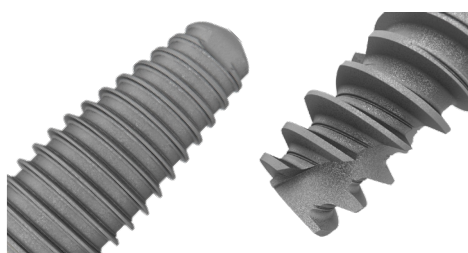







## Clinical performance of Xeal™ and TiUltra™ in peer-reviewed publications



Since their introduction in 2019, Xeal and TiUltra surfaces have been documented in a number of scientific publications. The table below lists the key studies and clinical cases, the summaries of their findings, as well as the information on the products included in the investigations.

Type	Reference	Description	Xeal™	TiUltra™
 <b>Clinical study</b>	Robust papilla regeneration and marginal bone gain: 2-Year results from a prospective study. Giacomo Fabbri, Giorgio Ban, Hyun-Chang Lim, Kwantae Noh. Clin Oral Impl Res;34(S27):159-160.	Ongoing prospective study with On1 Base Xeal and NobelActive TiUltra (single tooth, premolar/molar, healed sites), showing excellent soft tissue response including papilla regeneration and maintenance of keratinized mucosa height over 2 years.	On1™ Base Xeal™	NobelActive® TiUltra™
 <b>Clinical study</b>	All-on-4 concept using TiUltra surface implants and Multi-unit Xeal abutments: Report on the outcomes between 6 to 36 months. Ana Ferro, Miguel De Araújo Nobre. Clin Oral Impl Res;34(S27):137-138.	Retrospective study with All-on-4 Multi-unit Abutments Xeal and NobelParallel Conical Connection TiUltra, showing excellent bone response and no biologic complications with up to 3 years of follow-up.	Multi-unit Abutment Xeal™	NobelParallel™ Conical Connection TiUltra™
 <b>Clinical study</b>	A Retrospective Observational Study Assessing the Clinical Outcomes of a Novel Implant System with Low-Speed Site Preparation Protocol and Tri-Oval Implant Geometry. Giacomo Fabbri, Tristan Staas, Istvan Urban. J Clin Med. 2022 Aug 18;11(16):4859.	Final 1-year results from a retrospective study with Nobel Biocare N1 implants (TiUltra), showing excellent bone response and high implant survival, with a wide versatility of the system.	On1™ Base TCC Xeal™ Multi-unit Abutment Xeal™	Nobel Biocare N1™
 <b>Clinical study</b>	Navigation guided socket-shield technique for implant and pontic sites in the esthetic zone: A proof-of-concept 1-year prospective study with immediate implant placement and loading. Alessandro Pozzi, Lorenzo Arcuri, Joseph Kan, Jimmy Londono. J Esthet Restor Dent. 2022 Jan;34(1):203-214.	1-year results from a prospective study in the esthetic zone using NobelParallel TiUltra implants and navigated socket shield technique.	-	NobelParallel™ Conical Connection TiUltra™
 <b>Clinical study</b>	Dynamic navigation guided surgery and prosthetics for immediate loading of complete-arch restoration. Alessandro Pozzi, Lars Hansson, Paolo Carosi, Lorenzo Arcuri. J Esthet Restor Dent. 2021 Jan;33(1):224-236.	16-month results from a prospective study with patients rehabilitated with full-arch prostheses on TiUltra implants placed using dynamic navigation.	-	NobelParallel™ Conical Connection TiUltra™

Type	Reference	Description	Xeal™	TiUltra™
 Clinical study	Real-world study with 1000 patients treated with gradually anodized surface implants: Initial results. Miguel Roig Cayón et al. Clin Oral Impl Res;34(S27):167-168. <a href="https://onlinelibrary.wiley.com/doi/full/10.1111/clr.14162">https://onlinelibrary.wiley.com/doi/full/10.1111/clr.14162</a> ; Evaluation of gradually anodized surface on four implant systems. A prospective, thousand-patient real-world study. Eshraghi et al. AO2024  <a href="https://epostersonline.com/osseo2024/poster/p172">https://epostersonline.com/osseo2024/poster/p172</a>	Preliminary results from a prospective study with 1000 patients treated with TiUltra implants, showing excellent survival and soft tissue health.	On1™ Base Xeal™ Nobel Biocare N1™ Base Xeal™ Multi-unit Abutment Xeal™	NobelActive® TiUltra™ NobelParallel™ Conical Connection TiUltra™ NobelReplace® TiUltra™ Nobel Biocare N1™
 Clinical study	Dynamic Navigation System for Immediate Implant Placement in the Maxillary Aesthetic Region. Battista E, Gasparro R, Cacciola M, Sammartino G, Marenzi G. Applied Sciences. 2022;12(11):5510.  <a href="https://mdpi.com/2076-3417/12/11/5510">https://mdpi.com/2076-3417/12/11/5510</a>	6-month follow-up demonstrating that placement of NobelActive TiUltra with navigated surgery (X-Nav) in the esthetic zone of the maxilla results in high accuracy and 100% survival.	-	NobelActive® TiUltra™
 Clinical case series	An Osteotomy Tool That Preserves Bone Viability: Evaluation in Preclinical and Clinical Settings. Oded Bahat, Xing Yin, Stefan Holst, Ion Zabalegui, Eva Berroeta, Javier Pérez, Peter Wöhrle, Norbert Sörgel, John Brunski, Jill A. Helms. J. Clin. Med. 2022, 11(9), 2536.  <a href="https://pubmed.ncbi.nlm.nih.gov/35566662/">https://pubmed.ncbi.nlm.nih.gov/35566662/</a>	Clinical performance of OsseoShaper™ 1 collected during first user experience with 7 patients (15 implants) combined with animal model data on miniaturized version of the OsseoShaper, showing simplified protocol, retention of osseous coagulum, and decreased bone damage during osteotomy formation.	-	Nobel Biocare N1™
 Clinical case	Simultaneous Alveolar Ridge Augmentation and Periodontal Regenerative Therapy Leveraging Recombinant Human Platelet-Derived Growth Factor-BB (rhPDGF-BB): A Case Report. Istvan A Urban, Mustafa Tattan, Andrea Ravida, Muhammad Ha Saleh, Lorenzo Tavelli, Gustavo Avila-Ortiz. Int J Periodontics Restorative Dent. 2022 September/October;42(5):577-585.  <a href="https://pubmed.ncbi.nlm.nih.gov/35771596/">https://pubmed.ncbi.nlm.nih.gov/35771596/</a>	Clinical case with simultaneous vertical ridge augmentation and periodontal regeneration showing management of a challenging clinical situation with the Nobel Biocare N1 implant system.	Nobel Biocare N1™ Base Xeal™	Nobel Biocare N1™
 Clinical case	Management of bleeding during dental implant surgery using a novel implant with an abbreviated drilling protocol. A clinical report. Mikhail Babayan, Avinash S Bidra. J Prosthodont. 2023 Aug 26.  <a href="https://pubmed.ncbi.nlm.nih.gov/37634077/">https://pubmed.ncbi.nlm.nih.gov/37634077/</a>	Case report showing that the low invasiveness of osteotomy preparation with the Nobel Biocare N1 system offers an advantage when placing implants in patients with coagulopathies or fear of surgery.	Multi-unit Abutment Xeal™	Nobel Biocare N1™
 Clinical case	Transmucosal abutments in the esthetic zone: Surgical and prosthetic considerations. Iñaki Gamborena, Yoshihiro Sasaki, Markus B Blatz. J Esthet Restor Dent. 2023 Jan;35(1):148-157.  <a href="https://pubmed.ncbi.nlm.nih.gov/36628558/">https://pubmed.ncbi.nlm.nih.gov/36628558/</a>	Clinical case with immediate implant placement in the esthetic zone showing that Nobel Biocare N1 implants with a Nobel Biocare N1 base support excellent esthetics.	-	Nobel Biocare N1™
 Clinical case	Donker VJJ, Raghoobar GM, Vissink A, Meijer HJA. Digital Workflow for Immediate Implant Placement and Chairside Provisionalization in the Esthetic Zone. Case Rep Dent. 2022 Apr 1;2022:5114332.  <a href="https://pubmed.ncbi.nlm.nih.gov/35527725/">https://pubmed.ncbi.nlm.nih.gov/35527725/</a>	3 clinical cases with immediate implant placement and immediate provisionalization in the esthetic zone.	-	NobelActive® TiUltra™

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