



SCIENTIFIC **HIGHLIGHTS**

Short overviews on recently
published scientific evidence.

Issue **2/2024**

Edited by Dr. Marcin Maj

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Immediately versus early placed bone-level-tapered implants supporting all-ceramic crowns on titanium base abutments: 1-year radiographic and pink esthetic outcomes of a multicenter pilot RCT
(Stefan P Hicklin et al. 2024)

and

Accuracy of Dental Implant Placement with Dynamic Navigation- Investigation of the Influence of Two Different Optical Reference Systems: A Randomized Clinical Trial
(Anne Knipper et al., 2024)

Etiology, pathogenesis and treatment of peri-implantitis: A European perspective
(Tord Berglundh et al., 2024)

EDITOR'S CHOICE

J Esthet Restor Dent. 2024 Feb 9.

Immediately versus early placed bone-level-tapered implants supporting all-ceramic crowns on titanium base abutments: 1-year radiographic and pink esthetic outcomes of a multicenter pilot RCT

Stefan P Hicklin, Irena Sailer, Ana Todorovic, Philippe Mojon, Andreas Worni, Malin Stranding

STUDY OBJECTIVES AND METHODS

The aim of this study was to assess survival rates, radiographic, and pink esthetic outcomes of a bone-level-tapered (BLT) implant following immediate or early implant placement. Patients in need of tooth extraction and one implant in the anterior or premolar area were recruited in five centers. Patients were randomly assigned to the immediate or early placement protocol. Implants were restored with all-ceramic crowns cemented to titanium-base-abutments. Radiographic bone levels, implant stability quotient (ISQ), and pink esthetic outcomes were assessed.

RESULTS

- A total of 60 patients received 60 BLT implants (Institut Straumann). At 12-months, 59 implants (98.3%) were osseointegrated.
- The mean distance from implant shoulder to first bone-to-implant contact was 0.15 ± 0.59 mm without significant differences between the groups.
- Median ISQ values increased from 75.5 to 78.5. A mean buccal recession of 0.1 ± 0.70 mm occurred with no difference between groups.
- The mean papilla height gain in both groups was 0.5 ± 1.47 mm mesially and 0.4 ± 1.36 mm distally.

CONCLUSIONS

After 1 year, immediately and early placed BLT implants exhibit similar bone level changes, ISQ values, and pink esthetic outcomes.

Adapted from SP Hicklin et al., J Esthet Restor Dent. 2024 Feb 9, for more info about this publication, click [HERE](#)

J Long Term Eff Med Implants. 2024;34(2):89-92

Comparison of Alveolar Bone Level around Osseointegrated Dental Implants among Premenopausal and Postmenopausal Women: A 2-Year Study

J Dhayanithi, Arvina Rajasekar

STUDY OBJECTIVES AND METHODS

The purpose of this study was to assess the changes in alveolar bone level around osseointegrated dental implants over a period of 2 years among the premenopausal and postmenopausal women. Patients were categorized into 2 groups: premenopause patients (Group A; n = 25) and postmenopause patients (Group B; n = 25). Marginal bone loss (MBL) was recorded at baseline, 12 mo and 24 mo follow-up and compared between both the groups.

RESULTS

- On intragroup comparison, a statistically significant difference was observed between different time periods in both Group A ($P = 0.05$) and Group B ($P = 0.04$).
- Also, on intergroup comparison, a statistically significant difference was observed in Group B from Group A at 12 mo and 24 mo ($P < 0.05$).

CONCLUSIONS

Increase in marginal bone loss was observed among postmenopausal women. Therefore, clinicians should emphasize the need for oral hygiene maintenance among postmenopausal women for peri-implant health.

Adapted from J Dhayanithi et al., J Long Term Eff Med Implants. 2024;34(2):89-92, for more info about this publication, click [HERE](#)

J Clin Med. 2024 Jan 12;13(2):432

Clinical and Radiographic Outcomes of Single Implant-Supported Zirconia Crowns Following a Digital and Conventional Workflow: Four-Year Follow-Up of a Randomized Controlled Clinical Trial

Florian Beck, Lana Zupancic Cepic, Stefan Lettner, Andreas Moritz, Christian Ulm, Werner Zechner, Andreas Schedle



STUDY OBJECTIVES AND METHODS

The purpose of this study was to compare the clinical and radiographic outcomes of single posterior screw-retained monolithic implant crowns following a digital and conventional workflow and to report on the survival/complication rate after a mean 4-year follow-up. Thirty patients with a single posterior tooth missing were rehabilitated with a bone-level implant. After a healing period of ≥ 3 months, they were subjected to both a digital and conventional workflow to fabricate two screw-retained monolithic implant crowns. The quantitative clinical adjustments to both crowns (intrasubject comparison) and a questionnaire were recorded at try-in. Thereafter, a crown of the digital and conventional workflows was randomly inserted. At the last follow-up, the marginal bone level (MBL), peri-implant health-related parameters (bleeding on probing (BoP), plaque, pocket probing depth (PPD)), and functional implant prosthodontic score (FIPS) were assessed. Furthermore, the implant survival and success rates and technical complications were evaluated.

RESULTS

- A total of 27 patients were followed for a mean period of 4.23 ± 1.10 years. There was no significant difference between the digital and conventional workflows regarding clinical adjustments and questionnaire outcomes.
- More than twice as many participants recommended digital ($n = 16$) compared to conventional impressions ($n = 7$) to friends.
- The implant survival and success rate were 100% and 96.3%, respectively. Furthermore, two de-cementations and one fracture of the ti-base abutment occurred.
- There were no significant differences in BoP, plaque, and PPD metrics between the two groups.
- The changes in the MBL between implant crown insertion (baseline) and the last follow-up were 0.07 ± 0.19 mm and 0.34 ± 0.62 mm in the digital and conventional groups, respectively ($p = 0.195$). The mean overall FIPS score was 8.11 ± 1.37 (range: 5-10).

CONCLUSIONS

The clinical and radiographic outcomes of single screw-retained monolithic implant crowns were similar between both workflows after a mean of 4 years of service. The patients did not clearly prefer an impression technique for their restoration, although they would recommend the digital impression more often to friends. Thus, decision regarding clinical workflows may be based on the patient's and/or clinician's preference

Adapted from F. Beck et al., J Clin Med. 2024 Jan 12;13(2):432., for more info about this publication click [HERE](#)

Clin Implant Dent Relat Res . 2024 Feb;26(1):150-157

Long-term treatment outcomes of single maxillary buccal peri-implant soft tissue dehiscences: A 10-year prospective study

Andrea Rocuzzo, Leonardo Mancini, Crystal Marruganti, Guglielmo Ramieri, Giovanni E Salvi, Anton Sculean, Mario Rocuzzo



STUDY OBJECTIVES AND METHODS

The purpose of this study was to evaluate the 10-year clinical outcomes following surgical treatment of shallow isolated peri-implant soft-tissue dehiscences (PSTD) at single tissue level dental implants. The baseline population included 16 patients (16 implants) displaying an isolated peri-implant maxillary buccal soft-tissue dehiscence. The recipient bed was prepared with a minimally-invasive split-thickness flap limited to the buccal aspect to stabilize the tuberosity connective tissue graft (CTG) onto the periosteum. At the end of treatment, patients were enrolled in an individualized supportive peri-implant care (SPC) program. The aesthetic outcome was evaluated on photographs by three clinicians using a visual analog scale (VAS)

RESULTS

- SPC during the 10-years proceeded uneventfully in all patients. A total of 12 patients completed the 10-year examination, as 3 patients dropped-out and 1 implant was lost.
- Complete PSTD coverage was obtained at 7 implant sites (i.e., 58%) while the mean PSTD coverage amounted to 89.6% \pm 17.1% without statistically significant differences between 1 and 10 years ($p > 0.05$).
- Stable peri-implant parameters (i.e., PD and BoP) and full-mouth scores (i.e., FMPS, FMBS) were recorded throughout the observation period ($p > 0.05$).
- The aesthetic improvements obtained in the short-term were maintained up to 10 years.

CONCLUSIONS

Within their limits, the present results indicate that the proposed surgical technique is a simple and reliable treatment option for the treatment of single maxillary buccal PSTDs in selected cases with positive results up to 10 years in patients under regular SPC.

Adapted from A. Rocuzzo et al., Clin Implant Dent Relat Res . 2024 Feb;26(1):150-157, for more info about this publication click [HERE](#)

Bioengineering (Basel). 2024 Feb 4;11(2):155

Accuracy of Dental Implant Placement with Dynamic Navigation-Investigation of the Influence of Two Different Optical Reference Systems: A Randomized Clinical Trial

Anne Knipper, Katharina Kuhn, Ralph G Luthardt, Sigmar Schnutenhaus



STUDY OBJECTIVES AND METHODS

The aim of this study was to analyze the differences between the computer-assisted planned implant position and the clinically realized implant position using dynamic navigation. In the randomized prospective clinical study, 30 patients were recruited, of whom 27 could receive an implant (BLT, Straumann Institut AG, Basel, Switzerland) using a dynamic computer-assisted approach. Patients with at least six teeth in their jaws to be implanted were included in the study. Digital planning was performed using cone beam tomography imaging, and the visualization of the actual situation was carried out using an intraoral scan. Two different workflows with differently prepared reference markers were performed with 15 patients per group. The actual clinically achieved implant position was recorded with scan bodies fixed to the implants and an intraoral scan. The deviations between the planned and realized implant positions were recorded using evaluation software.

RESULTS

- The clinical examinations revealed no significant differences between procedures A and B in the mesiodistal, buccolingual and apicocoronar directions.
- For the mean angular deviation, group B showed a significantly more accurate value of 2.7° (95% CI 1.6-3.9°) than group A, with a value of 6.3° (95% CI 4.0-8.7°).
- The mean 3D deviation at the implant shoulder was 2.35 mm for workflow A (95% CI 1.92-2.78 mm) and 1.62 mm for workflow B (95% CI 1.2-2.05 mm).
- Workflow B also showed significantly higher accuracy in this respect.
- Similar values were determined at the implant apex.

CONCLUSIONS

The clinical examination shows that sufficiently accurate implant placement is possible with the dynamic navigation system used here. The use of different workflows sometimes resulted in significantly different accuracy results. The data of the present study are comparable with the published findings of other static and dynamic navigation procedures.

Adapted from A. Knipper et al., *Bioengineering (Basel)*. 2024 Feb 4;11(2):155, for more info about this publication, click [HERE](#)

Periodontol 2000. 2024 Jan 20

Biological processes and factors involved in soft and hard tissue healing

Mark Bartold, Saso Ivanovski

PURPOSE OF THIS REVIEW

Wound healing is a complex and iterative process involving myriad cellular and biologic processes that are highly regulated to allow satisfactory repair and regeneration of damaged tissues. This review is intended to be an introductory chapter in a volume focusing on the use of platelet concentrates for tissue regeneration. In order to fully appreciate the clinical utility of these preparations, a sound understanding of the processes and factors involved in soft and hard tissue healing. This encompasses an appreciation of the cellular and biological mediators of both soft and hard tissues in general as well as specific consideration of the periodontal tissues. In light of good advances in this basic knowledge, there have been improvements in clinical strategies and therapeutic management of wound repair and regeneration..

Adapted from M. Bartold et al., Periodontol 2000. 2024 Jan 20, for more info about this publication, click [HERE](#)

Periodontol 2000. 2024 Feb 2

Etiology, pathogenesis and treatment of peri-implantitis: A European perspective

Tord Berglundh, Andrea Mombelli, Frank Schwarz, Jan Derks

PURPOSE OF THIS REVIEW

Peri-implantitis is a plaque-associated pathological condition occurring in tissues around dental implants. It is characterized by inflammation in the peri-implant mucosa and progressive loss of supporting bone. An understanding of the diagnosis, etiology and pathogenesis, epidemiology, and treatment of peri-implantitis must be a central component in undergraduate and postgraduate training programs in dentistry. In view of the strong role of European research in periodontology and implant dentistry, the focus of this review was to address peri-implantitis from a European perspective. An overview of strategies and outcomes presented in clinical studies on nonsurgical and surgical treatment of peri-implantitis is discussed with a particular focus on end points of therapy and recommendations presented in the S3 level Clinical Practice Guideline for the prevention and treatment of peri-implant diseases.

Adapted from T. Berglundh et al., Periodontol 2000. 2024 Jan 20, for more info about this publication, click [HERE](#)

Periodontol 2000. 2024 Feb 2

Innate immune regulation in dental implant osseointegration

Takeru Kondo, Masahiro Yamada, Hiroshi Egusa



PURPOSE OF THIS REVIEW

Dental implant osseointegration comprises two types of bone formation-contact and distance osteogenesis-which result in bone formation originating from the implant surface or bone edges, respectively. This narrative review discusses the role of innate immunity in osseointegration and the effects of implant surface properties on distant osteogenesis, focusing on innate immune regulation.

Adapted from T. Kondo et al., J Prosthodont Res. 2024 Feb 13, for more info about this publication, click [HERE](#)

Clin Oral Implants Res. 2024 Feb 2

The use of digital technologies in peri-implant soft tissue augmentation - A narrative review on planning, measurements, monitoring and aesthetics

Franz Josef Strauss, Alfonso Gil, Rawen Smirani, Amanda Rodriguez, Ronald Jung, Daniel Thoma

PURPOSE OF THIS REVIEW

A comprehensive narrative review of pertinent literature was conducted, critically appraising key digital technologies that may assist peri-implant soft tissue augmentation and assessment. An electronic search on four databases including studies published prior to 1st July 2023 was performed and supplemented by a manual search. As digital technologies progress, their full potential in peri-implant soft tissue augmentation and their value will become more evident with ongoing research. Embracing these innovations and their potential benefits is recommended to ensure that during progress in implant dentistry, patient care is not hindered.

Adapted from FJ Strauss et al., Clin Oral Implants Res. 2024 Feb 2, for more info about this publication, click [HERE](#)

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