12 items, scored as 0 (not reported), 1 (reported but inadequate), or 2 (reported and adequate). Higher global scores indicate stronger methodological rigor and lower risk of bias.

Non-comparative studies have a maximum possible score of 16 (only the first 8 items are considered) and they were judged either with high, moderate or low methodological quality if the

score was between 15 and 16, 9 and 14, or below 8, respectively. In comparative studies, the highest possible score is 24 (all 12 items are considered). They were categorized as high, moderate or low quality if the score was between 23 and 24, 15 and 22, or below 14, respectively. The risk of bias was assessed independently by two reviewers, and disagreements were resolved through discussion.

Strategy of data synthesis We will perform a narrative and qualitative analysis of data. Various variables will be investigated to assess the clinical outcomes of adjunctive implantoplasty. These included survival, success, and resolution rates. In addition to clinical and radiological measurements, the evolution of BOP, SOP, PD, and MBL will be included as primary outcome variables, and REC and CAL as secondary outcome variables. For each study, the following data will be collected: Authors' names, year of publication, study type, population, mean age, number of implants, implant details (type, connection, surface, diameter, length, location), nature of the intervention, implantoplasty technique (instrumentation protocol), case definition of peri-implantitis, treatment success according to resolution or stabilization case definition, follow-up period and study results and outcome.

Subgroup analysis We WON'T PERFORM A SUBGROUP ANALYSIS.

Sensitivity analysis No sensitivity analysis is planned due to the High risk of performance bias detected in almost all studies.

Language restriction Yes , research restricted to english.

Country(ies) involved Morocco.

Keywords Dental implant; Peri-implantitis; Implantoplasty; Implant surface modification; Peri-implantitis therapy; Implant surface decontamination; Implant surface detoxification.

Contributions of each author

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