

Adjunctive chemical protocols reported after mechanical debridement with the NiTi Brush

A summary of the peer-reviewed literature — what the investigators applied to the implant surface after brushing

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Purpose

Clinicians often ask what should follow mechanical decontamination with the NiTi Brush. This document does not answer that question with a recommendation. It lists, study by study, what the authors of published clinical reports did after brushing — the agent, its concentration, how long it was applied and what was reported afterwards — so that a reader can weigh the evidence and read the original papers.

This is a literature summary prepared by HANS Korea, not a treatment recommendation and not part of the Instructions for Use. The choice of any chemical or pharmacological adjunct, its concentration and its duration is a clinical decision for the treating dentist, made in accordance with local regulations and the product information of the agent concerned. Where this summary and the Instructions for Use differ, the Instructions for Use prevail. HANS Korea holds no copyright in the papers cited, has no relationship with their authors or journals, and has paraphrased their Methods and Results in its own words; readers should consult the original publications, linked by DOI, for the authors' own findings.

At a glance

A	Saline irrigation only — no chemical agent on the surface	6 reports · 3 RCT-based (Gothenburg / Bilbao group), 2 cohorts (Frankfurt), 1 case report	All combined with a systemic antibiotic and/or a post-operative chlorhexidine mouthwash
B	Hydrogen peroxide 3 % for 2 min, then saline	3 reports · Monje et al. (Barcelona)	Also the control arm of the two electrolytic trials in group D
C	Chlorhexidine as the adjunct (0.12 % irrigation or 2-min rinse; 0.2 %)	3 reports	Once after H ₂ O ₂ , once after glycine air-polishing, once QLF-guided
D	Electrolytic decontamination for 2 min, then saline	2 reports · multicentre RCT vs H ₂ O ₂ ; case series adding rhPDGF-BB	Resolution 87.5 % vs 64.5 % with H ₂ O ₂ in the multicentre RCT (p = 0.08)

Common to every clinical report: a full-thickness access flap, complete removal of granulation tissue, mechanical decontamination of the exposed surface with the NiTi Brush (600 rpm for 2–3 minutes in the Barcelona studies; up to 1,200 rpm under continuous saline in the Gothenburg/Bilbao and Frankfurt studies), and saline irrigation before grafting or closure. Where reported, the brush model was NANO (Gothenburg/Bilbao), ICT Micro and ICT Nano (Marseille) or OMEGA (Makkah).

A. Mechanical debridement only — saline irrigation, no chemical agent on the surface

01 Reconstructive surgical therapy of peri-implantitis: a multicentre randomised controlled clinical trial

Derks J, Ortiz-Vigón A, Guerrero A, et al. Clinical Oral Implants Research, 2022.

<https://doi.org/10.1111/clr.13972>

DESIGN	Multicentre RCT · 138 patients / 147 implants · 12 months · Sweden · Spain · Italy
MECHANICAL STEP	Titanium curettes, then a rotating NANO NiTi Brush (HANS Korea) at up to 1,200 rpm under continuous saline irrigation.
AFTER BRUSHING	None. No chemical agent applied to the implant surface.
SYSTEMIC / POST-OP REPORTED OUTCOME	Amoxicillin 750 mg twice daily for 10 days, started 3 days before surgery. PPD reduction 3.7 mm and marginal bone gain about 1.0 mm in both groups; BOP reduced by 45–50 %. Bone substitute (test) did not add a clinical benefit; buccal recession was smaller in the test group.

02 Bone substitute material in the surgical therapy of peri-implantitis: 3-year outcomes of a randomised controlled trial

Alibegovic L, Trullenque-Eriksson A, Ortiz-Vigón A, et al., Derks J. Clinical Oral Implants Research, 2025.

<https://doi.org/10.1111/clr.14393>

DESIGN	Same trial, 3-year follow-up · 120 patients / 127 implants · Sweden · Spain · Italy
MECHANICAL STEP	As above — titanium curettes and NANO NiTi Brush (HANS Korea) under saline.
AFTER BRUSHING	None.
SYSTEMIC / POST-OP REPORTED OUTCOME	As above. At 3 years: PPD reduction 3.2–3.5 mm, marginal bone gain 1.1–1.3 mm; disease resolution (permissive definition) at 39 % of implants; 11 % of implants lost. No clear benefit of the bone substitute over access flap alone.

03 The adjunctive effect of a resorbable membrane to a xenogeneic bone replacement graft in the reconstructive surgical therapy of peri-implantitis

Regidor E, Ortiz-Vigón A, Romandini M, Dionigi C, Derks J, Sanz M. Journal of Clinical Periodontology, 2023.

<https://doi.org/10.1111/jcpe.13796>

DESIGN	RCT · 43 patients · 12 months · Spain
MECHANICAL STEP	Titanium curettes, then a rotating NANO NiTi Brush (HANS Korea) at up to 1,200 rpm under continuous saline irrigation.
AFTER BRUSHING	None on the surface. (Pre-surgical non-surgical phase: air-polishing with erythritol powder containing 0.3 % chlorhexidine.)
SYSTEMIC / POST-OP	Amoxicillin 750 mg twice daily for 10 days from 3 days pre-op; post-operative rinse with 0.12 % chlorhexidine + 0.05 % cetylpyridinium chloride.
REPORTED OUTCOME	No implant lost; treatment success 36.8 % (membrane) vs 45.0 % (no membrane), no significant difference in PPD, BOP, bone level or recession. Membrane added surgical time, pain and complications.

04 Volumetric assessment of tissue changes following combined surgical therapy of peri-implantitis: a pilot study

Schwarz F, et al. Journal of Clinical Periodontology, 2021.

<https://doi.org/10.1111/jcpe.13335>

DESIGN	Prospective pilot · 20 patients · 6 months · Germany
MECHANICAL STEP	Granulation tissue removal; exposed surface decontaminated with a titanium brush (HANS Korea); implantoplasty of supracrestal/buccal parts under sterile saline.
AFTER BRUSHING	None on the surface.
SYSTEMIC / POST-OP REPORTED OUTCOME	Single pre-operative dose of amoxicillin 2 g; 0.12 % chlorhexidine mouthwash daily for 5 days. Peri-implant soft tissue contracted 7.9 % (1 month) and 18.5 % (6 months); contraction was associated with a narrow band of keratinised mucosa.

05 Effectiveness of modified and control protocols for the surgical therapy of combined peri-implantitis-related defects: a retrospective analysis

Schwarz F, et al. Clinical Oral Implants Research, 2023.

<https://doi.org/10.1111/clr.14057>

DESIGN	Retrospective · 36 patients / 40 implants · 12 months · Germany
MECHANICAL STEP	Granulation tissue removal; titanium brush (HANS Korea); implantoplasty at supracrestal/buccal components under sterile saline.
AFTER BRUSHING	None on the surface.
SYSTEMIC / POST-OP REPORTED OUTCOME	0.12 % chlorhexidine mouthwash daily for 5 days after surgery. Median BOP reduction 58–67 % and PD reduction 0.8–2.0 mm across the three protocols at 12 months; 100 % implant survival.

06 Management of early dental implant complication: a report of two cases

Babgi W, Felemban B. Journal of Umm Al-Qura University for Medical Sciences, 2024.

<https://doi.org/10.54940/ms75920247>

DESIGN	Case report · 2 patients · Saudi Arabia
MECHANICAL STEP	NiTi Brush OMEGA (HANS Korea) on a low-speed handpiece; site irrigated with saline; bone substitute + collagen membrane.
AFTER BRUSHING	None on the surface.
SYSTEMIC / POST-OP REPORTED OUTCOME	Amoxicillin 500 mg for one week after surgery; chlorhexidine mouthrinse for one week. Peri-implant health re-established in both early-complication cases.

B. Hydrogen peroxide 3 % for 2 minutes, then irrigation

07 Significance of barrier membrane on the reconstructive therapy of peri-implantitis: a randomised controlled trial

Monje A, Pons R, Vilarrasa J, Nart J, Wang H-L. Journal of Periodontology, 2023.

<https://doi.org/10.1002/JPER.22-0511>

DESIGN	RCT · 33 patients / 48 implants · 12 months · Spain
MECHANICAL STEP	Mini-five and Gracey curettes; NiTi brushes (HANS Korea) for about 2–3 min at 600 rpm; implantoplasty of uncontained components.
AFTER BRUSHING	Hydrogen peroxide 3 % for 2 minutes, then saline irrigation.
SYSTEMIC / POST-OP REPORTED OUTCOME	Not the subject of the report. Disease resolution 77.1 % at 12 months; the barrier membrane did not raise the probability of resolution; baseline plaque index and keratinised mucosa width did.

08 Defect angle as prognostic indicator in the reconstructive therapy of peri-implantitis

Monje A, Pons R, Sculean A, Nart J, Wang H-L. Clinical Implant Dentistry and Related Research, 2023.
<https://doi.org/10.1111/cid.13244>

DESIGN	Secondary analysis of the RCT above · 33 patients / 48 implants · Spain
MECHANICAL STEP	NiTi brushes (HANS Korea) for about 2–3 min at 600 rpm.
AFTER BRUSHING	Hydrogen peroxide 3 % for 2 minutes, then saline irrigation.
SYSTEMIC / POST-OP REPORTED OUTCOME	As above. Radiographic bone gain 1.85 mm on average; a baseline defect angle below 57° predicted at least 1 mm gain and below 30° predicted at least 2 mm gain.

09 Electrolytic surface decontamination in the reconstructive therapy of peri-implantitis: single-centre outcomes of a randomised controlled trial

Monje A, Pons R, Peña P. International Journal of Periodontics & Restorative Dentistry, 2025.
<https://doi.org/10.11607/prd.7151>

DESIGN	Single-centre arm of a multicentre RCT · 19 patients / 23 implants · 12 months · Spain
MECHANICAL STEP	NiTi brushes (HANS Korea) — mechanical decontamination in both arms.
AFTER BRUSHING	Control: hydrogen peroxide 3 %. Test: electrolytic method (see group D). Both followed by saline.
SYSTEMIC / POST-OP REPORTED OUTCOME	Not the subject of the report. No significant difference in clinical or radiographic parameters between the two adjuncts; disease resolution about 16 % higher with the electrolytic adjunct (about 91 %), not statistically significant.

C. Chlorhexidine as the adjunct

10 Resolution of peri-implantitis by means of implantoplasty as adjunct to surgical therapy: a retrospective study

Monje A, Pons R, Amerio E, Wang H-L, Nart J. Journal of Periodontology, 2022.
<https://doi.org/10.1002/JPER.21-0103>

DESIGN	Retrospective · 43 patients / 135 implants · about 24 months · Spain
MECHANICAL STEP	Reconstructive cases: mini-five and Gracey curettes and NiTi brushes (HANS Korea); implantoplasty of supracrestal parts.
AFTER BRUSHING	Hydrogen peroxide 3 % for 2 minutes, then irrigation with chlorhexidine 0.12 %. (Non-surgical phase 6 weeks earlier: sub-mucosal irrigation with chlorhexidine 0.12 %.)
SYSTEMIC / POST-OP REPORTED OUTCOME	Not the subject of the report. Implant survival 97.8 %; therapeutic success 66 % (strict) and 79.5 % (flexible definition); apically positioned flap groups resolved disease most efficiently.

11 Absence of progressive bone loss following peri-implantitis surgical therapy with implantoplasty: a case series

Brincat A, Antezack A, Sadowski C, Faure-Brac M, Ohanessian R, Monnet-Corti V. Applied Sciences, 2023.
<https://doi.org/10.3390/app13127224>

DESIGN	Case series · 57 patients / 91 implants · 12–42 months (mean 24) · open access · France
MECHANICAL STEP	Implantoplasty under sterile saline; NiTi brushes ICT Micro and ICT Nano (HANS Korea) and glycine-powder air-polishing.
AFTER BRUSHING	Chlorhexidine 0.12 % rinses for 2 minutes, then profuse sterile saline irrigation to remove residual titanium particles.
SYSTEMIC / POST-OP	Amoxicillin 2 g/day for 7 days from the day before surgery; prednisolone 1 mg/kg/day for 3 days; chlorhexidine 0.2 % rinse 7 days then 0.12 % for 7 days, plus 0.2 % gel for 10 days.
REPORTED OUTCOME	Absence of progressive bone loss at 96.7 % of implants (100 % reconstructive, 98 % combined, 92.9 % apically repositioned flap); 3 implants removed.

12 Diagnosis and treatment improvement of peri-implantitis using quantitative light-induced fluorescence (QLF)

Yun J-H, et al. Journal of the Korean Dental Association 63(6):181–189 (Korean, CC BY-NC-ND), 2025.
<https://doi.org/10.22974/jkda.2025.63.6.001>

DESIGN	Case report · 2 cases · Korea
MECHANICAL STEP	Ultrasonic scaler tips, NiTi brush (HANS Korea) and air-powder abrasion; QLF imaging used to check residual biofilm and repeat cleaning where needed.
AFTER BRUSHING	Chlorhexidine 0.2 % applied after decontamination.
SYSTEMIC / POST-OP	Not reported here.
REPORTED OUTCOME	QLF revealed residual biofilm not visible to the eye and guided additional cleaning; inflammation controlled in both cases.

D. Electrolytic decontamination as the adjunct — head-to-head with hydrogen peroxide, and with a biologic

13 Surface decontamination on the reconstructive therapy of peri-implantitis: a multicentre randomised clinical trial

Monje A, Navarro-Mesa S, Soldini C, Zappalá G, Peña P, Navarro JM, Pons R. Clinical Implant Dentistry and Related Research, 2025.
<https://doi.org/10.1111/cid.70075>

DESIGN	Multicentre RCT · 58 patients · 12 months · open access · Spain · USA
MECHANICAL STEP	Steel curettes; NiTi brushes (HANS Korea) at 600 rpm for about 2–3 min in both arms.
AFTER BRUSHING	Test arm: electrolytic method for 2 minutes, then saline irrigation. Control arm: hydrogen peroxide 3 % for 2 minutes, then saline irrigation.
SYSTEMIC / POST-OP	Not the subject of the report.
REPORTED OUTCOME	All clinical indices and marginal bone level improved significantly in both arms; disease resolution 87.5 % (electrolytic) vs 64.5 % (hydrogen peroxide), p = 0.08. No major complications.

14 Recombinant human platelet-derived growth factor-BB-mediated reconstructive therapy of advanced peri-implantitis bone defects: a case series

Monje A, Pons R, Barootchi S, Saleh MHA, Rosen PS, Sculean A. International Journal of Oral Implantology 18(1):47–57, 2025.

PubMed 40047362 — <https://pubmed.ncbi.nlm.nih.gov/40047362/>

DESIGN	Prospective case series · 10 patients / 13 advanced defects (at least 50 % bone loss) · 12 months · USA · Spain
MECHANICAL STEP	NiTi brushes (HANS Korea) for about 2–3 min at 600 rpm on the intrabony component.
AFTER BRUSHING	Electrolytic method for 2 minutes, then saline irrigation, then rhPDGF-BB applied to the implant surface before grafting.
SYSTEMIC / POST-OP REPORTED OUTCOME	Not the subject of the report. Implant survival 100 %; mean pocket depth reduced by 4.5 mm; defects narrower and shallower at 1 year; disease resolution 61.5 % at implant level.

Background reading — reviews and laboratory work

Montero E, Rocuzzo A, Molina A, Monje A, Herrera D, Rocuzzo M. Periodontology 2000 91:199–216 (review), 2022.

<https://doi.org/10.1111/prd.12460>

Narrative review of minimally invasive reconstructive treatment. Describes a flapless technique that combines chemical decontamination with hydrogen peroxide and mechanical decontamination with a titanium brush, and tabulates the agents used across the clinical literature (hydrogen peroxide 3 %, chlorhexidine 0.2 %, tetracycline, enamel matrix derivative, electrolytic cleaning).

Brunello G, Becker K, Rauch N, Schwarz F, Becker J. Clinical Implant Dentistry and Related Research 27:e13417 (in vitro), 2025.

<https://doi.org/10.1111/cid.13417>

Titanium discs treated with NiTi brushes, diamond polishing brushes or a phenol/sulfuric-acid gel. The gel did not alter surface morphology, whereas both brushes did; cell viability after 7 days was highest on NiTi-brushed discs stored in saline. Operative time was shorter for NiTi than for the polishing brush.

How this summary was prepared

Inclusion. A paper is listed only when its Methods identify the mechanical instrument as the NiTi Brush of HANS Korea and describe what was applied to the surface afterwards. Studies using other titanium brushes are not included, even where the protocol is similar.

Wording. Every line is written by HANS Korea from the paper's Methods and Results. Nothing is quoted or reproduced; figures and tables of the papers are not copied. Concentrations, times and outcome figures are transcribed as the authors reported them.

What is not here. Non-surgical protocols, the composition of grafting materials and membranes, and post-operative maintenance schedules are outside the scope, except where they bear directly on the surface adjunct.

Currency. The list reflects papers verified by HANS Korea as of the date on the cover. It is a floor, not a census; when a further paper names the instrument, it is added.