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Root analogue implants: Next step in dental implants evolution

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Since the concept of osseointegration was introduced by Brånemark et al., modern dental implants have been considered a safe and reliable option for replacing missing teeth. Even though implant dentistry is constantly evolving towards simplification of clinical procedures and shortened treatment times, with such developments as immediate implant placement. Recently, a novel approach for immediate implant placement design has been proposed to replace a (soon to be) missing tooth, in contrast to traditional immediate implant approaches using conventional, threaded, cylindrical or tapered implants; this technique provides a preemptively individually made root analogue implant (RAI). These customized dental implants not only preserve more hard and soft tissues but also reduce rehabilitation time and prevent the second surgical intervention, leading to overall cost reduction and an improvement in the patients' psychological outlook for dental treatment. All that in mind, dental implants closely imitating natural root geometries are difficult to fabricate with conventional methods of computer numerical control machining because of the existence of irregularly curved surfaces and complex 3-dimensional (3D) geometry, however with the rapid development of implant materials and computer-aided design/computer-aided manufacturing (CAD/CAM) technology and also improvement of additive manufacturing (AM), also known as 3D printing, researchers are capable of directly producing almost any desired geometry without an expensive mold and tooling now. With the combined use of cone beam CT 3D data and high-end CAD/CAM technology it was possible to manufacture a RAI with sufficient precision. The custom-made implant resulted by combination usage of CBCT and CAD/CAM showed almost perfect functional and aesthetic integration. The possibility of fabricating custom-made, root analogue implants opens new interesting perspectives for immediate placement of dental implants. The aim of this present study was to review the different means of fabricating root analogue implants and their success rate.

Biography

Ehsan Iranmanesh is 5th year student in Kerman Dental University in Kerman, Iran regarding research aspect he's field has been mainly around implantology and also TMJ disorders.

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