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Glossary of Oral and Maxillofacial Implants

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Foreword

The preparation of the Glossary of Oral and Maxillofacial Implants represents a crucial step towards harmonizing the terminology employed worldwide by clinicians, researchers and academics who work in this field and establishing a solid basis for mutual understanding.

The International Team for Implantology (ITI) has no hesitation in endorsing this valuable work and congratulates its author, Prof. Dr. William R. Laney, his co-contributors and advisors on producing such an extensive, accurate and considered work.

The aim of the ITI is to promote and disseminate knowledge on all aspects of implant dentistry and related tissue regeneration. As it demonstrated with the ITI Treatment Guide series, the ITI is keen to support the development of practical tools for professionals in this field. As a work that lays the foundations for a shared vocabulary, the Glossary of Oral and Maxillofacial

Implants is sure to become an indispensable tool for every professional fascinated by the vast array of terminology in the field and who also has the desire to employ it accurately and meaningfully.

This volume does not aspire to the impossible task to cover all terms in this field. It has, however, selected around 2000 of the most commonly used terms from various areas of implant dentistry.

The ITI is proud to have been involved in the development of this volume and is happy to recommend it as a standard work from which every professional in the field can benefit.

Congratulations on a job well done.

Dieter Weingart
ITI President

Daniel Buser
Chairman,
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Preface

As the field of implant dentistry has grown internationally, so has the need for a common implant language. With new developments and technology has come an increasingly diverse and complex literature. For clinicians, educators, and researchers alike, it is time to bring universal consistency to the terminology of implant dentistry.

One component of the multimedia, multi-language series by the Quintessence Publishing Company, entitled Dynamics in Implant Dentistry, includes an illustrated glossary that provides a broadly based multidisciplinary introduction to scientific terminology pertinent to the field. From a thorough review of implant textbooks and peer-reviewed periodical literature, some 5000 terms were distilled for consideration. Approximately 2000 of these were selected for inclusion and defined by co-authors representing an interdisciplinary variety of implant-related interests, including surgery, radiology, hard and soft tissue biology, periodontics, prosthodontics, implant componentry, research methodology and statistics, biomechanics and ceramics.

Closely related to the expansion of implant clinical practice has been the competitive technical development and marketing activities by manufacturers of implant system components, instruments, and devices. While acknowledging that these products are essential to the expansion of implant dentistry, it is important to note that the intended aim of this glossary is to focus on collaborative science and art as the basis for implant therapy advancement and to minimize emphasis on commercial hardware technology and terminology.

The dedicated members of the Editorial Board who have compiled and written this first-edition represent the expertise of essential disciplines comprising the broad spectrum of implant dentistry. To the following contributors, I extend my heartfelt thanks and appreciation for their participation, cooperation, and especially their well-recognized expertise: Prof. Dr. Daniel Buser, Dr. Nina Broggini, Dr. Karl Dula, Prof. Dr. Erik Hjorting-Hansen, Prof. Dr. William Giannobile, Dr. Joni Cirelli, Prof. Dr. Lily Garcia, Dr. Roy Yanase, Prof. Dr. David Cochran, Dr. Ronald Jung and Prof. Dr. Thomas Taylor. In addition, Drs. Peter C. O'Brien



and Thomas G. Wilson, Jr. have contributed considerably to the glossary in support of the co-authors.

Without the profound interest and support of the International Team for Implantology, this glossary could not have progressed.

A work of this complexity and magnitude must involve the collaboration of capable support personnel. Ms. Ute Drewes has contributed her artistic skills to the creation of illuminative illustrations. The daily tasks of compiling and editing database input have been timely and extraordinarily accomplished by Ms. Elizabeth Floyd Davis (USA) and Ms. Anne Klebba, Quintessence Publishing, Berlin. Ms. Sandra Fielitz provided secretarial support in Quintessence Berlin and efficiently managed the laborious task of preparing the initial database from which the included terms were selected. The final review, coordination and editing of terms was superbly accomplished by Ms. Lisa Bywaters, Senior Editor, and her staff at Quintessence Publishing, Chicago. This publication was conceived and very capably managed by Mr. Alexander Ammann, Project Di-

rector of Quintessence Berlin. Mr. Bernd Burkart, head of the Quintessence Berlin production department, coordinated and directed all production activities. The dedication, perseverance, and cooperation of the entire Quintessence Publishing Company staff have been exemplary.

It is anticipated that the *Glossary of Oral and Maxillofacial Implants* will become a practical education and communications tool for those students and practitioners who have or will have an interest in implant dentistry. Nonetheless, this print resource should be considered a work in progress. New knowledge will continue to emerge and with it the need for additional terms, revision of those existing, and deletion of those that are redundant or obsolete.

William R. Laney, DMD, MS

A handwritten signature in black ink that reads "William R. Laney".



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B

Backscattered electron (BSE) imaging High-resolution imaging of a surface using electronics, similar to how a light microscope uses visible light. The advantages of BSE over light microscopy include greater magnification and much greater depth of field. This method is most commonly performed via application of accelerating voltages of 10 kV or more to the specimen while detecting high-energy electrons that backscatter quasi-elastically off the sample. For imaging of surface detail, the application of a lower-accelerating voltage results in less beam penetration, spread, and overall specimen damage.

Bacterial collagenase Any of various collagenases purified from a variety of microbes; they preferentially cleave collagen on the N-terminal side of glycine residues and occur in several classes of differing specificity. Bacterial collagenases are used in tissue disruption for cell harvesting.

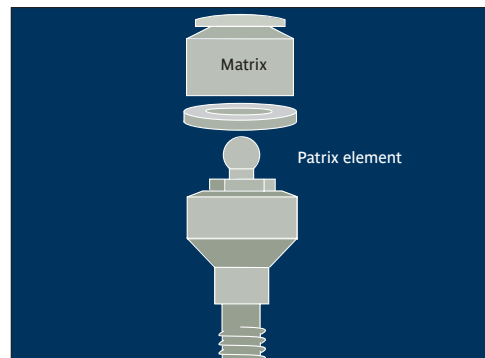
Bacterial leakage Colonization and release of bacteria at the interface of an oral implant abutment and implant.¹

Bacterium (pl: *bacteria*) Member of a group of ubiquitous, single-celled microorganisms that have a prokaryotic (primitive) cell type. Many of these are etiologic in diseases that affect all life forms, including humans and other animals. See also: *Actinobacillus actinomycetemcomitans*; *Fusobacterium nucleatum*.

BAHA Abbreviation for *Bone-anchored hearing aid*.

Balanced occlusion Existing or developed simultaneous harmonious occlusal contact of the teeth throughout the dental arch during mandibular centric and eccentric movements; especially important for removable complete dentures to achieve stability during function.^{2,3} See also: *Articulation*.

Ball attachment system Specific design of a mechanical attachment in which the patrix fits into the matrix in a ball-and-socket type of relation. Each element is incorporated into either the natural tooth as part of a restoration or as an abutment on the implant with the reciprocal element incorporated into the prosthesis. The patrix, or ball, can be made of plastic or metal alloy of various diameters and with varied amounts of resistance.⁴

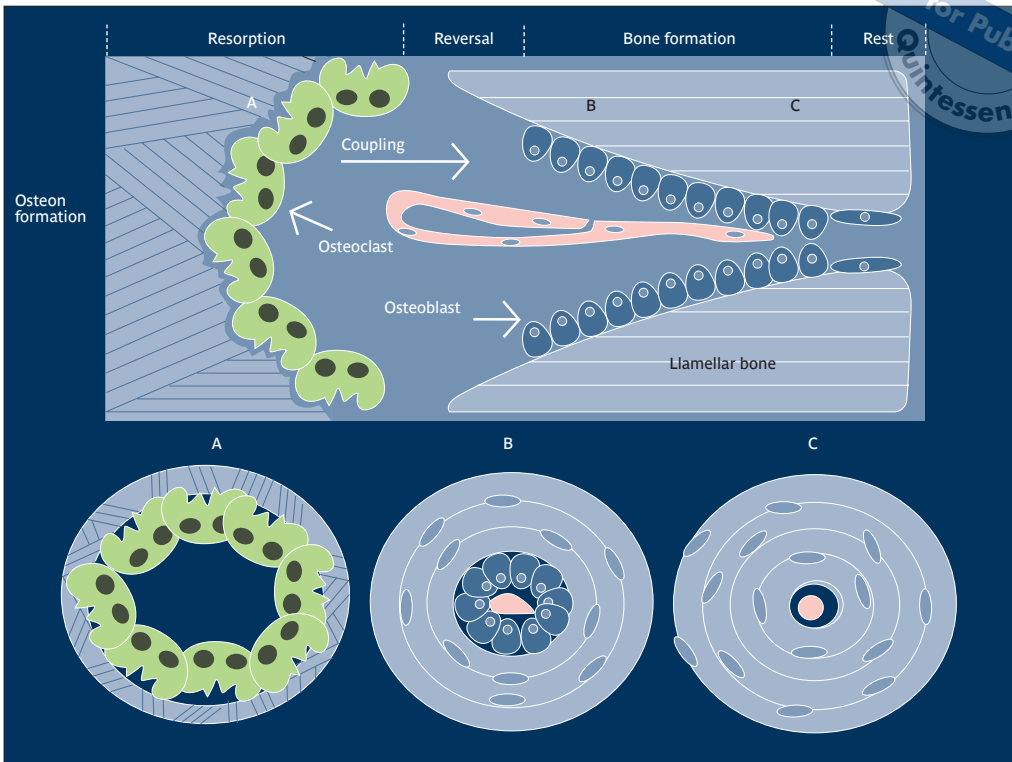


Ball attachment system.

Bar Round, half-round, or elliptically shaped metallic segment with greater length than width. A bar is commonly used to connect components of a prosthesis such as abutments, crowns, or parts of a removable partial



B

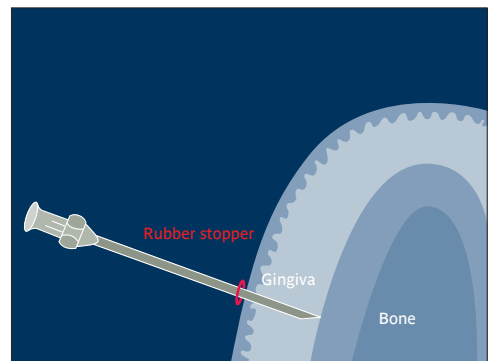


Bone remodeling.
(Redrawn from Buser et al³⁶ with permission.)

Bone remodeling unit (BRU) Group of osteoblasts and osteoclasts involved in the process of bone remodeling. See also: *Bone remodeling*.

Bone scaffold Process of bone formation that occurs through the utilization of a scaffolding matrix that may deliver cells, genes, or proteins. The scaffold may be osteoinductive or osteoconductive and serves to maintain the architecture of the anatomic defect.

Bone sounding Simple preoperative procedure performed under local anesthesia using a fine needle with a rubber stopper. The needle is used to penetrate soft tissues to assess the form and volume of the existing alveolar ridge.



Bone sounding.

Bone spreader See: *Alveolar ridge augmentation, Split-ridge technique for; Osteotome*.

Bone stimulation Initiation of bone formation around endosseous implants by pulsed electromagnetic fields. Must be performed within very early stages of healing, ie, during the first and second weeks; after 2 weeks, no effect can be measured. This principle has only been used in animal studies.³⁷

Bone strength Resistance of bone to fracture. Bone strength depends upon bone structure. The more dense the trabecular pattern, the stronger is the bone. This compressive strength of the vertebral bodies decreases with age. See also: *Osteoporosis*.

Bone structural unit (BSU) Represents the end result of a remodeling cycle of mature bone. In cortical bone, it constitutes a Haversian system after a cortical remodeling unit has taken place. In cancellous bone, it is a wall or packet. See also: *Bone remodeling unit (BRU)*; *Basic multicellular unit (BMU)*.

Bone substitute Nonviable biomaterial for reconstruction of bone, producing only a scaffold for formation of new bone. Supports the inherent potential for bone regeneration. It may be resorbable or remain in an unchanged version at the site of implantation. It also may assist in preservation of contour of an osseous reconstruction. See also: *Osteoconduction*.

Bone trap Device connected to the surgical suction to collect fine bone slurry within the surgical field during the drilling of bone or harvest of a bone block for alveolar ridge augmentation or maxillary sinus floor elevation. Collected bone can be added to the particulate graft.

Bone trephine Hollow, cylindrical cutting bur of various diameters used to harvest cylindrical bone blocks.



Bone trephine. (Courtesy of D. Buser)

Bony defect Alteration in the morphologic features of bone.



Bony defect. (Reprinted from Rateitschack et al³⁸ with permission.)

Bovine-derived anorganic bone matrix Particular anorganic bovine bone substitute with a calcium-deficient carbonate hydroxyapatite having a crystal size of approximately 10 nm. All proteins are removed from the bovine xenograft via various chemical and physical processes. Its porous structure, like normal bone, is osteoconductive but resistant to resorption, although osteoclasts are identified in lacunae on the surfaces. The surface area is very large, and the modulus of elasticity is similar to that of normal bone.

Bovine hydroxyapatite material See: *Bovine-derived anorganic bone matrix*.