

# Clinical evidence overview

## NiTi Brush for peri-implantitis

19 peer-reviewed publications in which the NiTi Brush is identifiable as the instrument used for implant-surface decontamination. A paper is listed only when it has been read in full and verified against the publisher's record; the count is therefore a floor, not a census.

|              |           |              |               |             |             |              |
|--------------|-----------|--------------|---------------|-------------|-------------|--------------|
| <b>19</b>    | <b>14</b> | <b>35</b>    | <b>76</b>     | <b>~400</b> | <b>~600</b> | <b>12-48</b> |
| PUBLICATIONS | COUNTRIES | INSTITUTIONS | INVESTIGATORS | PATIENTS    | IMPLANTS    | MONTHS       |

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### RANDOMISED CONTROLLED TRIALS

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

[Clinical Oral Implants Research](#) · accepted 4 July 2022

DOI: 10.1111/clr.13972

Jan Derks, Alberto Ortiz-Vigón, Adrián Guerrero, Mauro Donati, Eriberto Bressan, Paolo Ghensi, Dennis Schaller, Cristiano Tomasi, Karolina Karlsson, Ingemar Abrahamsson, Yuki Ichioka, Carlotta Dionigi, Erik Regidor, Tord Berglundh

A multicentre trial in 138 patients (147 implants) comparing access flap surgery alone against reconstructive surgery using a bone substitute material, with clinical and radiographic assessment to 12 months.

**Outcome.** At 12 months, 16.4% of reconstructed and 13.5% of access-flap implants met the composite success criteria; pocket-depth reduction (about 3.7 mm) and bone gain (about 1.0 mm) were similar in both arms.

<https://onlinelibrary.wiley.com/doi/epdf/10.1111/clr.13972>

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

[Clinical Oral Implants Research](#) · 2025 · open access (CC BY-NC-ND)

DOI: 10.1111/clr.14393

Lejla Alibegovic, Anna Trullenque-Eriksson, Alberto Ortiz-Vigón, Adrián Guerrero, Mauro Donati, Eriberto Bressan, Karolina Karlsson, Carlotta Dionigi, Erik Regidor, Yuki Ichioka, Cristiano Tomasi, Paolo Ghensi, Dennis Schaller, Ingemar Abrahamsson, Tord Berglundh, Jan Derks

The 3-year follow-up of the multicentre trial above: 120 patients (127 implants) randomised to access flap surgery alone or with a bone substitute material. In both arms the implant surface was cleaned with titanium curettes and a rotating NANO NiTi Brush (HANS KOREA CO., Ltd) under saline irrigation.

**Outcome.** At 3 years, pocket depth had fallen by 3.2–3.5 mm and marginal bone level had gained 1.1–1.3 mm at the remaining implants in both arms; disease resolution was reached at 39% of implants, and the bone substitute showed no clear benefit over access flap surgery alone.

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

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

Clinical Implant Dentistry and Related Research · 2025; 27(4) · open access (CC BY) · trial NCT05615051

DOI: 10.1111/cid.70075

Alberto Monje, Sofía Navarro-Mesa, Costanza Soldini, Giorgio Zappalá, Pedro Peña, José Manuel Navarro Sr., Ramón Pons

A multicentre trial in 58 patients comparing two adjuncts to mechanical decontamination in the reconstructive treatment of intrabony defects: an electrolytic method against 3% hydrogen peroxide. In both arms the surface was first decontaminated with NiTi brushes (Hans Korea Co., Gyeonggi-do, Korea) at 600 rpm for about 2–3 minutes.

**Outcome.** At 12 months every clinical index and the marginal bone level improved significantly in both arms; disease resolution was 87.5% with the electrolytic adjunct and 64.5% with hydrogen peroxide ( $p = 0.08$ ), with no major complications — the NiTi Brush was the mechanical step common to both.

<https://doi.org/10.1111/cid.70075>

### 04 The adjunctive effect of a resorbable membrane to a xenogeneic bone replacement graft in the reconstructive surgical therapy of peri-implantitis: a randomised clinical trial

Journal of Clinical Periodontology · accepted 14 February 2023

DOI: 10.1111/jcpe.13796

Erik Regidor, Alberto Ortiz-Vigón, Mario Romandini, Carlotta Dionigi, Jan Derks, Mariano Sanz

Forty-three patients treated with a xenogeneic bone substitute, randomised to receive a resorbable collagen membrane over the graft or not, assessed clinically and radiographically.

**Outcome.** At 12 months no implant was lost; treatment success was 36.8% with the membrane and 45.0% without ( $p = 0.61$ ) — the membrane added nothing measurable to the graft.

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

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

Journal of Periodontology · accepted 26 October 2022 · trial NCT05282667

DOI: 10.1002/JPER.22-0511

Alberto Monje, Ramón Pons, Javi Vilarrasa, José Nart, Hom-Lay Wang

Thirty-three patients (48 implants) with contained defects, treated with a mineralised and demineralised allograft mixture with or without a cross-linked barrier membrane, and followed for 12 months. In this protocol the implant surface was decontaminated with a NiTi brush at 600 rpm before grafting.

**Outcome.** At 12 months mean disease resolution was 77.1%, and the barrier membrane did not improve it (OR 1.55,  $p = 0.737$ ). Decontamination with the NiTi brush at 600 rpm was the step common to both arms.

<https://aap.onlinelibrary.wiley.com/doi/epdf/10.1002/JPER.22-0511>

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

International Journal of Periodontics & Restorative Dentistry · 2025

DOI: 10.11607/prd.7151

Alberto Monje, Ramón Pons, Pedro Peña

A single-centre analysis comparing an electrolytic method against hydrogen peroxide, each used as an adjunct to mechanical decontamination, at 12-month follow-up.

**Outcome.** At 12 months disease resolution reached about 91% with the electrolytic adjunct, roughly 16 points above hydrogen peroxide, but the difference was not statistically significant — both arms rested on the same mechanical debridement.

<https://doi.org/10.11607/prd.7151>

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

International Journal of Oral Implantology · 2025; 18(1): 47–57 · PubMed 40047362

PMID: 40047362

Alberto Monje, Ramón Pons, Shayan Barootchi, Muhammad H. A. Saleh, Paul S. Rosen, Anton Sculean

A prospective case series of 10 patients with 13 advanced intrabony defects (at least 50% bone loss), treated with a composite allograft/xenograft hydrated with rhPDGF-BB under a collagen membrane. Surface decontamination of the intrabony component was performed with NiTi brushes (Hans Korea, Gyeonggi-do, South Korea) for about 2–3 minutes at 600 rpm, followed by an electrolytic step.

**Outcome.** Implant survival was 100% at 1 year; mean pocket depth fell by 4.5 mm, the defects became narrower and shallower, and disease resolution was achieved at 61.5% of implants.

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

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

Clinical Oral Implants Research · accepted 20 February 2023

DOI: 10.1111/clr.14057

Frank Schwarz, Kathrin Becker, Christine Albrecht, Ausra Ramanauskaite, Amira Begic, Karina Obreja

Thirty-six patients (40 implants) with combined supra- and intrabony defects, comparing a control protocol against two modified augmentation protocols at 6 and 12 months. All protocols included access flap surgery, granulation tissue removal and implant surface decontamination with a titanium brush.

**Outcome.** At 12 months median bleeding on probing fell by 58–67% and pocket depth by 0.8–2.0 mm across the three protocols; implant-surface decontamination with a titanium brush was the step shared by all three.

<https://onlinelibrary.wiley.com/doi/epdf/10.1111/clr.14057>

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

Journal of Clinical Periodontology · accepted 13 June 2020

DOI: 10.1111/jcpe.13335

Maria Elisa Galarraga-Vinueza, Karina Obreja, Ricardo Magini, Anton Sculean, Robert Sader, Frank Schwarz

Twenty patients (28 implants) followed for six months with intra-oral scanning, measuring the volumetric change of the peri-implant mucosa after combined surgical therapy. This is the paper that names Hans Korea Co., Ltd. as the source of the titanium brush used for decontamination.

**Outcome.** Peri-implant soft tissue thinned by 0.11 mm at 1 month and 0.28 mm at 6 months, and the contour area contracted 7.9% then 18.5% — a quantified picture of healing after therapy in which the exposed surface was decontaminated with a titanium brush (Hans Korea Co., Ltd.).

<https://onlinelibrary.wiley.com/doi/epdf/10.1111/jcpe.13335>

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

Journal of Periodontology · accepted 18 April 2021

DOI: 10.1002/JPER.21-0103

Alberto Monje, Ramón Pons, Ettore Amerio, Hom-Lay Wang, José Nart

Forty-three patients (135 implants) followed for a mean of about 24 months, evaluating implantoplasty as an adjunct to resective and reconstructive surgical therapy.

**Outcome.** Over a mean of about 24 months, therapeutic success was 66% or 79.5% depending on the case definition, and implant survival 97.8% across 135 implants.

<https://aap.onlinelibrary.wiley.com/doi/epdf/10.1002/JPER.21-0103>

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

Clinical Implant Dentistry and Related Research · accepted 18 June 2023

DOI: 10.1111/cid.13244

Alberto Monje, Ramón Pons, Anton Sculean, José Nart, Hom-Lay Wang

A secondary analysis of a randomised trial (33 patients, 48 implants) examining whether defect configuration, defect angle, defect width and baseline bone level predict the outcome of reconstructive surgery.

**Outcome.** Defect angle strongly predicted bone gain ( $p < 0.001$ ): a 40° defect gained 1.85 mm, angles under 57° gained at least 1 mm and under 30° at least 2 mm.

<https://onlinelibrary.wiley.com/doi/epdf/10.1111/cid.13244>

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

Applied Sciences · published 16 June 2023

DOI: 10.3390/app13127224

Arthur Brincat, Angéline Antezack, Camille Sadowski, Mathias Faure-Brac, Romain Ohanessian, Virginie Monnet-Corti

A case series assessing the absence of progressive marginal bone loss from one year to more than three years after reconstructive, apically repositioned flap, or combined surgical therapy with implantoplasty.

**Outcome.** Over 12–42 months (mean 24), 96.7% of 91 implants showed no progressive bone loss; three implants were removed.

<https://www.mdpi.com/2076-3417/13/12/7224>

## 13 Management of early dental implant complication: a report of two cases

Umm Al-Qura University · accepted 25 January 2024

DOI: 10.54940/ms75920247

Walaa Babgi, Baher Felemban — Umm Al-Qura University, Makkah, Saudi Arabia

Two cases of early peri-implant complication managed by flap elevation, granulation tissue removal, mechanical cleaning of the implant surface with a titanium brush, and bone grafting.

**Outcome.** Both early complications resolved: radiographic bone fill around the implants at 4–5 months and healthy peri-implant tissue at the time of restoration. The implant surface was cleaned with the NiTi Brush Omega (HANS Korea) on a low-speed handpiece.

[https://drive.uqu.edu.sa/\\_/mj/files/10\(1\)/15.pdf](https://drive.uqu.edu.sa/_/mj/files/10(1)/15.pdf)

## IN VITRO STUDIES

## 14 The effect of NiTi brush, polishing brush and chemical agent on the dental implant surface morphology and cytocompatibility

Clinical Implant Dentistry and Related Research · 2025; 27:e13417

DOI: 10.1111/cid.13417

Giulia Brunello, Kathrin Becker, Nicole Rauch, Frank Schwarz, Jürgen Becker

Titanium disks with a sand-blasted, acid-etched surface were treated with diamond polishing brushes, nickel-titanium brushes, or a phenol and sulphuric acid gel, then examined by scanning electron microscopy, surface roughness measurement and cell viability assay. The authors report that none of the protocols compromised cytocompatibility, that operative time was shorter for the NiTi group than for the polishing brush group, and that the best cell-viability results were recorded in the NiTi group when samples were stored in saline.

**Outcome.** The NiTi Brush (NANO, HANS KOREA) left surface roughness close to the original, gave the highest cell viability of the protocols tested when discs were stored in saline ( $p \leq 0.001$ ), and was faster than the diamond polishing brush — 48.2 versus 54.9 seconds ( $p = 0.017$ ).

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

## 15 Quantity and size of titanium particles released from different mechanical decontamination procedures on titanium discs: an in vitro study

Dentistry Journal · published 24 April 2024 · open access (CC BY)

DOI: 10.3390/dj12050123

Anthony Kao, Andrew Tawse-Smith, Sunyoung Ma, Warwick J. Duncan, Malcolm Reid, Momen A. Atieh — Sir John Walsh Research Institute, University of Otago (New Zealand); Mohammed Bin Rashid University (UAE); University of Jordan

One hundred and forty moderately roughened titanium discs in seven groups — metal-tip and PEEK-tip ultrasonic scaling at two power settings, erythritol air-polishing, and a rotary brush — with the rinsing solution analysed by ICP-MS for titanium mass and by SEM for particle size. The rotary brush was the NiTi Brush Omega (Hans Korea), named in the methods.

**Outcome.** The NiTi Brush released  $6.45 \pm 2.03 \mu\text{g}$  of titanium per disc — about one-fifth of metal-tip ultrasonic scaling ( $34.0\text{--}34.4 \mu\text{g}$ ), a statistically significant difference — with particles of comparable size ( $1.05 \mu\text{m}$ ). Air-polishing and the PEEK tip released less.

<https://doi.org/10.3390/dj12050123>

## 16 Evaluation of biological response of STRO-1/c-Kit enriched human dental pulp stem cells to titanium surfaces treated with two different cleaning systems

International Journal of Molecular Sciences · published 16 April 2019

DOI: 10.3390/ijms20081868

Enrico Conserva, Alessandra Pisciotto, Laura Bertoni, Giulia Bertani, Aida Meto, Bruna Colombari, Elisabetta Blasi, Pierantonio Bellini, Anto de Pol, Ugo Consolo, Gianluca Carnevale

A comparison of Ni-Ti brushes against air polishing with bicarbonate powder on machined and  $\text{Ca}^{2+}$  - nanostructured titanium surfaces, examining the effect on surface properties, on human dental pulp stem cell behaviour and on bacterial biofilm formation.

**Outcome.** Air-polishing with bicarbonate removed about 99% of biofilm without altering the surface, whereas the Ni-Ti brush (I.C.T. Brush micro, Hans Korea) modified the surface and, on nanostructured discs, reduced stem-cell marker expression. A study that favoured the gentler method on that specific surface — reported here as published.

<https://www.mdpi.com/1422-0067/20/8/1868>

## REVIEWS

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## 17 Mucositis and peri-implant disease treatment with chitosan and titanium brushes: a systematic review

Journal of Clinical Medicine · published 22 November 2025 · open access (CC BY)

DOI: 10.3390/jcm14238306

Carlos Pappolla Sessa, Alejandro Pappolla Sessa, Andrea Martín-Vacas, Cristina Docampo-Vázquez, Juan Manuel Aragoneses — University of La Salle (Madrid); Universitat Politècnica de Catalunya (Barcelona)

A systematic review of nine studies — seven randomised controlled trials and two prospective case series — on chitosan and titanium brushes in the treatment of peri-implant disease. The titanium brush illustrated in the paper is the POCKET® model (Hans Korea).

**Outcome.** The review concludes that titanium brushes effectively reduce probing depth and bleeding, are safe, and perform best within surgical protocols combined with regenerative materials — while showing no clear superiority over other techniques in between-group comparisons.

<https://doi.org/10.3390/jcm14238306>

## 18 Minimal invasiveness in the reconstructive treatment of peri-implantitis defects

Periodontology 2000 · accepted 5 June 2022 · review article

DOI: 10.1111/prd.12460

Eduardo Montero, Andrea Rocuzzo, Ana Molina, Alberto Monje, David Herrera, Mario Rocuzzo

A review of minimally invasive approaches to reconstructive peri-implantitis treatment, covering flap design, barrier membranes, bioactive molecules and antimicrobial adjuncts, and the balance between minimising surgical trauma and retaining adequate access for implant surface decontamination.

**Outcome.** A narrative review. It concludes that a minimally invasive approach optimises the outcome of reconstructive therapy while limiting post-operative complications; no quantitative result.

<https://onlinelibrary.wiley.com/doi/epdf/10.1111/prd.12460>

## 19 安心・安全なインプラント治療を行うために — Toward safe and secure implant treatment

Journal of the Japanese Society of Oral Examination (日本口腔検査学会雑誌) · Vol. 10, No. 1, pp. 33–38 · 2018 · review article, in Japanese

Kazuhiko Hiroyasu (廣安一彦) — Department of Oral Implantology, The Nippon Dental University Niigata Hospital, Japan

A review of the current workflow of implant therapy in Japan, the evolution of the field, and the management of peri-implant complications. In the section on peri-implantitis the author describes polishing the exposed rough implant surface with a titanium brush to convert it to a smooth surface, limiting further deposit adhesion and bone resorption. Figure 8 of the paper illustrates this step and identifies the instrument as the NiTi Brush (HANS Korea).

**Outcome.** A review of implant therapy in Japan. For peri-implantitis the author polishes the exposed rough surface to a smooth one with a titanium brush to prevent further deposits; Figure 8 identifies the instrument as the NiTi Brush (HANS Korea).

[https://ir.tdc.ac.jp/irucan/bitstream/10130/4541/1/10\\_33.pdf](https://ir.tdc.ac.jp/irucan/bitstream/10130/4541/1/10_33.pdf)