

# Technology's Role in Dental Implant Procedure

Julia Cara\*

Department of Periodontology, School of Graduate Dentistry, Haifa, Israel

## DESCRIPTION

The field of dentistry has seen remarkable progress in recent years, with continuous advancements in dental implant technology being one of the most significant breakthroughs. Dental implants are a cutting-edge treatment for those who are missing teeth, offering a durable and natural-looking replacement option. As researchers and dental professionals strive to enhance the efficacy and patient experience of dental implant procedures, several cutting-edge technologies have emerged, revolutionizing the way implants are placed and integrated into the oral cavity.

One of the most notable advancements in dental implant technology is the utilization of Cone Beam Computed Tomography (CBCT) for treatment planning. CBCT is a specialized form of x-ray imaging that generates three-dimensional, high-definition images of the teeth, jawbone, and surrounding structures. This technology provides dentists with a comprehensive view of the patient's oral anatomy, enabling them to identify potential challenges and plan the implant procedure with unmatched precision. By visualizing the exact location, density, and quality of the bone, dentists can choose the most suitable implant type and size, minimizing the risk of complications and ensuring optimal outcomes.

Moreover, computer-guided implant surgery has revolutionized the placement process. Through the amalgamation of CBCT images and sophisticated computer software, dentists can now virtually simulate the entire procedure before touching the patient's mouth. This allows for meticulous preoperative planning, ensuring the correct positioning of the implant for optimal aesthetics and function. Computer-guided implant surgery reduces surgical time, enhances accuracy, and minimizes post-operative discomfort for patients.

In recent years, researchers and manufacturers have also made significant strides in implant materials. Titanium has been the traditional material of choice due to its biocompatibility and ability to integrate with bone (osseointegration). However, newer materials such as zirconia have gained attention for their excellent

biocompatibility and tooth-like aesthetics. Zirconia implants are especially popular for patients with thin or translucent gum tissues, as they eliminate the risk of the dark shadow sometimes seen around the gum line with traditional titanium implants. Additionally, zirconia implants are resistant to corrosion and plaque accumulation, contributing to improved long-term success rates.

The surface of dental implants has also undergone improvements to expedite the osseointegration process. Advancements such as nanostructured and micro-roughened surfaces have been shown to promote faster bone healing and integration, reducing the overall healing time required for the implant to fully integrate with the jawbone. Additionally, these surface modifications enhance the stability and longevity of the implant, providing a more robust foundation for the final restoration.

In the realm of restorative dentistry, digital technologies have transformed the fabrication of implant-supported crowns and bridges. Computer-Aided Design (CAD) and Computer-Aided Manufacturing (CAM) systems enable dentists to design and fabricate highly precise and customized restorations in-house or through a dental laboratory. This means that patients can receive their permanent prosthetics in a shorter time frame, eliminating the need for multiple visits and temporary restorations.

Furthermore, the rise of 3D printing technology has also impacted the dental implant field. Dental laboratories can now use 3D printing to create accurate surgical guides based on CBCT scans. These guides aid dentists during implant placement, ensuring unparalleled accuracy and efficiency. Moreover, 3D printing has the potential to produce patient-specific implants tailored to unique anatomical features, further enhancing treatment outcomes.

Researchers are continually exploring novel biomaterials that can accelerate bone regeneration and promote even faster osseointegration. Additionally, the integration of artificial intelligence and robotics in implant procedures may lead to further advancements in surgical precision and patient care.

**Correspondence to:** Julia Cara, Department of Periodontology, School of Graduate Dentistry, Haifa, Israel, E-mail: juliaca@gmail.com

**Received:** 30-Jun-2023, Manuscript No. DCR-23-22550; **Editor assigned:** 03-Jul-2023, Pre QC No. DCR-23-22550 (PQ); **Reviewed:** 17-Jul-2023, QC No DCR-23-22550; **Revised:** 24-Jul-2023, Manuscript No. DCR-23-22550(R); **Published:** 31-Jul-2023, 10.35248/2161-1122.23.13.646

**Citation:** Cara J (2023) Technology's Role in Dental Implant Procedure. J Dentistry. 13:646.

**Copyright:** © 2023 Cara J. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Advancements in dental implant technology have ushered in a new era of possibilities for patients with missing teeth. From improved imaging and treatment planning using CBCT to computer-guided implant surgery and innovative biomaterials, these developments have transformed the field of implant dentistry.

With ongoing research and development, we can expect even more exciting innovations in the years to come, further improving the success rates, aesthetics, and overall patient experience of dental implant treatments.