

The Digitalisation of Dentistry

Digital dentistry is the future, and the future is closer than you may think. Right now it is possible to take a digital impression, send it electronically to a laboratory who will then design the restoration via CAD, computer aided design, and then electronically send this information to a CAM centre, computer aided manufacture, who will in turn produce milled or rapid prototype models and mill or laser sinter the framework ready for the technician to produce the aesthetic final stage of the process.

The benefits of going digital are many. Doing so cuts out many steps that are not only time consuming but prone to error. Digitalisation will improve workflow, precision, fit and even, although not necessarily the first thing you might think of, profitability. By embracing the digital revolution a lot of processes will be streamlined and quicker plus remakes or adjustments will be dramatically reduced saving a considerable amount of surgery time. Digitalisation also opens the door to new and exciting materials. These savings and benefits can be had across all standards of work from the highest restorative dentistry to even standard NHS work.

The cost of surgery time is an area many dentists seem not to take into account when making decisions. By far the most expensive thing in a dental surgery is normally surgery time. It may be an eye opener to some dentists to sit down and work out just how much it costs them to run the practice for an hour. Such an exercise will highlight the savings getting

things right first time could make. Maybe a move to digital impression taking would not seem so expensive or, possibly contrary to general thinking, requesting CAD/CAM restorations from the laboratory would actually save money. Even NHS dentistry is not immune to the

benefits of digital dentistry, NHS CAD/CAM non-precious frameworks and full crowns are available now and digital impressions will still have the same benefits whatever area of dentistry.

So what exactly are the benefits of digital dentistry? As we all know the 'old' analogue system is prone to many problems and inaccuracies. Conventional impression materials have a number of inherent issues. The simplest areas to highlight include the impression material itself. It must be mixed correctly, impressions must be sterilised and stored correctly, any small deviation from the correct procedures and instructions will lead to inaccuracies. Moving onto impression taking there are many issues that hinder a successful restoration such as tissue compression, marginal accuracy or even a poor gag reflex. A digital impression does away with virtually all of the associated problems of analogue impression taking, not to mention being a much better experience for the patients.

What about in the laboratory? Not all laboratories are equal and many will suffer from similar types of issues as dental surgeries do, such as time and cost restrictions. Material instructions have to be followed exactly but even when this is done the nature of the materials used bring their own issues. Simply pouring plaster, which often hardens due to an exothermic reaction, can lead to the deformation of the impression. Waxing and metal casting are prone to their own stresses and strains potentially causing further imprecision. Non precious metal dental casting alloys often contain undesirable trace elements such as nickel and beryllium and the process of lost

wax casting can also add impurities to the restoration. Obtaining a passive fit in a cast substructure, which is required in all restorations and especially implant work, is difficult and often requires considerable work and expense.

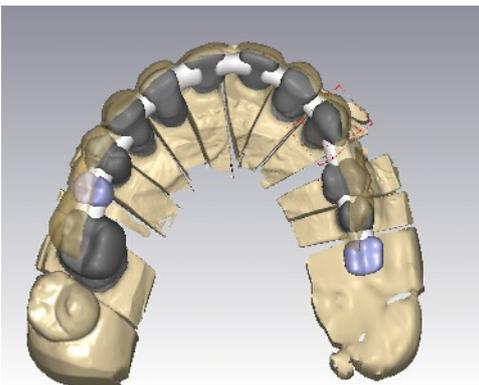
In the current world of 'analogue' dentistry there are obviously things that can be done to minimise problems, such as

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making sure all materials are used and stored correctly, using a laboratory that has a recognised quality system such as DAMAS or ISO 9001 and that has other awards such as being a Straumann Platinum Laboratory to show they have spent the time, money and resources to ensure they are doing things correctly and consistently. However, given the inherent problems of 'analogue' dentistry even that is not enough to guarantee everything is right first time. So what is the next step towards getting things right first time? Step into the future and turn to digital dentistry.

Even without a digital impression the majority of issues can be eliminated by using a CAD/CAM system. A laboratory using a CAD/CAM system to produce restorations on conventional models means the framework can easily be produced to the correct dimensions and anatomical shape to maximise support for the porcelain. Undercuts are automatically blocked out, the desired amount of cement space will be programmed in, the path of insertion will be optimised and model preparation will be minimised. When the framework is being milled or laser sintered it is being done to a tolerance of a few microns with no possibility of any impurities being introduced resulting in a high precision, passive fitting restoration that is right first time. Communication can also be improved as systems such as the Straumann CARES® system allows photographs of scanned designs and models to be emailed to the dentist so any issues can be resolved quickly.

On top of all the previous benefits the metal used for the milling or laser sinter-



ing is a very high quality with none of the trace elements mentioned previously - all in all a far superior metal. But it is not just metal restorations that are better. It is now possible to reproduce virtually all restorations via CAD/CAM. From all ceramic restorations such as Zirconia and E-Max® to hybrid composites of 3MTM ESPETM LavaTM Ultimate Restorative, through to pure metals such as Chrome and Titanium, with various long term temporary materials also available. Not only are the materials comprehensive, the types of restorations are also extensive from single crowns to full arch restorations. Most implant restorations and even denture bars are all available now with even more types of restorations on the horizon.

So with CAD/CAM produced restorations you have perfectly designed, accurately

fitting prostheses that are better for the patient and minimises wasted surgery time. Add in full digitisation with digital impressions and you can have a complete digital solution that will reduce the number of patient visits significantly. It will also be more comfortable for the patient, quicker, be reversible, with less surgery/chair time, speed up workflow and, as a result, lower costs.

The start of the transition to digital dentistry has well and truly begun and it is going to be an interesting time for everyone in dentistry, even the patients. There is no doubt digitalisation will increase and will undoubtedly lead to substantial changes in dentistry for both dentists and laboratories. As many other professions and industries have found once the digital revolution starts there is no stopping it. With the highlighted

benefits, however, why would anyone want to stop it in dentistry? Indeed digitalisation brings so many benefits it would be far better to embrace it now and look to capture the opportunities and benefits the move to digital dentistry will undoubtedly create ahead.



CAD/CAM Materials Available

All Ceramic restorations include:

Zirconia – The material of choice for strength. It can be used almost the same way as metal based restorations from single units to full arch bridges, Maryland bridges and implant abutments/restorations but offers a far more aesthetic and biocompatible restoration than conventional bonded restorations.

IPS E.Max® CAD – Strong material, but weaker than zirconium due to infiltration of glass, which improves translucency, but weakens at the same time. This offers high aesthetics for a variety of situations such as single crowns, veneers, inlays and onlays.

IPS Empress® CAD, Vita Mark II and Vita TriLuxe – similar characteristics and uses as IPS E.Max® CAD.

Composite/Resin Nano Ceramic technology restorations:

3MTM ESPETM LavaTM Ultimate Restorative - a composite type material based on Resin Nona Ceramic (RNC) technology. This excellent new material offers natural tooth-like wear and shock absorbance with no abrasion or opposite tooth damage.

Metals:

Cobalt Chrome – this is a highly versatile and pure material, not to be confused with cast chrome cobalt. It is suitable for a broad range of applications including single crowns, bridges, Maryland bridges and full contour crowns. Anything possible in conventional cast metals can be done using CAD/CAM Chrome.

Titanium – most often used for custom abutments but can also be used for similar restorations to CAD/CAM Chrome.

Polymers:

Polyamide, Polycon® ae and Polycon® cast – a range of temporary materials that provide options for high strength and aesthetics.

New 'British Bite Mark' Campaign

As a proud holder of the 'British Bite Mark' we are one of the first laboratories to have been recognised as meeting all the legal requirements to manufacture crowns, bridges, dentures and veneers in the UK and as such are able to carry the 'British Bite Mark' logo.

The 'British Bite Mark' is a new campaign launched by the DLA that aims to offer patients the opportunity to find out where their appliances have been made and whether they comply with UK and EU regulations.

At Maurice Hood we are committed to complying with all regulations to ensure peace of mind for our customers and their patients and feel this is an excellent new initiative to help boost patient confidence in their treatment. We will be supplying further information about this new standard in the coming months.



British Dental Technology
Clinically Compliant | Professionally Produced

How to Claim your Verifiable CPD

One hour verifiable CPD is available to all, dentists, nurses etc. You do not even have to currently be using our services. To get your CPD answer the questions on the enclosed form and return it to us. You can obtain further forms from our website or even complete the form online at www.mauricehood.co.uk/cpd.

CAD/CAM Pricelist Available - Including NHS, Independent and Private Restorations