Design, manufacturing, pre-clinical/clinical validation of novel metallic/ ceramic dental implants

India presently is in a state of major demographic shift towards the elderly population. Over one-half of the population has experienced tooth loss. Edentulism or the toothlessness has an indirect effect on oral health-related to quality of life. At present, more than 75 % of dental implants are imported and this attributes to the significant cost to the patients. Also, a large cross-section of Indians, living in rural areas, do not afford the imported dental implants. India is the fourth largest market for dental implants with a market estimation of $120 million, which is expected to grow to $330 million, by 2030. In order to address the challenges of toothlessness in an affordable way, indigenous dental implants with improved clinical limiting performance characteristics are needed. The current product design concept for metallic implant is 3-piece design system and for ceramic implant, it is a single piece implant system and is expected to support and improve both soft tissue and hard tissue attachment and the primary stability in poorly dense bones for immediate implantation. Aesthetically ceramic implants are better suited over metallic implants because of their white color. Good primary stability can work even in cases of low bone density and thus facilitate the osseointegration of the implant under physiological load. Therefore, the design features in implants are implemented in such a manner, that the masticatory forces can be transferred without any stress peaks to the surrounding bone bed in form of consistent physiological pressure in order to support the bone healing in the oral cavity. We strongly believe that the newly designed dental implants, once manufactured and marketed to the Government hospitals and primary healthcare centers in rural India, will contribute to high quality oral healthcare of patients, in particular the elderly, at an affordable cost.