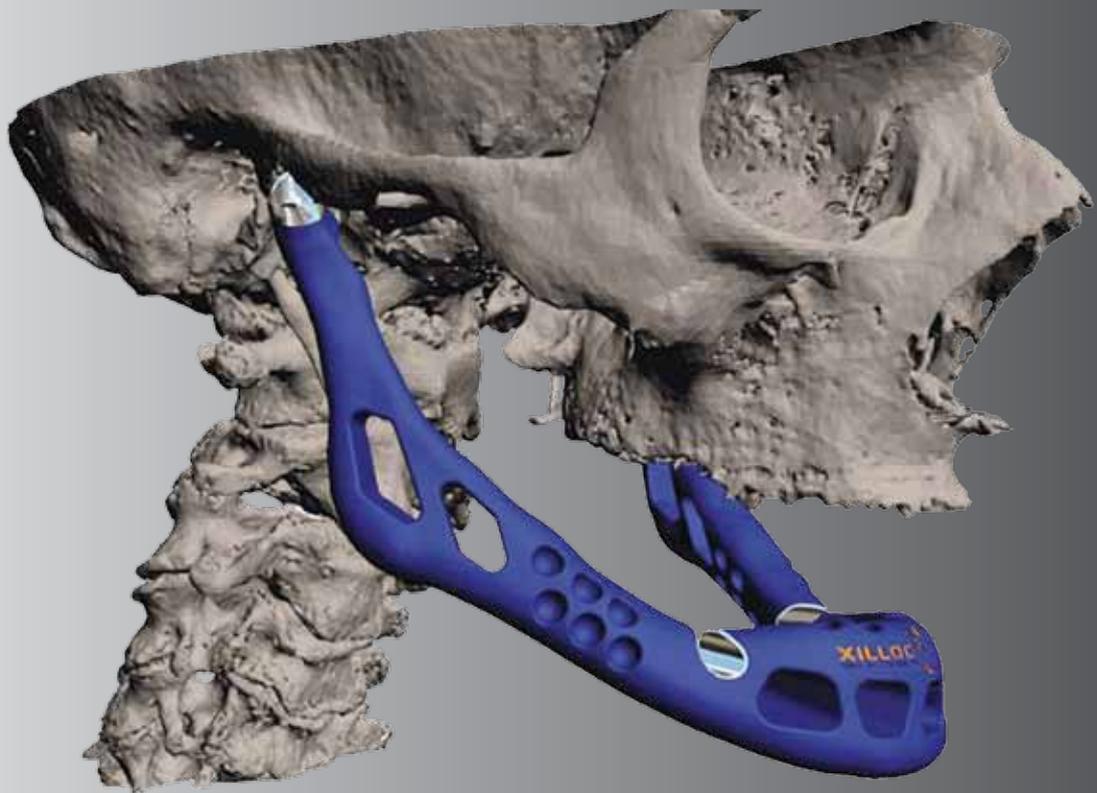


# implants

the journal of oral implantology

2<sup>2012</sup>



**| event review**

The Clinical Innovations Conference 2012

**| user report**

Impression techniques for Implant dentistry

**| case study**

Implant therapy of edentulous patients



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# Dear Reader,



Neel Kothari

Welcome to the second edition of *Implants* where we will be looking at some of the latest ideas, technology and pitfalls within the world of implant dentistry.

We all know that when done well, implant dentistry can be a tremendously successful treatment. But how do we judge success? If I buy a pen and it lasts for a year I'm not too worried but with a car it's a whole different story. So with dental implants how long should we wait before we can say it is successful? One website I read recently claimed a 100 per cent success rate on their dental implants based on 300 implants placed within the last year. Whilst this may prove to be the result of excellent surgical and prosthetic treatment, are we as a profession at risk of promising more than we can actually deliver?

In this addition of implants we will be looking at some of the excellent presentations at this year's Clinical Innovations Conference, which was fortunate to have some of the most sought after speakers in the dental industry as well as various case reports which we hope you will find informative and interesting, but ultimately help make you a better dentist!

I hope you enjoy this edition and always I welcome your feedback.

Until next time,

Neel Kothari



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# High-risk patients benefit from new techniques for computer-guided implant dentistry

**Journal of Oral Implantology** – The added precision of computer guidance to oral implant surgery provides another leap forward in restorative dentistry. Innovative modifications of software and instrumentation are further advancing dental implant success in patients lacking adequate bone. New techniques reduce surgery time and expedite postoperative healing.

A case study in the current issue of the *Journal of Oral Implantology* reports on the use of computer-guided implantation in a 54-year-old patient. The patient had a very narrow ridge of bone, making drilling for implant placement difficult.

Dental implants, as introduced in the 1980s, required two surgeries and the use of a temporary denture for at least six months. In the 1990s, this restorative procedure was reduced to a single, albeit daylong, surgical process known as immediate loading. The procedure was further enhanced by the use of computer-guided techniques. The first clinical use of computer-guided techniques combined with immediate loading occurred in 2002. Dental implants can now be precisely placed in an hour or less. Dentists can use virtual planning to create a surgical template and fabricate a prosthesis for immediate placement. The patient experiences minimal postoperative pain and swelling with this less invasive procedure.

However, this technology can be limited due to local anatomical factors. To place

the implant in the best position, the patient must have suitable bone at the desired implant site. Proper seating of computer-guided titanium drilling sleeves can be difficult to achieve if the patient's crestal bone is too high or narrow. Previously, this clinical situation required opening a flap and reducing bone before placing the dental implants. The current case study, however, achieved implantation without cutting a flap or reducing the bone height, while still permitting immediate placement of the already fabricated prosthesis.

For the presented case, deeper implant site preparation was necessary for implant seating and placement of the traditional computer generated surgical guide was difficult and therefore had to be eliminated. In the virtual planning phase, a different implant length was used to reposition the guide sleeves. Drilling sequences were changed, using a starting drill that would allow deeper penetration. Osteotomes, instruments to prepare the bone, were incorporated, as was the use of an alternative implant seating mount. Despite the patient's high risk factors for implant failure, a successful computer-guided implant was accomplished.

Full text of the article, "*Guided Flapless Surgery With Immediate Loading for the High Narrow Ridge Without Grafting*," *Journal of Oral Implantology*, Vol. 38, No. 3, 2012, is available at <http://www.joionline.org/toc/orim/38/3>.

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# Doctors implant first customised 3-D printed mandible

Author\_Claudia Duschek



Lower jaw implant

Belgian researchers have developed and produced the first patient-specific, 3-D printed titanium implant. For the first time in the history of implantology, a customised implant has replaced a complete mandible. It restored form, function and aesthetic aspects of a natural mandible in a significantly shorter period compared with classical treatments.

The Functional Morphology research group at the University of Hasselt's BIOMED research institute recently presented the first customised 3-D printed mandible, which was implanted in a patient in June 2011. The procedure was conducted on an 83-year-old woman who suffered from serious osteomyelitis, which had affected almost the entire mandible.

Given the severe and rapidly progressive infection in this senior patient's lower jaw-bone, treatment options were rather limited. The classical treatment, namely removing the damaged bone, would have resulted in a small mandible without any support and function. Researchers faced the challenge of restoring vital functions, such as breathing, speech, chewing and sensation. The decision to reconstruct the entire mandible with a customised 3-D printed implant was made to spare the senior patient a long surgery and shorten the subsequent stay in hospital. It was the first time that

a complete mandible was replaced.

The artificial jaw weighs approximately 107 grams, which is almost as heavy as a natural mandible. The implant is designed to allow the direct insertion of dental bars or bridge implants at a later stage and therefore provides the perfect foundation for dental restoration. Owing to perfect fit, the surgery was completed in four hours, which is only a quarter of the time needed with the classical method. This spared the patient additional adjustment surgeries and speeded up recovery.

Planned and designed by doctors and engineers from various institutions in Belgium and the Netherlands, the implant was produced by Layer-Wise, a company experienced in metal Additive Manufacturing (AM) technology, which is a specific form of 3-D printing used to create implants layer by layer. A high-precision laser selectively heats metal powder particles to quickly melt and attach them to the previous layer. The titanium model was coated with bioceramic afterwards. AM is used to print functional implant shapes that would otherwise require multiple metal working steps or that cannot be produced any other way.

The revolutionary jaw implant was granted the 2012 AM Award by the Additive Manufacturing Network in Belgium.

# From strength to strength - Clinical Innovations Conference 2012

**Author** Lisa Townshend

The Clinical Innovations Conference 2012, organised by Smile-on and the AOG and in association with The Dental Directory, was a fantastic success, boasting world-class speakers, cutting edge topics and practical advice for the many dental professionals in attendance.

Held at the Millennium Gloucester Hotel in London, the event saw more than 400 visitors from across the country come together for the two-day event.

The event began on the Friday, with world-renowned Dr Nasser Barghi speaking on 'All-Ceramic and CAD/ CAM Restorations in 2012: Clinical Steps', to a highly attentive audience. Always a popular speaker, Dr Barghi's look at restorative materials and the best indication for each was both practical and entertaining.

After the coffee break the conference split into two streams; Dr Wyman Chan and Dr Anthony Roberts. Dr Chan gave a lecture on 'Modern Bleaching Techniques'. As a dedicated tooth-whitening dentist, Dr Chan focussed on bleaching techniques and the science behind the products he uses, as well as running a live demonstration alongside his lecture, with his dental nurse.

Simultaneously, Anthony Roberts spoke about 'The Periodontal Jigsaw: Putting it all Together'. Looking at what a measure of success in periodontal treatment might mean for both clinicians and patients, Dr

Roberts discussed BPE charting and the journey of diagnosis. He also explained the clinician's role as motivator, communicator and educator in addition to their clinical capacity for the best treatment for patients.

The afternoon continued the high standard of speakers, with Richard Kahan giving an enthusiastic talk on 'New Horizons in Endodontic Diagnosis and Treatment Planning'. Comparing the dental and medical industries, Richard highlighted the issue that dentistry has a far smaller range of tests to use when diagnosing a patient's complaint.

Nasser Barghi, Mhari Coxon and Fraser McCord then separated the conference into three streams, speaking on 'Bonded All Ceramic Restorations in 2012', 'Effective Biofilm Management' and 'Diagnosis of Complete Denture Problems' respectively. Fraser McCord took over the lectures to discuss the best techniques for diagnosing problems with complete dentures.

Mhari Coxon followed on from Dr Roberts' presentation of the morning with a look at biofilm management. Giving an update on recent research into biofilm, Ms Coxon illustrated the four stages of biofilm development.

The first day concluded with Professor Gianluca Gambarini lecturing on '3D Endodontics: Concepts and Techniques'.