



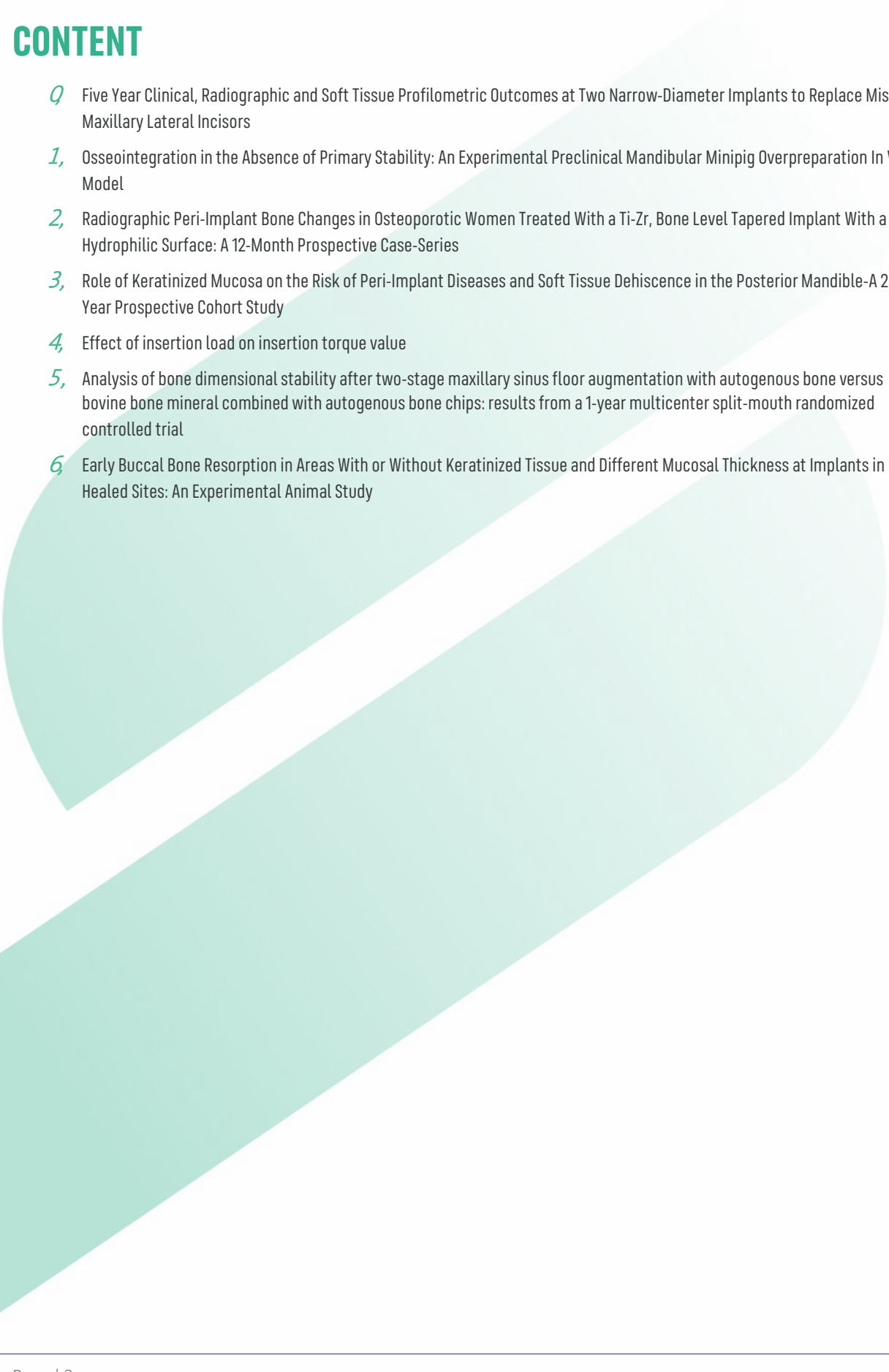
SCIENTIFIC HIGHLIGHTS

Short overviews on recently
published scientific evidence.

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Edited by Dr. Marcin Maj

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(Andrea Rocuzzo et al., 2025)

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Radiographic Peri-Implant Bone Changes in Osteoporotic Women Treated With a Ti-Zr, Bone Level Tapered Implant With a Hydrophilic Surface: A 12-Month Prospective Case-Series

(Elena Calciolari et al., 2025)

EDITOR'S CHOICE

Clin Oral Implants Res. 2025 Jul 27.

Five Year Clinical, Radiographic and Soft Tissue Profilometric Outcomes at Two Narrow-Diameter Implants to Replace Missing Maxillary Lateral Incisors

Andrea Rocuzzo, Jean-Claude Imber, Jakob Lempert, Leonardo Mancini, Simon Storgård Jensen



STUDY OBJECTIVES AND METHODS

The purpose of this study was to compare the 5-year outcomes in patients with congenitally missing maxillary lateral incisors (MLIs) rehabilitated with two different narrow-diameter implants (NDIs). One-hundred patients rehabilitated with a cement-retained bi-layered zirconia single-unit crown on either a Ø2.9 mm (Test) (n = 50) or a Ø3.3 mm (Control) (n = 50) (T1) were assessed at 1-, 3-, and 5-year follow-up (T2, T3, T4). Clinical, radiographic, patient-reported outcome measures (PROMs), biological/technical complications, and esthetic ones were recorded. After the acquisition of intraoral optical scans (IOS) (T4), three different soft tissue profilometric profiles (linear, concave, and convex) were identified.

RESULTS

- At T4, 66 patients (n = 33 per group; drop-outs n = 33; implant survival rate: 99%; early implant loss n = 1) were evaluated.
- Between T1 and T4, crestal bone level (CBL) changes at Ø3.3 and at Ø2.9 mm implants were comparable (difference: 0.24 mm; $p > 0.05$).
- Despite the positive recorded esthetic scores (i.e., Score 1-2), at T4, 9.1% of Ø2.9 mm versus 18.2% of Ø3.3 mm implants displayed alveolar process deficiency (Score 3).
- The frequency of soft tissue profilometric profiles was linear (21.2% vs. 40.6%), concave (72.7% vs. 37.5%) and convex (6.1% vs. 21.9%) (Ø2.9 mm vs. Ø3.3 mm group [$p > 0.01$]).
- Complications included decementation, ceramic chipping of the incisal edge (3× each), abutment loosening (1×) and a buccal fistula (3×).
- The statistically significant improved PROMs values at T1 remained stable up to T4 for both groups ($p > 0.05$).

CONCLUSIONS

The use of Ø2.9 or Ø3.3 mm implants showed comparable positive long-term results. Clinicians can rely on both implant types to replace congenitally missing MLIs.

Adapted from A Rocuzzo et al., Clin Oral Implants Res. 2025 Jul 27, for more info about this publication click [HERE](#)

Clin Oral Implants Res. 2025 Jul 23.

Osseointegration in the Absence of Primary Stability: An Experimental Preclinical Mandibular Minipig Overpreparation In Vivo Model

Thomas Gill, Hansley Ooi, Emre Tezulas, Aviva Petrie, Simon Rawlinson, Mario Rocuzzo, Shakeel Shahdad



STUDY OBJECTIVES AND METHODS

The effect of osteotomy overpreparation, and thus lack of primary stability, on implant osseointegration and crestal bone volume maintenance was investigated by comparing placement of dental implants with either a standard osteotomy preparation (NP) or an overprepared osteotomy (OP) where the final osteotomy drill was larger in diameter than the implant placed. Bone-level implants (Ø3.3 mm diameter) were placed in the mandible of minipigs with two preparation techniques: an NP (Group 1) and an OP to a final osteotomy of 3.5 mm in diameter (Group 2) and submerged for 2 and 8 weeks. An Implant Stability Quotient (ISQ) was measured for each implant at placement. Implant survival, defined histologically as the absence of fibrous encapsulation and the presence of direct bone-to-implant contact, osseointegration and crestal bone formation were analysed histologically and histomorphometrically to compare the preparation techniques.

RESULTS

- A 100% survival for both preparation types was observed.
- The mean ISQ at insertion for Groups 1 and 2 was 69.35 a.u. (95% CI: 68.02-70.68) and 11.95 a.u. (95% CI: 10.53-13.37) respectively ($p < 0.001$).
- At 2 and 8 weeks, there was no difference between the two groups for total bone-to-implant contact (tBIC) ($p > 0.05$).
- Group 2 demonstrated significantly higher mean first bone-to-implant contact (fBIC), coronal bone-to-implant contact (cBIC) and bone-area-to-total-area (BATA) at 2 and 8 weeks compared to Group 1 ($p < 0.05$).

CONCLUSIONS

Implants inserted into an overprepared osteotomy with no primary stability successfully osseointegrated. At 2 and 8 weeks, OP resulted in significantly more coronal bone apposition and maintenance of coronal bone volume as measured by fBIC, cBIC and BATA.

Adapted from T Gil et al., Clin Oral Implants Res. 2025 Jul 23., for more info about this publication, click [HERE](#)

Clin Oral Implants Res. 2025 Jul 8.

Radiographic Peri-Implant Bone Changes in Osteoporotic Women Treated With a Ti-Zr, Bone Level Tapered Implant With a Hydrophilic Surface: A 12-Month Prospective Case-Series

Calciolari Elena, Mardas Nikos, Palaska Iro, Tagliaferri Sara, Donos Nikolaos



STUDY OBJECTIVES AND METHODS

The purpose of this study was to assess 12-month post-loading 3D peri-implant radiographic bone changes in osteoporotic women receiving a single titanium-zirconium bone-level tapered dental implant with a hydrophilic surface. This was a prospective case series involving 18 post-menopausal osteoporotic women in need of a single dental implant. A standardized CBCT scan was performed after implant placement and at 12 months post-loading to assess peri-implant bone changes. The Implant Stability Quotient (ISQ) was recorded after implant placement, at implant impression, loading, and 12 months post-loading. Peri-implant clinical parameters were recorded at 6 and 12 months post-loading and during the last visit implant survival and success were also evaluated.

RESULTS

- Seventeen patients completed all study visits, and implant placement was uneventful for all participants.
- A statistically significant difference (reduction) from implant placement to 12 months post-loading was observed in terms of radiographic buccal bone width and palatal/lingual width ($\Delta Bw-O$: 0.53 mm, $p < 0.001$ and $\Delta Pw-O$: 0.47 mm, $p = 0.006$), as well as in terms of vertical distance between the implant shoulder and the first bone to implant contact on the buccal and palatal/lingual aspect ($\Delta BICb$: -0.26 mm, $p = 0.005$ and $\Delta BICp$: -0.46 mm, $p = 0.018$).
- ISQ increased during osseointegration, and a high implant survival (100%) and success rate (from 81.3% to 100% based on 3 different sets of criteria) were recorded at 12 months post-loading.

CONCLUSIONS

In this case series, osteoporotic patients treated with single titanium-zirconium implants showed high survival rates, predictable 12-month implant outcomes, and physiologic peri-implant bone remodelling.

Adapted from E Calciolari et al., Clin Oral Implants Res. 2025 Jul 8, for more info about this publication, click [HERE](#)

J Periodontol Res. 2025 Jul 21.

Role of Keratinized Mucosa on the Risk of Peri-Implant Diseases and Soft Tissue Dehiscence in the Posterior Mandible-A 20-Year Prospective Cohort Study

Andrea Rocuzzo, Jean-Claude Imber, Alexandra Stähli, Mario Romandini, Anton Sculean, Giovanni E Salvi, Mario Rocuzzo



STUDY OBJECTIVES AND METHODS

The purpose of this study was to evaluate the 20-year outcomes of tissue-level implants placed in the posterior mandible, comparing implants surrounded by keratinized tissue (KT) or alveolar mucosa (AM). At baseline, 128 patients (128 implants) were rehabilitated with implant-supported fixed dental prostheses in the posterior mandible and enrolled in a supportive periodontal/peri-implant care (SPC) program. Patients were categorized based on the presence (KT) or absence (AM) of keratinized mucosa. During the first 10 years of SPC, 11 AM patients underwent free gingival grafting (FGG), identifying a third group (AM + FGG). At the 20-year follow-up, peri-implant health status and soft-tissue dehiscence were assessed according to the 2018 Case Definitions. The need for additional treatment between the 10- and 20-year examinations was also recorded.

RESULTS

- Of the 98 patients evaluated at the 10-year follow-up, 64 (KT = 42; AM = 16; AM + FGG = 6; drop-out rate: 35%) attended the 20-year examination.
- Additional treatment was required in 11 AM patients (50%) versus 2 KT patients (5%) ($p < 0.01$).
- AM implants exhibited significantly greater marginal bone loss, bleeding on probing, and soft tissue recession compared to KT implants ($p < 0.01$).
- The application of an FGG (AM + FGG = 6) had a protective effect on peri-implant health status at 20 years.
- Peri-implantitis was diagnosed in 4.2% of implants surrounded by keratinized mucosa (KT or AM + FGG) versus 25% in the AM group (OR = 6.67; 95% CI: 1.09-40.9; $p = 0.041$).

CONCLUSIONS

Tissue level implants placed in the posterior mandible without KT showed greater marginal bone loss, bleeding on probing, soft tissue recession, and peri-implant diseases compared to implants with KT at 20 years.

Adapted from A Rocuzzo et al., J Periodontol Res. 2025 Jul 21, for more info about this publication, click [HERE](#)

J Dent Sci. 2025 Jul;20(3):1861-1868

Effect of insertion load on insertion torque value

Po-Yuan Hsueh, Yoko Yamaguchi, Yasutomo Yajima



STUDY OBJECTIVES AND METHODS

The aim of this study was to examine the effect of insertion load on implant primary stability by evaluating the insertion torque and insertion time in various implant designs. Four implant designs were tested, including one cylindrical implant standard (S), two hybrid implants tapered effect (TE) and bone level (BL), and one conical implant bone level tapered (BLT). Polyurethane bone models of the maxillary posterior region were used. Insertion torque value (ITV) and insertion time, defined as the duration from implant placement initiation to platform alignment, were recorded under two load conditions, the minimum load and a load of 5.0 newton (N). A torque meter was used to capture torque-time curves, and the mean and standard deviation of ITV were calculated. Data were analyzed using a paired t-test ($P < 0.05$).

RESULTS

- The minimum insertion load varied by design: implant S required 2.5 N, implants TE and BL each required 2.0 N, and implant BLT required 1.0 N.
- At minimum load, insertion torque was 8.68 N cm for implant S, 6.64 N cm for implant TE, 12.29 N cm for implant BL, and 29.52 N cm for implant BLT.
- Under 5.0 N, the values were 8.12, 7.82, 14.89, and 30.53 N cm, respectively. Insertion time decreased by up to 12.52 % from 1.0 N to 5.0 N, with significant differences in implant BLT.

CONCLUSIONS

Hybrid implants are more sensitive to load variations. Optimizing the insertion load based on implant design can enhance clinical outcomes. The insertion load is a critical but often overlooked factor in primary implant stability.

Adapted from Po-Yuan Hsueh et al., J Dent Sci. 2025 Jul;20(3):1861-1868, for more info about this publication, click [HERE](#)

J Dent. 2025 Sep;160:105889.

Analysis of bone dimensional stability after two-stage maxillary sinus floor augmentation with autogenous bone versus bovine bone mineral combined with autogenous bone chips: results from a 1-year multicenter split-mouth randomized controlled trial

Isabella Neme Ribeiro Dos Reis, Anouck Jue, Eppo Wolvius, Justin Pijpe, Rubens Spin-Neto, Ronald Ernest Jung, Nadja Naenni, Franz J Strauss, Brend Jonker



STUDY OBJECTIVES AND METHODS

The purpose of this study was to compare the dimensional stability of augmented bone following maxillary sinus floor augmentation (MSFA) using autogenous bone (AB) alone or bovine bone mineral combined with locally harvested AB chips (BBM), one year after implant loading. A secondary analysis of a split-mouth, multicenter randomized controlled trial was conducted among 20 patients (40 implants). CBCT/CTs were used to measure bone height (buccal and palatal aspects) and bone area at the implant center at two time points: before implant placement (4-6 months post-MSFA, T1) and 12 months post-implant loading (T2). Residual bone height and sinus width at 1, 5, and 10 mm from the crest were also recorded. Linear regression models with generalized estimating equations were used to assess the influence of graft material (AB and BBM), initial graft dimensions and sinus width on dimensional changes.

RESULTS

- Adjusted regression models showed that AB-treated sites experienced significantly greater reductions in graft height (mean difference at buccal sites: -1.76 mm [95 % CI, -0.86 to -2.65]; p-value = <0.001); mean difference at palatal sites: -1.82 mm [95 % CI -0.75 to -2.88]; p = 0.001; and bone area (mean difference -17.80 mm² [95 % CI -6.61 to -28.99]; p = 0.002) compared to BBM.
- Greater initial graft height and area were associated with reduced dimensional changes (p < 0.001) especially when using BBM.
- Sinus width, measured 10 mm from the crest, was modestly but significantly associated with changes in bone height (p = 0.020), but not with changes in bone area (p = 0.147).

CONCLUSIONS

MSFA using BBM combined with autogenous bone chips resulted in greater dimensional stability compared to AB alone.

Adapted from I Neme Ribeiro Dos Reis et al., J Dent. 2025 Sep;160:105889, for more info about this publication, click [HERE](#)

J Clin Periodontol. 2025 Jun;52(6):920-928

Early Buccal Bone Resorption in Areas With or Without Keratinized Tissue and Different Mucosal Thickness at Implants in Healed Sites: An Experimental Animal Study

Antonio Liñares, Hong Jin Tan, Fernando Muñoz, Dragana Rakasevic, Yago Leira, Juan Blanco



STUDY OBJECTIVES AND METHODS

The purpose of this study was to evaluate early buccal bone resorption (BBR) in areas with or without buccal keratinized tissue (KT), and different mucosal thickness (MT) following implant placement at healed sites. In 9 beagle dogs, three months following the hemimaxilla third and fourth premolars extraction, full-thickness flaps were elevated and two tissue-level implants were inserted. Before suturing, each dog was randomly assigned into 3 groups (control, non-keratinized tissue, NKT and non-keratinized tissue plus connective tissue graft, NKT-CTG). In both experimental groups (NKT and NKT-CTG), buccal KT was excised. In the NKT-CTG group, a CTG was sutured to the buccal alveolar mucosa flap (BF) and coronally repositioned around the implant neck, while in the NKT group, only the BF was repositioned. BF with a 2 mm KT band was repositioned around the implants in the control group. Buccal bone thickness (BBT), MT and KT width were measured clinically at baseline. Three months later, BBR and MT were analysed histologically.

RESULTS

- Mucosal thickness at surgery was similar in NKT and control groups (1.33 ± 0.26 mm and 1.67 ± 0.52 mm, respectively).
- In the NKT-CTG group, MT was 2.50 ± 0.45 . The mean BBT measured at the mid-buccal region was about 1 mm in the 3 groups.
- Three months later, early BBR was observed in all groups, with mean values of 0.91 mm \pm 0.62 (control), 1.11 mm \pm 0.69 (NKT) and 1.10 mm \pm 0.58 (NKT-CTG).
- The mean values of MT at a 1.5 mm distance from the marginal mucosa were 1.20 mm \pm 0.69 (control), 2.18 mm \pm 0.53 (NKT) and 3.45 mm \pm 1.33 (NKT-CTG).

CONCLUSIONS

Within the limitations of the present investigation, the presence or absence of KT did not affect early BBR. CTG placed in the zones without KT did not prevent early BBR.

Adapted from A Liñares et al., J Clin Periodontol. 2025 Jun;52(6):920-928, for more info about this publication, click [HERE](#)

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