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Commentary

Electrochemical Nano-pattern Formation in Dental Implants to Boost Osseointegration

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ABOUT THE STUDY

A growing number of patients are selecting dental implants in recent years to correct dentition defects due to improved chewing performance and orofacial aesthetics. Dental implants are frequently used to replace missing natural teeth since they have been shown to be long-lastingly successful and to improve patient quality of life. Some patients, however, experience both physical and emotional distress, because to the functional restriction brought on by the healing process following implant implantation [1]. The resorption of alveolar bone is one of the major alterations in bone tissues that might result from dental extraction. The dental papilla may also experience multiple tooth extractions. Periodontal tissue might also contribute to the loss of the periodontal ligament following extraction.

As a result, implant restorations are necessary to protect and maintain the bone's structure. Many methods and materials are now being described for implants to prevent bone resorption. The approach that is advised is the immediate installation of dental implants [2]. The key component of dental implants' long-term success is osseointegration. It is determined by the Bone-to-Implant Contact (BIC) value under an optical microscope and is defined as the direct structural and functional connection between the implant and the bone.

The biocompatibility of the implant surface is a key component in osseointegration. More bone is deposited on surfaces with adequate roughness and high hydrophilicity than on other surfaces. Osseointegration is supported by alternative metrics in histologic sections such as resonance frequency measurement, torque reduction, and direct mineralized bone-implant connection. Direct bone-implant interaction is crucial for the high level of clinical success [3]. The rate of bone adaptation to the implant surface was accelerated by the surface microstructure. New implant surface techniques are therefore essential to creating bone to implant adaptation and assessing the clinical protocol.

Osseotite, TiUnite, SLA, and SLActive are the four types of dental implants that were employed in the clinical trials. TiUnite is a new-generation surface for dental implants and is one of such implants. Oral implants made of titanium (Ti) can help patients who are completely edentulous as well as those who are only partially missing teeth. Alternative materials for hard tissues are made from it and its alloys. Although these materials are regarded as suitable substrates, conductivity issues still exist. Techniques for modification, such as alkali-heat treatment, sol-gel coating, H_2O_2 oxidation, and anodization, are being developed to boost the bioinertness of Ti-based surfaces. With reference to an easy, repeatable, and effective method for creating microstructure on metal surfaces, anodization is frequently used with titanium [4].

On the subject of the long-term effectiveness of dental implants, this process can be hastened. Bone and dental implants still don't get along, though. Because of their high biocompatibility and nanotopographical surface, TiO_2 Nanotube (NT) arrays are vertically aligned and have a wide range of applications. Additionally, it enhanced proliferation, vasodilation, and differentiation. However, due to inadequate connection and unforeseen effects on the local tissue, it has only been used a very little amount [5]. By contrasting the ENF approach with the traditional MA and SLA procedures in the dental implant areas, our study was able to determine the efficacy of the new surface treatment method. According to our research, in the rabbit and beagle models, the ENF outperformed the MA in terms of BV and ISQ outcomes.

CONCLUSION

As a result, it is thought to be beneficial for bone growth and high stability. The ENF and SLA models, however, did not differ. Because the manufacturing process is simpler and the preclinical findings are on par with or better than those of the traditional surface treatment technology, the ENF is thought to be replacement. However, in order to better understand the

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physical surface, more information must be gathered through research and clinical studies.

REFERENCES

1. Aidos H, Diogo P, Santos JM. Root resorption classifications: A narrative review and a clinical aid proposal for routine assessment. Eur Endod J. 2018;3(3):134.
2. Consolaro A. O conceito de reabsorcoes dentarias ou As reabsorcoes dentarias nao sao multifatoriais, nem complexas, controvertidas ou polemicas. Dental Press J Orthod. 2011;16:19-24.
3. Darcey J, Qualtrough A. Resorption: part 1. Pathology, classification and aetiology. Br Dent J. 2013;214(9):439-451.
4. Al-Haddad A, Che Ab Aziz ZA. Bio-ceramic-based root canal sealers: A review. Int J Biomater.2016;1-10.
5. Raghavendra SS, Jadhav GR, Gathani KM, Kotadia P. Bio-ceramics in endodontics: A review. J Istanbul Univ Fac Dent. 2017;51(3):S128.