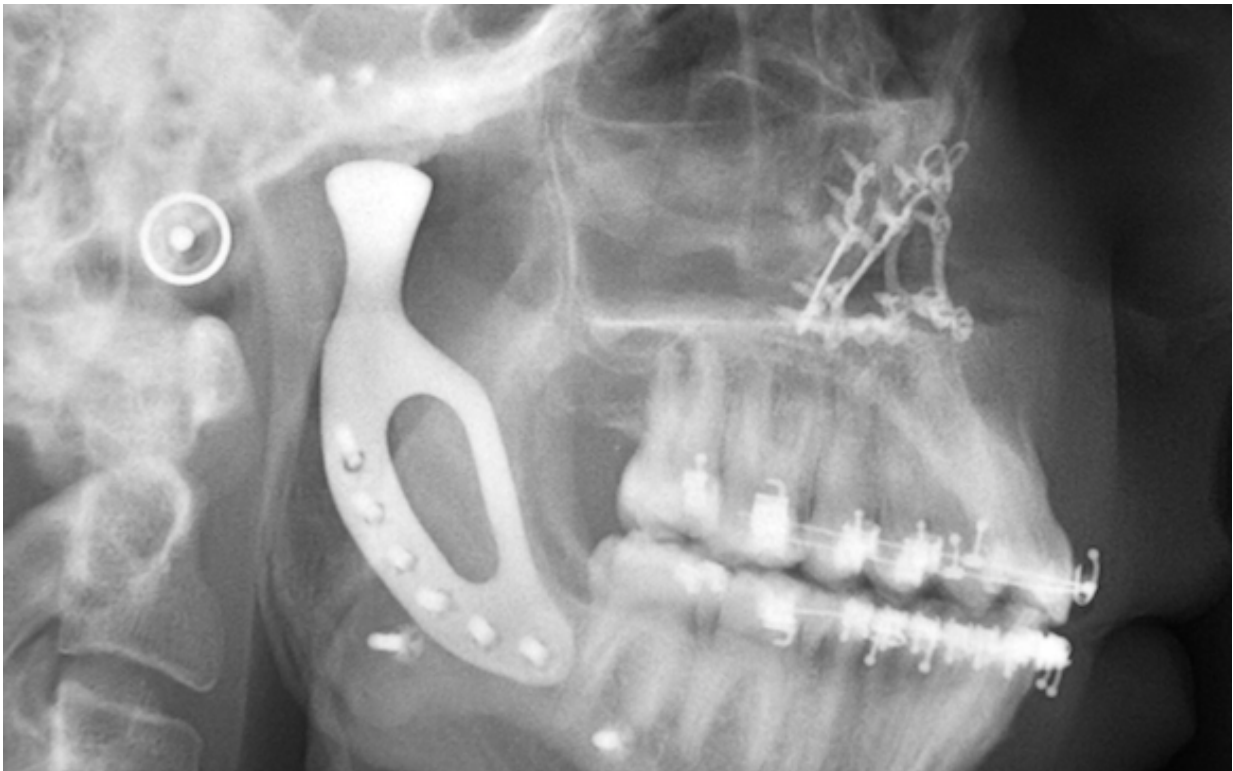


Australian-first for reconstructive surgery uses a 3-D printed jaw implant

June 22 2015, by Anne Rahilly



In an Australian-first surgical procedure, engineers from the Department of Mechanical Engineering at the University of Melbourne along with Epworth Freemasons' Oral & Maxillofacial surgeon George Dimitroulis, have corrected a young man's rare congenital jaw deformity, using a 3D

printed jaw joint that was designed and created in Melbourne.

Mr Dimitroulis said surgery is at the cross-roads of an exciting era, where an increased use of 3D technology will see customised [medical devices](#) become an integral part of healthcare in the 21st Century.

"Many people suffer from jaw joint disorders such as painful clicking and jaw locking, with thousands undergoing surgery each year to treat advanced arthritic and other degenerative joint conditions," he said.

Patient Richard Stratton was born with condylar aplasia – missing a jaw joint called temporomandibular joint (TMJ) that resulted in a lack of growth in the left side of his face and a noticeably skewed lower jaw. The condition also affected jaw motion, greatly affecting his chewing capacity and facial expression.

In early May, Mr Dimitroulis led the surgical team who reconstructed the missing jaw with a custom-made jaw [joint replacement](#) that was the result of collaboration between surgeons, research engineers from the School of Engineering at the University of Melbourne, and medical devices company 3D Medical (ASX:3DM).

This new jaw joint replacement was printed in titanium and manufactured using the latest 3D metal printing capabilities.

Dr David Ackland, a senior lecturer and researcher in experimental muscle and joint biomechanics at the University of Melbourne, led the engineering design and testing of the joint replacement, and said the biomechanical and clinical results look promising.

"Working closely with maxillofacial surgeon Dr Dimitroulis, we helped to design, engineer and test this entirely new jaw joint prosthesis using state-of-the-art computational modelling we developed at the University

of Melbourne," he said.

"We believe the techniques we have developed and the latest 3D printing technology will facilitate a new direction in research and manufacture of implantable devices."

"This case highlights the talents and capabilities we have here in Australia to design, develop, and manufacture our own high-tech medical devices," Dr Ackland said.

Provided by University of Melbourne

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