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Editorial

Ligaplants: The Rising Star of Dental Implantology

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The first treatment of choice for restoring prosthetics has always been dental implants. The renewal of periodontal ligament fibers and their implantation on the root surface might lead to new attachment. The bone loss brought on by an increased occlusal load or an infection has been blamed for implant failure. After implant insertion, there is a recorded bone loss of roughly 0.2 mm annually. Therefore, the ultimate objective has changed from osseointegration alone to periodontium preservation and halting the spread of disease in the surrounding hard and soft tissue. We all know that the lack of the periodontal ligament, which not only aids in the anchorage but also supports bone development around the native tooth, is what distinguishes implants from natural teeth. It can spontaneously regenerate, restoring the innervation and strength of the tissue. By developing periodontio-integrated implants known as "Ligaplants," the rapidly developing field of regenerative medicine has created a more dynamic role for ankylosed implants. To restore missing teeth, improve biological performance, and ultimately lengthen the life of the prosthesis, the notion of fresh attachment in periodontal ligament regeneration is being applied to the surface of dental implants.

Ligaplants are a novel therapeutic approach that is now undergoing in vitro and in vivo clinical trials. Additionally, they have produced positive results in animal trials, while in vivo results have not yet been correlated. To create an "implant supported by the periodontium" that can maintain form, function, and possible proprioceptive responses identical to a real tooth, numerous successful studies have been carried out. These compelling arguments suggest that such an implant could be used in clinical settings in the future, revolutionizing implant dentistry and winning over patients.

The characteristics of the ligaplants include their shock absorbing function thus allowing the tooth to move around in the socket. Moreover, it offers proprioception. The PDL interacts with the neighboring bone in a significant way as the periosteum on the side of the bone that faces the root. It contains essential cells like undifferentiated mesenchymal stem cells, which are most crucial, as well as osteoclasts, osteoblasts, fibroblasts, cementoblasts and cementoclasts. Each of these cells plays a vital role in the dynamic interaction between the bone and the tooth. Among ligaplants' benefits are: that it resolves issues like gingival recession and tooth-missing bone abnormalities. Although the initial fitting is loose to save the PDL cell cushion, Ligaplants become securely incorporated without interlocking and direct bone contact. This mimics the natural insertion of natural tooth roots in the alveolar process. The shortcomings associated with the ligaplants are: care should be taken when cultivating ligaplants i.e. the temperature, the cells used for culturing, how long it takes, and other factors. The ligaplants may not succeed if a problem arises during the cultivating process because additional non-periodontal cells may form. In addition, this implant is expensive because there aren't enough facilities. Unpredictable circumstances may influence the host's ability to accept the implant or the growth of PDL in the socket, which could lead to implant failure. Prolonged cell culture might encourage the development of non-PDL cell types.

When dental implants are inserted alongside cultivated periodontal ligament cells, it is possible for tissue attachment resembling periodontal ligaments to grow around the implants. Implant dentistry may take on new meaning if cultured periodontal ligament cells are applied to the implant's surface. Due to the implant's loose fit, ligaplant insertion is quite simple. However, the patient

might not need to endure any additional discomfort from grafting with ligaplants. Ligaplant will only have a successful future through research findings and testing, as with all emergent technologies. The current focus of ligaplant research is on extending this first observation to further explore the significance of this form of healing around titanium-surfaced dental implants and to determine whether this phenomenon also occurs around implants with different surfaces. An only human study with long-term follow-up could confirm the viability and effectiveness of ligaplants [1-5].

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