Precautions for using zirconia implant abutments

The introduction of zirconia to the dental field opened the design and application limits of all-ceramic restorations. Thanks to its high strength and fracture toughness, long-span posterior restorations are now possible with high accuracy and success rate. Additionally, its white color allows better reproduction of the required color especially in the anterior zone. These properties make zirconia an interesting material for the construction of implant abutments and superstructures.

The fabrication of zirconia implant abutments utilizes state-of-the-art CAD/CAM technology, which uses patients’ models for the production of an individual customized abutment.

Moreover, the CAD phase allows accurate positioning and angulation of the zirconia abutment ensuring obtaining the best esthetics. The fabrication of zirconia implant abutments is complicated by the problem of providing adequate fixation to the implant body. For titanium abutments, the fixation screw exerts direct pressure on the abutment, which in turn is provided with external or internal hex to provide connection with the implant body. On the other hand, zirconia is a brittle material and friction between the fixation screw and the internal surface of the ceramic abutment could produce high internal stresses that could lead to unexpected fracture. This problem is solved by insertion of a friction fit internal metallic nut (Procera zirconia abutment for Straumann implants), which is equipped with an external hex for establishment of proper contact with the implant body (Fig. 1).

Additionally, the fixation screw interlocks with the metallic nut during tightening procedure (Fig. 2). This technology employs the vibration of piezoelectric ceramics to cut bone but not soft tissues. Despite the fact that they are based on similar physical phenomena, Piezosurgery is a patented ultrasonic technology specifically engineered for bone surgery. Piezosurgery was developed in the late 1990s by Tomaso Vercellotti, an inventor of the revolutionary technology.

What is Piezosurgery® and where does it originate from?

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Interview: Piezosurgery’s Giuseppe Vercellotti

Giuseppe Vercellotti, co-owner and chief operating officer of Piezosurgery Incorporated.

What sets Piezosurgery devices apart from others?

Ultrasound technology specifically engineered for bone surgery. Piezosurgery was developed in the late 1990s by Tomaso Vercellotti, an inventor of the revolutionary technology.

AAIP to host 28th annual meeting

The American Academy of Implant Prosthodontics will hold its 28th annual meeting on Nov. 6 at the Marriott at McDowell Mountains, Scottsdale, Ariz., in association with the Dental Implant Clinical Research Group and Midwestern University College of Dental Medicine.

The theme of the meeting will be “Implant Update — 2010,” and feature outstanding dental clinicians and a well-known financial analyst.

Featured speakers at the meeting are Drs. Robert J. Braun, Clement Guartolli, Leon I. Linkow, Harold F. Morris, Peter A. Neff and Azfar Siddiqui, and G. Kent Mangelson.

Linkow, considered by many of his colleagues as the “Father of Oral Implantology,” will speak on “Five Decades of Dental Implants.” In 1992, New York University College of Dentistry created the first and only endowed chair in implantology in perpetuity with Linkow as the recipient.

Neff, formerly professor and chairperson of the Department of Occlusion at Georgetown University School of Dentistry and author of the popular textbook “TMJ Occlusion and Function,” will speak on “Occlusal Considerations in Implant Prosthodontics.”

Morris, co-director of the Dental Implant Clinical Research Group and clinical professor of restorative dentistry at Temple University School of Dentistry in Philadelphia will speak on “Recent Advances in Implant Research.”

Braun, professor of oral and maxillofacial pathology, medicine and surgery at Temple University School of Dentistry in Philadelphia, will speak on “Systemic Implications of Oral Disease and its Relation to Oral Implantology.”

Siddiqui, associate professor of dentistry at Midwestern University College of Dental Medicine, will speak on “Lateral Bone Condensing and Expansion for Dental Implant Placement.”

Guarolli, past president of the American Academy of Implant Prosthodontics, will discuss “New Implants for Old Fixed Prostheses.”

Mangelson, CFP, an expert in the area of lawsuit protection and prevention, will speak on “Advanced Lawsuit Protection and Tax Reduction Strategies for Dentists.”

By Moustafa N. Aboushelib, DDS, MSc, PhD, and Rien van Paridon, DDS, PhD

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