Journal of Medical Implants & Surgery

Kumaravel, J Med Imp Surg 2022, 7:2

Short Communication Open Access

Success Rate of Medical Implants: Contemporary Research Findings

TS Kumaravel*

Department of GLR Laboratories (Europe) Pvt Ltd, Sharnbrook, MK44 1LZ, Chennai, 600068, India

Medical implants are the artificial tissues or organs that are surgically placed in the human body to cure certain medical conditions. In certain cases these implants are used to replace the missing or damaged body part which either supports or enhances the functioning of the biological structure. These materials are made up of either metal, polymer or ceramic that may or may not contain electronic device such as artificial pacemaker [1].

Implantation of medical devices or artificial tissues in the human body can have varied degree of success. After several days of implantation, the immune system of the body reacts to the device or the artificial valve which may lead to complications. This, in addition to the already challenged system can lead to several deleterious effects on body physiology. The body's natural defense system can thwart state of the art medical device implants and such surgeries can be failure. This sort of rejection responses were studied in experimental animal models such as mice. Clinical research on medical implants has led to development of artificial tissues that can fully resist the body defense response to the foreign objects [2]. This material was later used for coating different implants such as heart valves and prosthesis. This can be extended to several other types of implants for incorporation into the human body for achieving full metabolic or physiological functionality.

With increasing incidence of chronic degenerative diseases and several organs becoming dysfunctional or affected, the demand for functional medical implants is growing at a fast pace throughout world. The global medical implant market is estimated to increase substantially up to nearly two hundred billion dollars with annual compound growth rate of 8% by the year 2023 [3]. Globally, there is increase in the number of orthopedic patients and the patients with coronary heart diseases. The possibility of medical implants for the treatment of these diseases is driving the growth of medical implant industry. Increasing number of the dental cases is also prompting the dental implants production and usage for medical or even cosmetic purpose. Implant market is getting major boost from increased lifespan and higher percentage of geriatric population, rapid growth of the healthcare industry and the technological advancement and higher production of the medical implants.

Patients infected with HIV or other viral diseases required additional dental care in addition to standard treatment regimen and could potentially require dental implants. In general, oral health of virus infected patients is of great concern, particularly in the scenario of antiretroviral therapy mediated increased life expectancy. Highly active non-retroviral therapy including nucleoside reverse transcription inhibitors, non- nucleoside reverse transcription inhibitors, protease inhibitors, integrate strand transfer inhibitors can affect the oral health condition. In one of the studies it was found that there was a higher failure rate of 10 percent in AIDS patients whereas the acceptable failure rate is a maximum of seven percent. In such cases the root formed implants is more valuable alternative to fixed and removable prosthetics. The failure was mainly associated with anterior arch and mandibular posterior arch.

Generally, in dental prosthesis the revision surgeries are far more difficult to perform and has low success rate with potential damage to surrounding tissues. The laser-induced calcium phosphate coating yielded desirable properties including cell adhesion, differentiation, and proliferation and could prevent biodegradation. Replacement of the missing or damaged teeth has become much more common and dental implants are often the remedy. In dental implants the degree of immobility and pri-implant radiolucency are considered as the major evaluation parameters for the rate of success [4]. However, recently the width of the gingiva and other medical conditions including smoking and implant width are taken into consideration in addition to the genetic and immunological markers.

Recently, researchers developed new peptide that can be used as a coating that dramatically improves the success rate of the devices. Generally, the surgically implanted devices can have high rate of failure with almost 40% of the hip implants being unsuccessful necessitating repeated hospital visits and follow-up surgeries. This coating fundamentally prevents the development of the biofilms that gets created upon implantation leading to higher infection rate. Therefore, the medical implants are coated with antibacterial material [5]. On certain occasions the silver nanoparticle coating is applied and their concentration is optimized such that there are no toxic effects.

References

1. Karthik K, Sivaraj S, Thangaswamy V (2013) Evaluation of implant success: A review of past and present concepts. J Pharm Bioallied Sci 5: 117-119.
2. Romanos GE (2019) Implant Therapy: Clinical Approaches and Evidence of Success. Impl Denti 28: 522.
3. Narayan R (2012) Fundamentals of medical implant materials. ASM handbook 23: 1-16.
4. Smith DE, Zarb GA (1989) Criteria for success of osseointegrated endosseous implants. J Prosthet Dent 62:567-572.
5. McKinney R, Koth DL, St DE, k DE (1984) Clinical standards for dental implants. Clinical Dentistry 21: 1-11.

***Corresponding author:** TS Kumaravel, Department of GLR Laboratories (Europe) Pvt Ltd, Sharnbrook, MK44 1LZ, Chennai, 600068, India, E-mail: kumaravelts@glrlabs.com

Received: 02-Mar-2022, Manuscript No. jmis-22-56807; **Editor assigned:** 04-Mar-2022, PreQC No. jmis-22-56807 (PQ); **Reviewed:** 21-Mar-2022, QC No. jmis-22-56807; **Revised:** 25-Mar-2022, Manuscript No. jmis-22-56807 (R); **Published:** 31-Mar-2022, DOI: 10.4172/jmis.1000131

Citation: Kumaravel TS (2022) Success Rate of Medical Implants: Contemporary Research Findings. J Med Imp Surg 7: 131.