Dental Implants and Materials Used

Rebecca Johnson*

Editorial Office, Journal of Dental Research and Practice, Belgium

Corresponding Author*

Rebecca Johnson
Editorial Office
Journal of Dental Research and Practice, Belgium
E-mail: dentistry@emedscholar.com

Received: 03-Jan-2022, Manuscript No. jdrp-22-60413; **Editor assigned:** 05-Jan-2022, PreQC No. jdrp-22-60413 (PQ); **Reviewed:** 15-Jan-2022, QC No. jdrp-22-60413 (Q); **Revised:** 15-Jan-2022, Manuscript No. jdrp-22- 60413 (R); **Published:** 25-Jan-2022, DOI: 10.4172/jdrp.22.4(1).003

Letter to Editor

A dental implant is a medical device that is used to restore the function and appearance of a missing tooth or teeth by providing direct bone support for a prosthetic replacement. The clinical success and prognosis of implant therapy are influenced by the implant's microstructure, surface composition and features, as well as design variables. Biocompatible implant materials with appropriate toughness, strength, corrosion, wear, and fracture resistance are preferable. The implant's design principles must be compatible with the material's physical properties. Materials used to make dental implants are classified based on their chemical composition or the biological responses they cause when inserted [1]. Dental implants can be produced from a variety of chemicals such as metals, ceramics or polymers.

Titanium

Titanium is the "gold standard" material for the fabrication of endosseous dental implants because of its favourable long-term clinical survival rates.
There are six distinct types of titanium available as implant biomaterials amongst which, there are four grades of Commercially Pure Titanium (CpTi) and two Titanium (Ti) alloys. The advantages of using Titanium as a dental implant are high degree of biocompatibility, strength and corrosion resistance.
There have recently been some worries that titanium may cause an undesirable host reaction; nevertheless, there is little data in the literature, and preliminary conclusions are based solely on case studies and isolated clinical reports [2]. Metal ions are released from implants after skin or mucosal contact, forming complexes with native proteins and acting as allergens, producing hypersensitive reactions [3].
Urticaria, pruritus of the skin or mucosa, atopic dermatitis, delayed fracture healing and discomfort, necrosis, and weakening of orthopaedic implants have all been reported in the medical literature as symptoms of titanium allergy. Different types of allergy to titanium have also been observed, particularly in sensitive persons, including non-specific immune suppression or overaggressive immunological responses. Titanium hypersensitivity has been characterised in the dental literature as face ecz-ema, dermatitis, rashes, non-keratinized oedematous hyperplastic gingiva, and fast implant exfoliation that could not be related to infection, poor healing, or overload. It's worth mentioning, however, that the clinical significance of these discoveries in dentistry is yet unknown [4].

Ceramics

Because of its inert nature, high strength, and physical qualities such as low thermal and electrical conductivity, ceramics were employed for surgical implant devices. The usage of ceramics has been limited due to features such as poor ductility and brittleness [5]. When compared to inert ceramic and metallic surfaces, bioactive ceramics have been demonstrated to release calcium phosphate ions surrounding the implants, resulting in improved bone apposition.

Ceramics, particularly yttrium-stabilized tetragonal polycrystalline zirconia (Y-TZP), have increased mechanical characteristics, making them suitable substrates for dental implant production [6,7]. Yttria stabilised tetragonal zirconia polycrystalline (Y-TZP) materials outperform conventional dental ceramics in terms of corrosion and wear resistance, as well as flexural strength (800 MPa to 1000 MPa).

Only the two most widely utilised implants have been reviewed in this work. Apart from these, several other materials, such as cobalt-chromium molybdenum alloys, stainless steel, polymers, carbon and its compounds, and so on, have been employed as dental implants.

Implants are becoming increasingly popular among patients, and they are commonly viewed as a first-line therapeutic choice. Implants have surpassed other treatment techniques in the previous decade and have entered the mainstream of dental practice.

References

1. Osman, R.B. and Swain, M.V. "A critical review of dental implant materials with an emphasis on titanium versus zirconia." Materials 8.3 (2015): 932-958.
2. Smith, D.C. "Dental implants: Materials and design considerations." Int J Prosthodont 6.2 (1993): 106-117.
3. Parr, G.R., et al. "Titanium: The mystery metal of implant dentistry. Dental materials aspects." J Prosthet Dent 54.3 (1985): 410-414.
4. Sykaras, N., et al. "Implant materials, designs, and surface topographies: Their effect on osseointegration. A literature review." Int J Oral Maxillofac Implants 15.5 (2000); 675-690.
5. Olmedo, D.G., et al. "Reactive lesions of peri-implant mucosa associated with titanium dental implants: A report of 2 cases." Int J Oral Maxillofac Surg 39.5 (2010): 503-507.
6. Hallab, N., et al. "Metal sensitivity in patients with orthopaedic implants." J Bone Jt Surg 83.3 (2001): 428.
7. Saini, M., et al. "Implant biomaterials: A comprehensive review." World J Clin Cases: WJCC, 3.1 (2015): 52.