Success in treatment with dental implants

Success in treatment with dental implants is determined not only by osseointegration, but also by the stability of the soft tissue around the restoration, giving it a natural appearance. The stability of this tissue is important for preventing periimplant bone resorption. The presence of a healthy periimplant mucosal interface has been associated with long-term implant success and protection against marginal bone loss. The soft tissue around implants plays a role in the protection and maintenance of the periimplant bone; in the crestal zone, it prevents bacterial invasion through different mechanisms in each of their components, provides resistance to frictional forces and limits the entry of foreign bodies.

The biological seal around the oral implant consists of two main layers: the epithelial junction and the underlying adhesion of the connective tissue. The main function of the epithelial junction is to form a physical barrier. The connective tissue function is much more complex, serving for defense, support and nutrition. The connective tissue is organized around the pillar in circular fibers, achieving stabilization of the pink tissue and helping to reduce bone resorption.

The connective tissue is of crucial importance in stabilizing epithelial apical migration and in preventing bone resorption. The discrepancy between the diameter of the implant and the abutment can establish a point at which circular connective fibers can be retained. The connective tissue surrounding the dental implant is in direct contact with the surface of the titanium dioxide and contains a dense network of collagen fibers that originate in the periosteum of the alveolar bone crest and extend to the mucosal margin.

The quality of this mucosa is determined in part by the prosthetic accessory materials in contact with it and the topography of the implant. The development of new dental implants, prosthetic abutments and crowns offers novel surfaces and designs capable of improving soft-tissue insertion, with a view to avoiding microbial contamination of vital bone.

The biologically oriented preparation technique (BOPT) concept has been described as affording an adaptive profile of the soft tissue, invading the sulcus in a controlled manner. With this technique, the collagen fiber distribution appears to increase mucosal fixation around the teeth (and implants) and increase soft-tissue stability over the long term, with the aim of maintaining periimplant bone protection. The convergent conical portion of the implant–abutment assembly, together with the BOPT design crowns, offers positive outcomes, such as the prevention of bone remodeling and preservation of the alveolar ridge, adequate peri-implant tissue stability, and improved periimplant function and esthetics, without the need for more invasive and costly bone or soft-tissue regeneration techniques.

New histological studies and larger samples are recommended to evaluate histologically and histomorphometrically the disposition of connective tissue fibers around implants and, thereby, demonstrate that adequate tissue stability and coronal migration of periimplant soft tissue are necessary for a successful outcome in implant treatment.

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