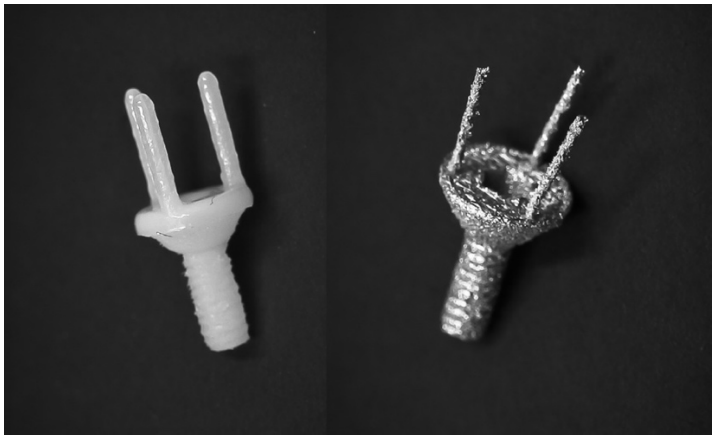
ADDITIVE MANUFACTURING A NOVEL DENTAL IMPLANT ABUTMENT

L.Kalman

Assistant Professor, Restorative Dentistry
Faculty Lead, Dental Outreach
Schulich School of Medicine & Dentistry
Western University
1151 Richmond Street
N6A-3K7
London, Ontario, Canada
519-636-6933
519-661-3416 (fax)
ljkalman@icloud.com

Abstract (not more than 300 words)

Dental implants are an important elective option for the replacement of a missing tooth or teeth. An abutment is an interface component between the implant and artificial tooth/teeth. A novel dental implant abutment has been developed and patented. 3D printing or additive manufacturing, with plastic and metal, were investigated as an alternative approach for production of this prototype abutment. Scanning, computer-aided design and 3D plastic and metal printing were employed with MED690 VeroDentPlus and Duraform 316L stainless steel, respectively to fabricate a novel dental abutment prototype. Prototypes were printed with a claimed accuracy of 16 microns (plastic) and 8 microns (metal). The prototypes were qualitatively assessed for functionality by implant threading and simulated fabrication of an artificial tooth in a laboratory setting. The plastic prototypes could not tolerate artificial tooth fabrication due to failure. Metal prototypes tolerated artificial tooth fabrication successfully. 3D metal printing appears to be an alternative approach to dental implant prototype fabrication providing a predictable, cost-effective and efficient avenue. Further investigation is warranted.



Keywords—abutment, additive manufacturing, implantology, medical device

Professional Biography (100-150 words)

Les completed a BSc (Hon) & DDS at Western followed by a GPR at the London Health Sciences Centre. He maintained a full-time solo private practice with an emphasis on digital dentistry, prosthodontics and medical device research. Kalman transitioned to full-time academics as an assistant professor and outreach coordinator. Kalman's research focuses on medical devices & technologies relevant to clinical dentistry. He has authored over 30 articles, holds two patents and has translated two technologies. He is an active member of the Academy of Osseointegration, the International Congress of Oral Implantologists, the Standards Council of Canada and serves on the Board of Directors for the University of Western Ontario Faculty Association. He has been recognized as an Academic Associate Fellow (AAID), Fellow, Master and Diplomate (ICOI), has been awarded the Schulich Alumni of Distinction Award and most recently the Merck *Patients First* award.



Email Id: ljkalman@icloud.com

Any Comments:

This is original exploratory research.