First-ever robot-led dental surgery performed in China

By DTI

XI’AN, China: For the first time ever, a robot has independently placed two 3-D-printed implants into a patient’s mouth without human involvement. The successful procedure raises hopes of lessening Asia’s dentist shortage, especially prevalent in metropolitan areas such as Hong Kong and Singapore, and of avoiding risks posed by poor-quality surgeries performed by unqualified dentists.

According to a recent survey, about 400 million patients are in need of dental implants in China. However, the number of qualified dentists in the country is insufficient to meet the increasing demand. Through a continuing implementation of robot technology, this shortage may be eased.

In the future, robot-assisted and -led technology could increasingly facilitate dental surgeons’ work, experts have predicted. Robotic technology has already been introduced in recent years to assist in dental procedures such as root canal therapy, orthodontic operations and implant placement. In March this year, a pioneering robotic guidance system, Yomi, received clearance from the U.S. Food and Drug Administration. The computerised navigational system delivers physical guidance through the use of haptic robotic technology, which provides sensory feedback and constrains the movement in position, orientation and depth, the device’s manufacturer, Neocis, stated.

After taking a CT scan to acquire data on the female patient’s skull and jaw, the medical staff fitted position orientation equipment to the woman and determined the movements, angle and depth needed to fit the implants in her mouth so that the robot could be programmed to move into the correct position to carry out the operation.

According to Prof. Zhao Yimin, a surgeon from the Fourth Military Medical University (FMMU) in Xi’an, the procedure went very smoothly and the implants were placed with high precision.

Although human staff were present at all times during the 1-hour surgery, they did not play an active role. The robot, which was jointly developed by the Beihang University in Beijing in China and FMMU’s Stomatological Hospital over the last four years, is designed to follow a set of preprogrammed commands, but is able to make adjustments during surgery, the South China Morning Post reported.

In 2018, Dental Tribune’s new online learning series set to launch in 2018

By DTI

LEIPZIG, Germany: In 2018, Dental Tribune International (DTI) is launching its online educational platform, Dental Tribune Online Shows. Consisting of a series of educational lectures on all dental specialties, including aesthetic dentistry, digital dentistry, endodontics, implantology, laser dentistry, orthodontics, periodontics and preventative dentistry, the shows are designed to be of immense value for dental professionals around the globe and are free to attend.

The unique concept will allow dental professionals insights into the latest studies and case reports as well as gaining first-hand experiences from top international experts. Lectures are designed to be convenient in style and use and participants will be able to access them from anywhere in the world, free of charge. Additionally, interaction with the dedicated experts via the question-and-answer session at the end of each presentation offers a chance to dig deeper into an area of interest—all the while receiving credits from an ADA CERP-recognised provider.

Lectures will be presented on a dedicated website and cover two full consecutive days (Friday and Saturday, 9.00 to 20.30) with ten 60-minute presentations per day. Each lecture will be recorded, edited and archived on the respective show’s website to allow for later access.

The DT Online Shows calendar and corresponding websites:

- 16 & 17 November 2018: Aesthetic Dentistry Show www.AestheticDentistryShow.com

Dental Tribune spoke with Simon Beard, Align Technology’s Vice President and Managing Director of Europe, in London.

Each lecture will be recorded, edited and archived on the dedicated experts. Lectures are designed to be of immense value for dental professionals. The unique concept will allow dental professionals insights into the latest studies and case reports as well as gaining first-hand experiences from top international experts. Lectures are designed to be convenient in style and use and participants will be able to access them from anywhere in the world, free of charge. Additionally, interaction with the dedicated experts via the question-and-answer session at the end of each presentation offers a chance to dig deeper into an area of interest—all the while receiving credits from an ADA CERP-recognised provider.

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National campaign to address early-life oral health crisis

By DTI

MANCHESTER, UK.—According to figures from the Faculty of Dental Surgery of the Royal College of Surgeons of England, four in five children under 2 years of age in England had not seen a dentist last year. Over the same period, in-hospital operations to extract teeth in children and teenagers were performed than ever before.

To reduce the number of younger children needing extractions under general anaesthetic, which is why we need to reach families early to provide support on prevention. We hope DCby1 will raise awareness of the importance of looking after children’s teeth from an early age. Baby teeth do matter,” said Dr Claire Stevens, a consultant in paediatric dentistry and President of BSPD.

“Children as young as 2 and 3 are being admitted to hospital for in-hospital operations to extract and have fulfilled their units of dental activity allowance, the Lowry arts centre tomorrow, (Photograph: University Dental Hospital of Manchester, UK)
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By DTI

LONDON, UK: The role of the household may have an influence not only at the social level, but also at the micro level. In a study conducted in the UK, researchers have discovered that early environmental influences are far more significant than human genetics in shaping the salivary microbiome, the group of organisms that determine oral and overall health.

Dr Adam P. Roberts, senior lecturer in antimicrobial chemotherapy and resistance at the Liverpool School of Tropical Medicine, pointed to periodontitis, which is associated with an altered microbiome, as a key example of how the study may be relevant to people’s oral and general health. “Once we understand the members of the microbiome that are responsible for health, our everyday behaviour could change to shift our microbiome favourably,” he said. Roberts co-led the study, which was conducted during his time at the UCL Eastman Dental Institute in London.

The study’s main objective was to discover how the salivary microbiome is established and what factors are most responsible for the mix of bacteria. With access to a unique sample set of DNA and saliva from an Ashkenazi Jewish family living in various households spread across four cities on three continents, the team asked how much of the variation seen in salivary microbiomes was due to host genetics and how much to the environment.

Owing to the family members adhering to ultra-Orthodox Judaism, they shared cultural diets and lifestyles that controlled for many confounding factors. Additionally, because the family members’ DNA had already been sequenced to the level of single changes in the DNA code, the research team had a unique and precise measurement of their genetic relatedness.

From this, UCL Genetics Institute graduate student Liam Shaw and the team of researchers sequenced the bacterial DNA signatures present in saliva samples from 15 family members and 27 unrelated Ashkenazi Jewish controls. Across all samples, they found that the core salivary microbiome was made up of bacteria from the Streptococcus, Rothia, Neisseria and Prevotella genera. “What that tells us is that the contact and sharing of microbes that goes on at the very local environment is what determines the differences between individuals,” said Shaw.

To understand what might be driving differences at the bacterial species level, Shaw and the team used statistical methods adopted from ecology to ascertain which factors were responsible for the most variation. When comparing factors such as shared household, city, age and genetic relatedness, the factor that determined who had the most similar saliva microbes was overwhelmingly shared household. Furthermore, spouses, parents and children younger than 10 living in a household together had the most similar salivary microbiomes.

According to Roberts, the study shows that environments shared during upbringing play a major role in determining the community of bacteria that is established and knowing that the shared environment drives the microbiome may provide the ability to one day modulate it.

The study, titled “The human salivary microbiome is shaped by shared environment rather than genetics: Evidence from a large family of closely related individuals,” was published on 12 September in mBio, an open-access journal published by the American Society for Microbiology.

### Britain Dental Conference joins forces with Dentistry Show

By DTI

COVENTRY & LONDON, UK: The organisers of two of the largest dental events in the UK, the British Dental Association (BDA) and CloserStill Media, have announced their collaboration starting in 2018. Their joint event will be called the British Dental Conference and Dentistry Show and the first edition will be held on 18 and 19 May next year at the National Exhibition Centre in Birmingham.

It will replace CloserStill’s main event, the Dentistry Show, as well as the British Dental Conference, most recently held in Manchester in May.

**Picture showing exhibition hall of the Dentistry Show in 2017.**

Peter Ward and Alex Harden.
Free to attend, it will become a key date for all members of the dental profession, both organisations said. Financial details were not disclosed. In a statement, BDA Chief Executive Peter Ward welcomed the partnership with CloserStill, which he said will help to take the organisation’s flagship event, which has a 100-year history, to a new level. Its members being the BDA’s first priority, he said, the association is working to ensure they have access to more exclusive events in more locations across the UK, in addition to the national conference.

“The event will feature a thriving, vibrant exhibition with hundreds of our friends in the industry there to help you find the new and improved tools and services for your life in practice. Alongside the vast exhibition, we will host a CPD [continuing professional development] theatre with a programme bringing you the quality learning you’ve come to expect from us,” he said.

“This is an exciting investment for us all,” stated Alex Harden, Event Director of the Dentistry Show. “Between us, the team now running The Dentistry Show and The BDA Conference have been responsible for running some of the UK’s fastest growing events over the last two decades. Our combined experience, sector knowledge and significant commercial and marketing resources will be focussed on delivering for both exhibitors and the audience for these powerful brands.”

CloserStill has organised the annual Dentistry Show in Birmingham since 2007. The latest edition, held also in May this year, attracted over 8,000 visitors and 400 exhibitors.

### GDC warns of new online scam

By DTI

LONDON, UK: The General Dental Council (GDC) has warned dental practices not to answer requests recently sent by a computer forensics company pretending to be working on its behalf. In the e-mail, the company asks for remote access to patient data, the GDC stated on its website.

According to the GDC, providing unauthorised access to computer software could not only compromise data, but also result in a serious breach of the Data Protection Act. Practices that have received such requests are advised to check with the regulatory body first and, in the case of suspected fraud, contact the police immediately.

The GDC has confirmed that this is not standard procedure and that any requests are unlikely to have been authorised by them. Therefore if you are contacted by any company requesting access to your computer software you should refuse the request,” it said in a statement on its website.

Earlier this year, a global cyber-attack, caused by a wave of ransomware-laden phishing e-mails, brought disruption to NHS systems nationwide and saw details of thousands of its staff stolen.

**Editorial note: Are you a victim of a cybercrime? If so, please contact the National Fraud & Cyber Crime Reporting Centre at 0300 123 2040.**
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leadership shakeup: Dentsply Sirona announces appointment of new interim CEO, COO

By DTI

YORK, Pa., U.S./SALZBURG, Austria: Dentsply Sirona has announced that its board of directors has implemented leadership changes with immediate effect intended to better position the company to achieve its potential. The changes include the appointment of Mark A. Thierer as interim Chief Executive Officer (CEO) and Bob Size as interim president and chief operating officer (COO). Additionally, Eric K. Brandt has been elected nonexecutive chairman of the board. Dentsply Sirona also announced that, as part of its leadership changes, the board has accepted resignations from Bret W. Wise, executive chairman, Jeffrey T. Slovin, CEO and director, and Christopher T. Clark, president and COO.

“Dentsply Sirona’s board of directors strongly believes that the company is well-positioned to achieve its business objectives, and that new leadership is critical to achieving success,” said Brandt.

The new interim CEO has more than 30 years of experience in the health care industry. Thierer most recently served as CEO of OptumRx and oversaw all Optum pharmacy care services, including the management of pharmacy benefits, pharmacy network, home delivery pharmacy and specialty pharmacy programs. Thierer earned a Bachelor of Science in Finance from the University of Minnesota and a Master of Business Administration from Nova Southeastern University in the U.S.

“I am excited about the opportunity to lead Dentsply Sirona, the recognized market leader in the dental industry,” said Thierer. “We have a significant opportunity to create value for our partners, the dental professionals and patients that use our products every day. Our dedicated employees have an unwavering commitment to high quality products, innovation, and best in class customer support helping us empower dental professionals to provide better, safer, faster dental care.”

“Mark Thierer is a proven healthcare executive with a successful track record both in driving organic growth and transaction execution on a comparable scale to Dentsply Sirona,” said Brandt. “In addition, as interim President and COO, Bob Size returns to the company with direct operational experience, having served as part of the senior leadership of Dentsply Sirona for fourteen years.”

Size served as Senior Vice President of Dentsply Sirona from January 2007 through June 2017, with operating responsibilities over both manufacturing operations and selling organizations located in the U.S. and Europe, as well as the DENTSPLY North America sales organization. Prior to that, he served as a vice president (2006) and as Vice President and General Manager of the DENTSPLY Caulk division beginning June 2003 through December 2005. Size has a Bachelor of Science in Marketing from the University at Buffalo and a Master of Business Administration in Finance from Canisius College in the U.S.

“The board of directors has also initiated a search process to identify a permanent CEO and COO,” Brandt said.

“On behalf of the Board, I want to thank Bret, Jeff and Chris for their years of service to Dentsply Sirona. We wish each of them the best in their future endeavors,” Brandt said.
ROOTS SUMMIT is coming to BERLIN
28 June – 1 July 2018
Berlin, Germany
www.ROOTS-SUMMIT.com
UK-developed protective toothpaste available without fluoride

By DTI

LONDON, UK: For individuals who want to protect their teeth, but do not wish to or cannot use fluoride, BioMin Technologies has recently launched a new toothpaste. Instead of fluoride ions, the BioMin C releases chloride ions through a patented calcium chloro-phosphosilicate to replace minerals lost from tooth surfaces, the company said.

According to BioMin, the new toothpaste was developed for use in regions of the world where fluoride is already available in high levels in the water supply, such as India and China. In addition to remineralising tooth surfaces, it may further help protect teeth by reducing sensitivity and diminishing the risk of initial dental caries.

“BioMin C works when water and saliva in the mouth help to slowly release the calcium and phosphate ions contained within the toothpaste. These ions then rapidly form the tooth mineral on the tooth surface, which effectively seals open dentine tubules,” he further explained.

BioMin C is a complement to the fluoride version of the toothpaste, which was launched to the market in April last year. CEO Richard Whatley said that the new version will capitalise on the established distribution network in the UK, parts of Europe and countries around the world, including India, China and Australia.

“Distribution contracts have also been established in the Middle East and Canada, and introduction is planned later this year in the USA. Negotiations with potential distributors and licence holders are on-going in ten further countries,” he said.

Developed at Queen Mary University of London, the BioMin technology received the Armourers and Brasiers’ Venture Prize in 2013, an annual award given to breakthrough innovations in materials science from the UK. A bioactive glass, it has been developed to adhere to tooth structure through a special polymer, from where it slowly dissolves into ions that form fluorapatite—a mineral also found in shark teeth—over an 8–12-hour period to make teeth more resistant to acids from food.
Tremendous potential for future growth

An interview with Simon Beard, Vice President and Managing Director of Europe, the Middle East and Africa at Align Technology

In September, Align Technology invited active Invisalign providers in the general dental practitioner (GDP) group, who offer the clear aligner system alongside some traditional orthodontic treatment options, to its GDP convention in London in the UK. Dental Tribune had the opportunity to speak with Align’s Simon Beard about the event, the future of Invisalign and why the markets in Europe offer huge potential.

What was the goal of the GDP convention, and will it be a regular event?

This exclusive event is intended to give our Invisalign providers ongoing education about our product features and insights into best practices from our top providers and help them stay informed of evolving trends, such as a multidisciplinary approach among dental practices. The convention is applicable to current Invisalign providers regardless of whether they are fairly new to Invisalign or have been a provider for some time and are looking to continue their education.

We plan to continue to provide a wide variety of educational events or sessions to enable our Invisalign providers to gain experience and develop the Invisalign provider community, for peer-to-peer discussion and exchanges of best practices.

Over the past year, we have seen more than 435,000 UK visitors to the Invisalign UK website. Of these, over 22,000 interested consumers have taken an Invisalign smile assessment online and more than 13,000 have searched for an Invisalign provider. These results attest to the success of the campaign and that both potential patients and, as a result, clinicians have accepted the investment in the new identity.

Constant innovation is absolutely crucial to our current and future success and drive to address unmet needs. Perpetual developments in our software, our materials and the different types of malocclusions we can treat are pivotal to our success.

What will the next generation of Invisalign offer?

Invisalign offers a solution applicable to roughly 60 per cent of patients suitable for fixed orthodontic appliances (ten million case starts per year). With continued feature advancements and ongoing innovation, we believe Invisalign can be applicable to 70 per cent of the traditional orthodontic market, which excludes severely complex cases in which surgical procedures may be needed and young children with many primary teeth.

Whether it is clear aligners, digital scanning, virtual treatment plans or awareness programs that help patients visualise their new smile, our technology and processes deliver a tremendous patient experience and effective treatment outcomes, and we will continue to advance the technology in all those areas. Align Technology is the only company in the world to date that has an orthodontic database of about five million dental cases, and we use machine learning to mine that data to really learn and understand how we can do orthodontics better, how it can be faster and more convenient for both dentists and patients.

The four-millionth patient was treated with Invisalign clear aligners last year right here in London. How important is the European market compared with other Invisalign markets?

The demand for the Invisalign system is growing globally and the UK is one of our success stories. We have helped treat over 4.7 million cases worldwide and the four-millionth patient, which we announced last year, was from the UK. The market here is relatively smaller compared with our largest market—the US—but we are one of our largest markets in Europe. Having said that, clear aligner therapy is still under-penetrated in the markets we serve, including the UK, and we see tremendous potential for future growth here.

There are ten million orthodontic case starts of traditional wire appliances each year globally, three million in Europe alone. The Invisalign system is applicable to approximately 60 per cent of those cases, of which about a quarter are adults and the rest are teenagers. Add to that the 100 million consumers in Europe that would benefit from simple straightening of their teeth to gain a better smile and you can see the enormous potential for Invisalign clear aligners.

Where can readers find out more?

GDPs interested in learning more about the Invisalign system and our training programmes can go to www.invisalign.co.uk and select “I am a Doctor” from the top drop-down menu.

Thank you very much for the interview.
What would Dr Mo Lar do? Part 6

By Richard Lishman, UK

Over the course of an 11-part series, the dentists the question: How to tackle a number of personal and professional challenges by providing advice and guidance to fictional character Dr Mo Lar. In the sixth article, Managing Director Richard Lishman explores areas that Lar must consider if he is to fulfill his dream of becoming a principal dentist.

From dental student to associate, homeowner, husband and father, Lar is now at a point in his life where he is considering taking on the challenge of running his very own practice. To achieve his goal, Lar will need to consider a great many factors, including finance, location of the practice, practice premises and type of contract, as well as general compliance and regulatory issues.

The path to becoming a successful principal begins with finding the right practice. Besides needing the requisite experience and financial backing, Lar will have to consider the impact of current market trends and availability. There is no point in choosing a practice that is not financially viable or is beyond his financial capabilities, as he will either struggle to secure the necessary funding or will not be able to sustain the business. Therefore, Lar will need to work with a strong practice sales agent that both fully understands his current financial position and requirements and can navigate him through the process.

**Acquisition process**

No two transactions are ever completely the same, but there are certain processes that are a given during a practice acquisition. In the initial stages of the transaction (heads of terms), both parties’ teams work together to outline the agreed terms of the purchase, including price, the amount of deposit required and legal aspects, such as cost protection, indemnities, exclusivity, confidentiality and price amendment mechanisms. In the intermediate process (due diligence), the buyer’s solicitors work with the seller’s team to raise enquiries about the practice and premises. Typically, this can take between 60 and 90 days, though in the event of complications, due diligence can cause significant delays.

Once Lar begins his acquisition journey, he will need to utilise the services of a specialist legal representative to ensure that the process is handled efficiently and accurately. Required documentation can include a detailed inventory of equipment, information about employees, suppliers and goodwill; up-to-date risk assessments, energy performance certificates, asbestos reports and so on, and three years’ worth of accounts.

The exact processes Lar will go through will depend on whether he purchases a freehold practice or takes on a lease (lease transfer agreement). Whichever he chooses, he should ensure that canvassing searches are carried out to ascertain whether there are any issues affecting the premises.

Once signed, dated and exchanged, the business sale/purchase agreement/contract is legally binding on the condition that other aspects of the transaction are completed smoothly, such as Care Quality Commission registration and transfer of NHS contract (if applicable).

Lar has experience working in a predominantly NHS practice, so his sights are set on purchasing a mixed practice with an attractive unit of dental activity contract. There are several areas to consider here, including whether the contract is a personal dental services agreement or a general dental services contract, and if there has been any underperformance by the seller. If so, there would be a risk of a significant claw-back of any overpayment or possible termination of the contract. Only with expert help can Lar hope to navigate through the transfer of the NHS contract.

All buyers are required to register with the Care Quality Commission. Again, this process can be complicated owing to the number of potential pitfalls—such as late application, use of the wrong form, and errors or incomplete details—so it is always wise to utilise the services of a specialist legal adviser.

**Finance**

Before any of this, though, Lar must review his finances and calculate his affordability. He might have his heart set on becoming a principal, but unless he can prove to the bank that he is a suitable borrower, his dream will be over before it has even begun. This is where an accountant comes in.

An accountant can work with Lar on every aspect of practice finance, including calculating his upper spending limit, putting together a business plan, applying for a loan and selecting a lender. The composition of a solid business plan is particularly pertinent, as a bank will not lend to Lar unless it has the relevant proof that he is a suitable candidate. To maximise his chances of success, Lar would need to include business aims and objectives, a description of services/products, potential weaknesses of the business and solutions to overcome them, a market and competitor research plan, proposed working arrangements and working hours, as well as accounts and a financial forecast for three to five years, including expenditure, projected profit and loss, and a balance sheet.

Altogether, Lar has a great deal to consider now that he wants to become a principal. With the right help from a team of experts, including a specialist independent financial adviser, lawyer, accountant and sales agent, though, Lar can rest assured that he is prepared for what the acquisition process has in store.

Next article: Lar looks to expanding his business by purchasing a second practice.
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Sign up to the finest e-read in dentistry
During a special session at this year’s British Orthodontic Conference in Manchester, a number of internationally prominent clinicians debated the use of digital technology in orthodontics. Dental Tribune Online had the opportunity to speak with one of them, Dr Asif Chatoo from London, about his position and where he thinks the main benefits of digital technology lie.

Dental Tribune Online: Dr Chatoo, as a regular user of digital technology in your practice, where do you stand in the digital debate?

Dr Asif Chatoo: Digital technologies have been around for almost 25 years, when clinicians first started to use computers to help them manage their practices. Since then, there has been a revolution with the introduction of digital photography and later radiography. Now, we have things like digital intra-oral scanning, which means that we do not need to take impressions and keep physical models. The pictorial representations that one gets from photographs are all real and can be analysed so that they provide true representations of the patients.

With all of this technology, we have to be very careful though. Part of the counter-argument is that we are being led by the market and there are questions as to whether this is true progress. There are so many things on offer, however, and hopefully as professionals we can recognise what is beneficial and what is not.

Is the argument of the digital revolution being led primarily by manufacturers valid?

I think in the sense of making orthodontics available to everyone to treat patients with orthodontic appliances, yes. There is a steep learning curve with digital technology and one needs to ask questions when the manufacturer’s guidelines say that if one does it a certain way everything will be fine. Some might be tempted to believe that if one follows the manufacturer’s guidelines then one can throw out the rulebooks of orthodontics, but that is not true. One still has to apply sound orthodontic principles to tooth movement. Take, for example, something like Invisalign. Despite being around for so long, there is no evidence that accuracy and predictability of tooth movement are anything better than about 15 per cent. If one looks at it like that one will say 15 per cent predictability on tooth movement is terrible. However, orthodontists are very smart people and they are cutting trays and modifying the aligners and making it the way they want the appliance to work. I think that is how we have to go forward because we cannot be dictated to by digital technology. We have to be able to control it and then we can see the value and make it work for us in a way that is constructive. The technology is there to facilitate treatment and not to take over.

One still has to apply sound orthodontic principles to tooth movement. Take, for example, something like Invisalign. Despite being around for so long, there is no evidence that accuracy and predictability of tooth movement are anything better than about 15 per cent. If one looks at it like that one will say 15 per cent predictability on tooth movement is terrible. However, orthodontists are very smart people and they are cutting trays and modifying the aligners and making it the way they want the appliance to work. I think that is how we have to go forward because we cannot be dictated to by digital technology. We have to be able to control it and then we can see the value and make it work for us in a way that is constructive. The technology is there to facilitate treatment and not to take over.

Does the use of digital technology benefit the patient, in your opinion?

With digital technology, it is possible to explain to the patient what is going to happen with the digital plan in front of one. One can show the patient how his or her teeth are going to move and gain the patient’s input as one goes along. As a tool for communication, it is excellent. The next thing is how effective it is, and whether it is better or faster. There are no studies at the moment that show that there is a significant difference. From the patient’s perspective, there is an overall benefit because it is faster and cost-effective. As long as there is no harm inflicted on the patient, I do not think there is a problem. If one is looking for the silver bullet that is going to change one’s working life, then unfortunately it comes very slowly with digital technology. One has to learn it and master it. One has to go through 100 cases to really know how it works and whether it is good in this or that environment.

What are the main considerations for clinicians who want to start working with digital technology?

I think they have to have a great deal of patience and be willing to learn. One cannot simply close one’s eyes and rely on the fact that one knows how to move a tooth. There may be problems in the beginning and they have to learn how to overcome those problems by successfully using the technology. I would consider it a completely new way of thinking. It does work and can be beneficial to one’s practice, but it has to be in a controlled environment and dentists should expect a steep learning curve.

Thank you very much for the interview.
Brain-guided implant reconstruction: Who makes the decisions?

By Dr Scott D. Ganz, USA

It appears that there is still a great divide between those who utilise 3-D technology for dental implant planning and surgical placement of dental implants and those who do not. Clearly, decisions as to how to diagnose and treatment plan our patients may be the difference between success and failure. Recently an internet advertisement promoting an educational programme stated that ‘Implant surgery is not complicated, easier than most other dentistry, and every dentist has the skills to surgically place implants. If you can take teeth out, you can put a dental implant in. You don’t need expensive equipment for brain-guided surgery, you can learn it with no initial investment!’ Implant dentistry has become one of the most predictable and successful treatment modalities in all of dentistry, if the only imaging modality utilised is a two-dimensional panoramic or periapical radiograph how can a clinician really know if a procedure will be complicated?

Figure 1 represents a beautifully rendered 3-D maxilla and mandible with the cross-sectional imaging showing the existing teeth and roots in both arches as processed within the interactive treatment planning software (NobelClinician, Nobel Biocare). This vital information allows for a complete understanding that each patient’s anatomy is individual and unique, and that each patient’s bony anatomy, root positions within the bone, and tooth trajectories may not coincide with the alveolar process. Therefore without this information, the placement of implants may be compromised, resulting in complications. Therefore it is imperative that clinicians utilise the most up-to-date 3-D CBCT imaging and interactive treatment planning software to fully appreciate the individual nature of each patient’s unique anatomy.

When evaluating potential implant receptor sites, it is not just the available bone that should be considered, as our patients are in need of teeth, not implants. Clinicians must learn to practice ‘restoratively driven implant reconstruction’—knowing where the tooth position should be in relation to the bone and potential implant. This process can be accomplished with greater accuracy with the use of 3-D imaging and software applications that have the tools to provide clinicians with this valuable diagnostic information. There are advertisements that promote concepts such as ‘Brain-guided surgery vs cone beam-guided surgery—which works better’, leading clinicians to believe that it is the computer that makes the decisions, and not the clinicians who use the technology properly to improve their diagnostic abilities.

The diagnostic and treatment planning process using CBCT imaging provides for a variety of views including the axial, cross-sectional, panoramic, 3-D reconstructed volume (Fig. 2) and much more afforded with the use of interactive software as an aid to evaluating the thickness of the buccal plate, to assess the bone density, to visualise the trajectory of the tooth vs the bone, and then if a receptor site is found to be appropriate the clinician can position the implant to best support the desired restoration (Fig. 3).

Therefore it is the clinician who will decide on the available treatment options based on the enhanced diagnostic information provided by the technology. 3-D imaging technologies helps clinicians diagnose more accurately and more consistently, than any two-dimensional modality—there is just no comparison. Diagnosis is the key element of implant success, and should not be minimised. To diagnose properly, clinicians need to use our brains—it is not the computer that makes the decisions.

Case presentation

A 74-year-old male presented to the clinic with a chief complaint of pain in the edentulous lower jaw, especially on the right side when trying to masticate using an existing complete denture (Fig. 4). The denture had little or no retention due to the resorbed condition of the mandibular arch, and was almost impossible to wear without denture adhesive applied many times during the day. The patient had been seen by a local dentist with the concept of managing his mandible with the placement of dental implants.

The initial treatment options that could be considered for this patient included:

- Four/five standard diameter implants supporting a fixed hybrid restoration.
- Four/five standard diameter implants supporting a fixed hybrid restoration.

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The original treatment plan conceived by the original treating dentist was to place four narrow-diameter implants in the mandible to support the existing complete denture with overdenture attachments, due to financial limitations of the patient. A flapless surgical protocol was chosen, and the initial implant site located by the panoramic radiograph.

The panoramic reconstructed view of the edentulous mandible may provide the clinician with some information regarding the bony anatomy, but it is not sufficient to plan for implants in the majority of case presentations. It is essential to precisely locate the bilateral anatomical sites where the inferior alveolar nerve exits the mandible, and the panoramic radiography cannot provide this information accurately. To plan for the placement of implants, it would be important to understand the available bone anatomy to determine the number of implants that could be placed, and the diameter and lengths required. The 2-D panoramic radiograph cannot predict the width, trajectory, or density of the bone, as well as the thickness of the overlying soft tissue. Therefore, it can be difficult for a clinician to make truly educated decisions based on two-dimensional imaging modalities.

Upon drilling the initial pilot osteotomy preparation directly through the soft tissue, the drill immediately broke in the bone. A periapical radiograph confirmed that the drill broke, and it seemed to be ‘in the bone’. The subsequent paper print-out of the digital radiograph can be seen in Figure 6. The clinician reported what happened to the patient, and decided to abort the entire procedure and send the patient to a different practice.

In the planning phases, clinicians should be considered the engineer and architects of the oral cavity, providing a ‘blueprint for success’ based upon the data provided by the CBCT scan data and using the tools of the planning software to simulate the positioning of the implants, such as the axial and cross-sectional views. The right and left inferior alveolar nerves (IANs) were traced to determine the available width in the anterior symphysis for implant placement. It was determined that four standard diameter implants could be positioned to support an overdenture as desired by the patient (Fig. 9).

In the planning phases, clinicians should be considered the engineers and architects of the oral cavity, providing a ‘blueprint for success’ based upon the data provided by the 3-D imaging, and the ability to simulate the implant position to avoid adjacent vital anatomy. The CBCT data can often yield significant surprises that cannot be determined with 2-D imaging. The initial assessment of the CBCT data revealed that the patient was not positioned properly during the scan. The inferior border of the mandible was not imaged. It is very important that patients be positioned properly to assure that all pertinent diagnostic information is available for review. Fortunately it did not impact the diagnostic phase for the purposes of implant placement.

The cross-sectional images revealed the presence of a thick bony buccal plate of bone in some areas, thinner in others, and a thick lingual plate of bone generally. The surprise was in the symphysis, a hollow area in the anterior central area exactly where implants would be placed! Other hollow areas and introsseous vessels were noted (see arrows, Fig. 10). The ‘hollow’ areas in the anterior symphysis are as illustrated in the 3-D reconstructed volumes with four simulated implants in an occlusal view.

The hollows in the anterior symphysis area of the mandible are seen in a ‘clipping’ view with simulated implants, slicing through the axial and cross-sectional reconstruction (Figs. 11a & 11b). This anatomical variation could not be determined with 2-D imaging modality. Once this was known, the planning of implants could proceed with the knowledge of the individual patient’s anatomical presentation. The patient was informed of the issues related to the anatomy as shown on the 3-D simulation from the CBCT scan.

Some images are invaluable to educate the patient and improve case acceptance, and extremely invaluable for the diagnostic process in determining the best surgical approach. Proper diagnosis and treatment planning through 3-D imaging and simulation software revealed that the narrow ridge would have been a significant obstacle using a flapless approach, and the hollows in the bone may have caused significant issues in the placement and the ability to stabilise the four implants that were eventually placed.

Prior to implant placement, the soft tissue in the anterior symphysis was carefully removed with serrated curettes and serrated round burs. Following the simulated plan, osteotomies were prepared for four implants to support an overdenture. The two middle implants were 4.0 mm in diameter, 20 mm in length, and the two distal implants were 3.5 mm by 18 mm in length approximately 1-2 mm below the bone crest as per manufacturer’s protocol (AnyRidge, MegaGen Implants). Each implant waswell fixed due to three factors: (1) the anticipated thickness of the buccal and lingual cortical plates; (2) the apical length of the implants engaging native bone; and (3) the thread design of the implant type (Figs. 16a & 16b).

Each implant was tested by resonance frequency analysis through 3-D implant stability quotient (ISQ) value (IDS Oststell). Clinicians might consider the implant closure (Fig. 18b) Postoperative healing was unremarkable.

After the site was allowed to mature for three months, a midline incision carefully split the narrow band of keratinised tissue over the uncover the grafted site and the underlying four implants, which were all covered with a small layer of immature bone. Once fully exposed, each implant was once again fitted with a SmartKey to assess an ISQ value, which was then compared with the initial values to determine the progression of osseointegration and to confirm implant stability (Figs. 19a & 6b). The ability to measure stability over time provides invaluable information for the clinician about the health of each implant. A favourable ISQ value imparts a level of confidence and knowledge of when an implant can be loaded
Table 1: RFA/ISQ values over time.

<table>
<thead>
<tr>
<th>Implant Site</th>
<th>RFA / ISQ Values Over Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>At Placement</td>
<td>78  74  74  71</td>
</tr>
<tr>
<td>3 months</td>
<td>80  80  80  84</td>
</tr>
<tr>
<td>6 months</td>
<td>83  82  82  84</td>
</tr>
</tbody>
</table>

and restored. Healing collars were positioned to allow for the soft tissue to be approximated and secured. The initial values were recorded. The initial values were adjusted based on the excellent stability afforded by the thread design of the implant engaging the buccal and lingual cortex, and apical length into native bone. A two-stage approach was elected due to the large hollow areas in the symphysis, which were grafted and covered with PRF. At three months, the implants were found to be covered with a thin layer of immature bone, and the intermedial area seemed solid. A second series of measurements were recorded to reflect the status of integration. All values increased significantly, verifying that the process of osseointegration was progressing positively, and loading was appropriate. Overdenture abutments (Meg-Rhein) were secured to each implant, and stainless steel housings with retentive caps were embedded into the denture.

Discussion

As technology becomes more available to clinicians worldwide, our ability to diagnose and plan with improved accuracy and consistency can only be seen as a huge benefit. The use of 3D printing has now become an affordable option for both group practices and single practitioners, therefore making it possible to produce accuracy biomedical models that greatly enhance the diagnostic and treatment planning phase. DICOM data can be exported to standard files that can be managed in software that drives 3D printers to fabricate models of the mandible or the maxilla. The CBCT dataset from the case presentation contained within this article was exported as a standard triangulation language (STL) file and imported into the 3-D printer software (PreForm Formlabs, Fig. 20).

The importance of having an actual model in hand cannot be underestimated. For this particular case presentation, the 3-D printed model was fabricated using a process known as stereolithography by an in-office 3-D printer, the Form 2 (Formlabs). The surface detail is excellent, and provides not just an excellent diagnostic aid, but a method to educate our patients on the recommended treatment plan based on a physical model that can be viewed and touched. It has been demonstrated that these models can be successfully used for guided surgery applications, and for other bone grafting guides such as a ‘sinus-lift’ or ‘harvest’ guide. The virtual 3-D reconstructed surface model can be seen in Figure 22a, and the 3-D printed model in Figure 22b. The position of the bilateral mental foramina can be clearly seen, as well as the intramedullary bone within the ramus, and the anterior symphysis where the hollow areas were noted. These models can also be utilized to simulate the actual surgical approach to validate the procedure and for surgical guide fabrication.

This singular case illustrates many important aspects about treatment planning for dental implants. To minimise the diagnosis phase, and to suggest that clinicians do not need to use ‘expensive’ equipment as an aid to implant planning is not appropriate in today’s world of the digital workflow where we need to avoid complications to ensure that we offer our patients the correct treatment. Some have suggested that technology is used in place of sound thinking, or that the computer makes the decisions for the positioning of the implants. To suggest that when we use computers to help plan the case that we are not using our brains, or that computers are making the decisions about where implants are placed is an incorrect assessment of the state-of-the-art.

Technology, when used properly, expands our brain power by providing clinicians with the necessary information to make educated decisions for our patients. To negate the use of technology due to perceived ‘increased costs’ or that 2-D radiography is sufficient for implant planning is a potentially dangerous approach—rellying on 2-D imaging requires guesswork, and there is no place for guessing when drilling into bone. Whether clinicians use ‘guided’ surgery, use surgical templates, or place implants totally ‘freehand’, it is important that our minimal standards be met. 3-D imaging and interactive treatment planning software applications to provide a blueprint for success, to avoid complications, reduce morbidity, with the ultimate goal to help facilitate the restorative phase that provide patients what they want, teeth. Remember: ‘It’s not the Scan, it’s the Plan!’

Dr Scott D. Ganz maintains a private practice for prosthodontics, maxillo-facial prosthetics, and implant dentistry in Fort Lee, New Jersey, USA. Co-Director of Advanced Implant Education (AEI), he has served as President of the New Jersey Section of the American College of Prosthodontists and of the Computer Aided Implantology Academy.

Dr Ganz delivers presentations worldwide on both the surgical and restorative phases of implant dentistry, and has published extensively on these topics. He is considered one of America’s leading experts in the evolution of computer utilisation and interactive software for diagnostic and treatment planning applications using CT and new-generation CBCT imaging modalities.
Every clinician knows the situation of having a patient waiting for an implant impression. Unfortunately, sometimes the individual tray does not fit and has to be modified because the technician wrongly calculated the direction of the insertion. It is even more problematic when the individual tray cannot be found. Explaining this mishap to patients is embarrassing and annoying because it takes valuable time away from other patients, who may have to wait longer for their treatment.

Since I started working with the Miratray implant impression tray (Hager & Werken), these problems have become a thing of the past. The implant impression tray consists of a plastic structure and a transparent foil. Its secret lies in the patented foil technology, which is skilfully balanced. The foil is stable enough to hold the impression material secure inside the tray and allows impression posts to be clearly visible.

The Miratray is available in three standard sizes (S, M and L) and can be used for both dentate and edentulous patients. Blocking with plastic splints, recommended for some types of implants, is possible and unproblematic. The use is similar to that of the individual impression tray, but offers the advantage of having full visibility when gently pushing down the tray until the foil is perforated by the impression post. Owing to the durable foil, this becomes an unproblematic and clean procedure, as overflowing impression material can be avoided. After the material has been cured, the screws of the impression posts can be easily removed. The result is an extraordinary impression with the fixed posts within.

Studies led by the late Prof. Hubertus Spiekermann from RWTH Aachen University in Germany proved that the Miratray is as accurate as an individual tray. It makes handling of converging or diverging implants easier because the impression posts do not have to be lead through the sometimes-small notches of the individual tray. Our patients are glad that they do not have to go through another impression-taking session. In some cases with healthy oral mucosa, impressions can be taken directly after the uncovering.

Even with financial constraints, the Miratray is a perfect alternative. According to Hager & Werken, the tray costs less than € 5. Furthermore, it can be claimed as an individual tray, at least here in Germany, because small adjustments need to be made, for example when there are problems with the vestibular space.

The main advantages of Miratray

- A perfect and open implant impression
- Impression-taking in only one session
- No laboratory costs
- Controlled and safe impression with an unobstructed view
- Clean working thanks to the foil precisely closing on the impression post
- No overflowing impression material
- Individual, practical and economical
- Suits all implant impression materials and common implant systems

Dr Deborah Horch, Germany

Dr Deborah Horch is a practising dentist in Korschenbroich in Germany. She can be contacted at de.horch@gmx.de.

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By DTI

BIRMINGHAM, UK: Under new management and with more exhibitors than ever before, the BDIA Dental Showcase is set up for a new edition in Birmingham. The show, which will be held from 19-21 October in hall 3 of the National Exhibition Centre, is going to feature three days of innovation, learning and fun.

One of the new additions to this year’s show is the Dental Practice of the Future, a special showcase featuring a purpose built dental surgery with state-of-the-art equipment provided by some of the leading providers in the business. The setting boasts a reception centre, a clinical surgery and a fully compliant, dedicated decontamination room and will provide attendees with the opportunity to experience the latest technology in dentistry within a practice setting. With seats for 150 people, the feature doubles up as a lecture theatre where presentations from authorities within the profession will be held. These will include keynotes on the future of dentistry, demonstrations on how to handle medical emergencies, ergonomics, innovations in X-ray, 3-D printing or how to make the right purchasing decisions. When not in use for planned lectures, the futuristic surgery will be open for attendees to walk through and explore. Visitors interested in the equipment will be able to head to the relevant stand to find out more.

Like in previous years, attendees will be able to learn about the latest products, clinical techniques and practice-concepts at the KaVo Dental-sponsored Min Lectar Theatre which will run through the three days of the event. Supported by a number of leading exhibitors, topics range from digital treatment planning to how to incorporate periodontology in the practice and increase profits by saving taxes. Further educational opportu...
WHITE TEETH
FRESH BREATH
PURE SMILE

WHITE TEETH DUE TO
HYDROXYLAPATITE

CURAPROX
BLACK IS WHITE
CHEW FOR WHITE
WITH ACTIVATED CHARCOAL

curaprox.com
the BDIA Dental Showcase is free.

Last year it was acquired by the Mark Allen Group for an undisclosed sum with the BDIA licensing its name for an initial period of another five years. More information are available at www.dentalshowcase.com. To attend the BDIA Dental Showcase is free.

Attendees will be able to gain CPD hours for every session they attend during the show, the organiser said. Certificates are available for download under the section “Conference Session” on the BDIA Dental Showcase website.

There will be also plenty to see at the trade exhibition this year. Over 240 manufacturers and dealers, including familiar and new corporate faces, are going to present their latest portfolios of dental products and services in hall 3/3A. Dental Tribune will again showcasing its complete portfolio of dental media including the recently launched prevention – international magazine for oral hygiene at booth E20. There, visitors will also find information about events like the roots summit or educational offerings like the Dental Tribune Study Club.

From a black tie dinner to a casino or a crazy golf course, there have been some amazing Bridge2Aid Bash events over the years. For Friday evening, Bridge2Aid has teamed up again with the BDIA and the companies A-dec and Henry Schein Dental for its biannual social hangout. A chance for both exhibitors and attendees of the Showcase to wind down after a couple of days at the show, meet with colleagues and network, the event is moving to the Vox Conference Centre, right next to the NEC, this year. According to the organiser, the Bash is going retro with an ’80s and ’90s disco and prices will be awarded for the best fancy dress costume inspired by these two decades. Attendees will also have the chance to test their skills and win prices for scoring top on full-sized retro arcade games, including such classics like Space Invaders, Pacman, Pinball, Sega Giant Tetris and Sega Race TV. All profits from the evening will go to Bridge2Aid and enable them to continue their work in East Africa of training rural health workers in emergency dental care and preventative oral health education to treat their own communities. Admission for the event is £35 per person and can be booked either as individual tickets or in tables of eight to 12.

The BDIA Dental Showcase is one of the oldest and most prestigious dental events in the UK.

Esthetics in many colors
Perfect shade determination with VITA Easyshade® V

Shade determination has never been more innovative, reliable, and above all, more precise than with the new VITA Easyshade V. It now combines all that modern digital shade determination and communication has to offer for your daily business. The result is perfect esthetics. The VITA Easyshade V impresses with maximum convenience and an elegant design, as well as with unprecedented value for money. So why settle for less? 

VITA Easyshade® V


Dental Tribune will again cover the show on its website and special e-mail newsletters. Readers will find the latest news, interviews with key opinion leaders as well as impressions from the show floor at www.dental-tribune.co.uk and on DTI’s various social media channels.
D-Light Pro: A curing light for all situations

Dentists want the convenience of one curing light for all situations, but often the specifications of the devices restrict their use to camphorquinone-based materials. Often, the size of these devices also makes them uncomfortable to use for certain indications. But what if dentists could pick up a curing light knowing it will properly cure whatever material they are using or they could cure close to the pulp, confident that there is no risk of harm? What if the light could also help them to visualise bacterial activity in plaque and infected dentin, micro-leakage and old fluorescent restorations? What if the light was so small that it could be handled like a hand instrument?

The “what ifs” are now reality with the all-new D-Light Pro from GC. This high-powered, dual-wavelength LED curing light offers efficient curing but that is just the beginning. D-Light Pro cures, protects and detects. On top of that it’s as thin as a pen, and so light that clinicians can hold it and manipulate it the way you would a hand instrument.

D-Light Pro offers two curing modes (High Power & Low Power) with 20-second cycles, both guaranteeing an efficient polymerisation of all light-cured dental materials. This is achieved by using two LEDs with different peak wavelengths (400–405 nm and 460–465 nm), resulting in a wide spectrum and the ability to cure all materials regardless of the photoinitiator used in their formulation.

While the High Power mode offers the highest curing efficiency with an output of 1400 mW/cm², the Low Power mode at 700 mW/cm² enables to limit heat generation, for instance to cure adhesives and composites in deep cavities where the preparation comes close to the pulp.

D-Light Pro has a unique Detection mode that uses near-UV violet light to help visualising what is often invisible to the naked eye: old fluorescent restorations, bacterial activity in plaque, fissures and infected dentin or micro-leakage at restoration margins. D-Light Pro is also a great tool to support a minimally invasive approach in many situations. Consider for instance how it takes the guesswork out of cleaning fissures prior to sealing: the violet light will confirm instantly whether this step has been completed correctly. And consider how helpful it is that the light clearly distinguishes between tooth structure and fluorescent restorative materials. It allows the dentist to remove only what needs to be, like old restorations or excess cement, for example after the removal of orthodontic brackets.

At just 95 grams and unusually thin for a curing light, D-Light Pro offers unsurpassed handling for the dentist and comfort for the patient. Its small size and ergonomic design offer easy access in both anterior and posterior areas, with a manipulation similar to that of a hand instrument. A well-calibrated beam also ensures that polymerisation will be efficient even if it is not possible to place the light in ideal proximity to the material being cured.

The D-Light Pro kit contains two batteries which can be swapped easily in just a few seconds thanks to an easy plug-in/plug-out system making it possible to always have one battery in use and one charging. When the light is not in use, both batteries can be charged at the same time.

GC has also thought about sterilisation, and so the D-Light Pro is the first curing light that can be fully autoclaved once its electronic module & battery have been removed, which takes no more than a second.

To have a demonstration of D-Light Pro visit booth J10. More information is also available at www.geeuropa.com.

VITA Easyshade V: More than just a precise determination of tooth shade

The fifth generation of VITA Easyshade stands for more than just a user-friendly spectrophotometer for the objective determination of tooth shade. It is a complete, multi-functional system that supports dentists and dental technicians from the determination and communication of the tooth shade through to reproduction and shade controlling of the finished ceramic dental restoration.

The VITA Easyshade offers a multitude of applications, which was made possible by an expert team of scientific developers and software designers. It is suitable for documenting actual and target tooth shade for professional tooth bleaching and supports, for example, the precise selection of CAD/CAM and filling materials, as well as the planning of aesthetic corrections with veneers. It also enables shade controlling of layered restorations after the first firing and, if required, provides instructions for optimization measures for achieving the target tooth shade.

This fifth generation device is presented in a new, maximally ergonomic design. The user-oriented operating concept has been revolutionized by a brilliant multi-touch colour OLED display, and thanks to an efficient microprocessor and acoustochrom technology, the tool now works even faster, even in continuous operation. Precise measurement results are provided for by the neural network VITA vBrain, among other elements. Basic tooth shade or the shade gradient from incisal to cervical is displayed in the standard shade system VITA classical A2–D4 and VITA SYSTEM 3D-MASTER. The multi-function device also indicates the appropriate VITABLOCS and calculates the bleach shades according to the American Dental Association. Systematic transmission of the shade information combined with patient photos from the dental practice to the dental laboratory is made possible by the Microsoft Windows-based software VITA Assist and the smart phone application VITA mobileAssist.

The fifth generation of the VITA Easyshade delivers exclusive solutions and leaves no questions unanswered. With greater performance, greater precision, more applications and more software, it is the best digital tooth shade determination and communication device on the market. For detailed information visit booth F5 or go to www.vita-zahnfabrik.com.
**Why black, white and silver are the colours this season**

BDIA Showcase marks the announcement of three important milestones for Philips Oral Healthcare and the company is inviting dental professionals to find out why black, white and silver are the colours this season.

In addition to a plethora of on stand activity the company is fielding two expert speakers to lecture during the event in the Dental Update Theatre. Dr Ben Atkins will be presenting “The Evolution of Oral Healthcare” on Friday, 20 October between 15:30 and 16:15. Atkins is a Trustee of the Oral Health Foundation and runs the out of hours dental service for Cheshire. He is also responsible for the treatment of the homeless in Manchester and works as an advisor to the BDA. Generally, he is an advocate for harnessing dental technology to encourage patient compliance.

Meanwhile Dental Hygienist and Therapist Megan Fairhall, who has developed her own brand #LiveToSmile, will be explaining how to harness social media in her lecture entitled “Let’s Be Social” on Saturday 21 October from 15:30 - 16:15. Megan utilises social media and networking to increase patient leads and revenue, and will be letting delegates into her secrets to success. Afterwards both speakers will be available on the Philips stand to answer questions.

Shedding light on chairside whitening

The company will also feature live Philips Zoom! Chairside whitening demonstrations, conducted by some of Philips’ expert Key Opinion Leaders who will also be shedding light on a new Zoom! Chairside clinical study. For the first time the company will be showing how a Dentist and Hygienist/Therapist can work effectively in tandem to provide tooth whitening. To exemplify this Dr Andy Wallace will present and three Hygienists/Therapists will demonstrate on each day of the show; Pat Popat, Megan Fairhall and Christina Chatfield respectively. CPD certification will be available to all delegates attending “Philips’ Zoom!” lectures and demonstrations.

Also on the stand will be a series of brushing booths to allow delegates to trial the new digital innovation, the Philips Sonicare DiamondClean Smart, first-hand. Everyone who trials the new premium app-connected brush at the show will then be able to buy the product and take advantage of a show voucher, and a substantial discount off the retail price.
See more than meets the eye

Cure
With a **dual wavelength**, an output of 1400mW/cm² and a **very light and ergonomic design**, D-Light Pro will be your perfect partner for **all standard curing procedures**. Enjoy its **instrument-like handling** and **never run out of power** thanks to its two batteries!

Protect
D-Light Pro is also offering a Low Power mode at 700mW/cm² to **limit heat generation**, for instance in **deep cavities close to the pulp**. Another way to protect your patient is **through sterilisation**: D-Light Pro is the first curing light which can be **fully autoclaved** after removing the electronic components.

Detect
D-Light Pro is not only a curing unit; it also offers a violet mode which helps you to **visualise bacterial activity** in plaque, infected dentin and fissures, and micro-leakage on restoration margins. It is also an excellent tool to **visualise fluorescent materials**, such as old restorations or excess cement!

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**D-Light® Pro**
**from GC**

Dual wavelength LED curing light