

Statements from the Estepona Consensus Meeting on Peri-implantitis, February 2–4, 2012

Tomas Albrektsson, MD, PhD, ODhc, RCPsG;^{*†} Daniel Buser, DDS, DMD;[‡] Stephen T. Chen, MDSc, PhD;[§] David Cochran, DDS, PhD, Dr hc;[¶] Hugo DeBruyn, DDS, MSc, PhD;^{**} Torsten Jemt, DDS, PhD;^{††} Sreenivas Koka, DDS, PhD;^{‡‡} Myron Nevins, DDS;^{§§} Lars Sennerby, DDS, PhD;^{¶¶} Massimo Simion, MD, DDS;^{***} Thomas D. Taylor, DDS, MSD, FACP;^{†††} Ann Wennerberg, DDS, PhD^{‡‡‡}

STATEMENTS¹

- The great majority of well-documented oral implants show very good long-term clinical results.
- A limited amount of crestal bone loss (CBL) or marginal bone loss may be a biologic response to implant placement.
- CBL may occur for reasons other than infection.
- CBL may occur around implants and can have a long-term impact on the outcome of those implants.
- Some implants can demonstrate substantial bone loss, but a steady state may be reached and no further clinically significant bone loss observed.

- There is an adaptive change of the crestal bone level after placement and restoration.
- Peri-implantitis is an unsuitable term to describe all CBL.
- The term peri-implantitis is here defined as an infection with suppuration associated with clinically significant progressing CBL after the adaptive phase.
- In contrast, peri-implant mucositis is defined as inflammation of the peri-implant mucosa without discernibly progressing CBL.
- Bone remodeling including CBL is influenced by inflammation.
- Implant-, clinician-, and patient-related factors as well as foreign body reactions may contribute to CBL. Implant factors: material, surface properties, and design (e.g., ease of plaque removal); clinician factors: surgical and prosthodontic experience, skills, and ethics; patient factors: systemic disease and medication, oral disease (e.g., untreated or refractory periodontal disease, local infections), behavior (e.g., patient compliance with oral hygiene and maintenance, smoking), and site-related factors (e.g., bone volume and density, soft tissue quality); and foreign body reactions (e.g., corrosion by-products, excess cement in soft tissues).
- A radiograph does not give an absolutely accurate picture of the bone-implant contact or the crestal bone situation. However, the periapical radiograph is an important clinical tool to be used at implant placement, implant loading, and repeatedly thereafter.
- Radiographs taken longitudinally may assist the clinician to monitor changes in crestal bone levels.
- Peri-implant examinations that include bleeding on probing and probing depths do not by

^{*}Professor and Head, Department of Biomaterials, University of Gothenburg, Gothenburg, Sweden; [†]Senior Scientist, Department of Materials Science and Technology, Malmö University, Malmö, Sweden; [‡]Professor and Chair, Department of Oral Surgery and Stomatology, School of Dental Medicine, University of Berne, Berne, Switzerland; [§]Senior Fellow, Melbourne Dental School, University of Melbourne, Carlton, Australia; [¶]Professor and Chair, Department of Periodontics, University of Texas Health Science Center, San Antonio, TX, USA; ^{**}Professor and Chairman, Department of Periodontology and Oral Implantology, University of Ghent, Ghent, Belgium; ^{††}Professor, Department of Prosthetic Dentistry/Dental Material Science, Institute of Odontology, The Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden; ^{‡‡}Professor and Chair, Department of Dental Specialities, Mayo Clinic, Rochester, MN, USA; ^{§§}Associate Clinical Professor, Department of Oral Medicine, Infection, and Immunity, Division of Periodontology, Harvard School of Dental Medicine, Boston, MA, USA; ^{¶¶}Professor, Department of Oral and Maxillofacial Surgery, Institute of Odontology, The Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden; ^{***}Professor and Chairman, Department of Periodontology, University of Milan, Milan, Italy; ^{†††}Professor and Head, Department of Reconstructive Sciences, University of Connecticut, School of Dental Medicine, Hartford, CT, USA; ^{‡‡‡}Professor and Chair, Department of Prosthodontics, Faculty of Odontology, Malmö University, Malmö, Sweden

themselves function as indicators of CBL around oral implants.

- The presence of purulent exudate in combination with clinically significant progressing CBL necessitates therapeutic intervention.
- Established dental implant therapies used today are successful with high predictability. However, implant outcomes may be at risk due to a number of factors including patient behavior, clinician expertise, and the amount of follow-up care. The prevalence of implant success is calculated in general populations of patients that are treated and evaluated under specific and sometimes stringent conditions. These evaluations depend upon a large number of variables including patient follow-up and examination over long periods of time. For these reasons, the percentage of success in the populations may vary widely. In the case of individual patients, a comprehensive examination is required that allows evaluation of the risks for their specific

situation. Therefore, the outcome for the individual may be different from the outcomes calculated for large populations.

- When oral implants are placed and restored according to current established protocols, an implant success rate above 95% over 10 years has been reported in numerous recent studies. The incidence for peri-implantitis or implant failure is less than 5% under such conditions.
- In the presence of significant patient-related risk factors or suboptimal clinical performance, lower implant success rates may be encountered.
- Based upon the history and development of implant therapy, excellent clinical outcomes can be expected to continue.

REFERENCE

1. Albrektsson T, Buser D, Sennerby L. On crestal/marginal bone loss around dental implants. *Int J Prosthodont* 2012; 25:320–322.