

# COMBINING LASERS AND DIGITAL DENTISTRY

Written by **Cohan Rajan**



Cohan Rajan discusses combining restorative treatment using digital dentistry with the benefits of dental lasers



Figure 1: Initial presentation, broken crown, isolation with Isolite for preparation and scanning



Figure 2: After preparation and troughing to expose margins with Waterlase

We are lucky to live in the era of digital dentistry and the technology available to us is ever expanding. One of the areas seeing the greatest advancements is that of intra oral scanners (IOS) with new machines coming to the market all the time.

#### COHAN RAJAN BDS

Cohan graduated from Barts and The London School of Medicine and Dentistry in 1998 finishing his studies there with an MSc (Gerodontology) in 2000. His passion for better treatment through the application of technology lead him to set up a fully digital private squat in 2003, Dental-Spa, in the West End of London where he is still in practice. From then, Cerec and Waterlase have been his go to technologies but recently he has also integrated iTero and CBCT into practice.

WEBSITE: [www.dental-spa.co.uk](http://www.dental-spa.co.uk)

I have used various iterations of the Cerec system for over 15 years now and having been in the same clinic for that time, I have been pleasantly surprised with the longevity of the restorations produced by this system, so I'm a big fan of IOS and digital dentistry.

#### SCANNING IN PRACTICE

When deciding on what technology to invest in for our practices, the key deciding factors should be the benefit to our patients, the benefit of a better and more effective workflow and of course, the benefit to the bottom line.

A good example of this is, recently, I was convinced to get an iTero scanner for the Invisalign treatments we offer. I have found that the way the iTero scanner works, and

the user interface really got my team into scanning in a way that is quite remarkable; to the point that I am in the process of building a scanning room where patients will routinely be scanned as a way of taking digital study models that can then be compared with new scans at the next visit.

The patients benefit from digital study models in real colour which is great for patient education, the hygienist can check for recession, I can check for tooth movements and wear and it is all done quickly and efficiently with minimal costs to the patient. Of course, it works seamlessly for Invisalign too with my assistants doing the scanning. By contrast, they would never use the Cerec. Get the right IOS for the right application was my learning from this. ▶

## RESTORATIVE WORK

When it comes to IOS applications for restorative work, we need to consider what the ideal scenario is for the scanning. The main issues with scanning in the oral cavity are moisture contamination, either of the scanning camera head or of the area to be scanned.

With the scanners becoming so accurate that we can use them for implant work as well, we should now consider how we can manipulate the hard and soft tissues to achieve the clinical result we aim for. The application of lasers and CBCT in relation to implants has been covered elsewhere, so I will not cover that in this article.

For the patient, what is most important is as little as possible post-operative inflammation and pain; we have the technology to give them that outcome. This is also a great practice builder as happy patients refer their friends and family and they also love being treated with lasers.

## LASERS

I have been using the Waterlase all-tissue Erbuim dental laser from Biolase for over 10 years now and my laser is still going strong. Like any dental equipment, it has to be serviced as stipulated by the manufacturer. That is an excellent return on investment by any standards and although there is a computer in it, it is not stressed and performs flawlessly every time. There was a learning curve for me and my team, but it was really not difficult, and the training support was really good.

One of the key benefits to the tissue is that the laser does not destroy as many cells when compared to diode lasers, the scalpel and the worst offender, electrosurgery. As the depth of the cut is from only three cell layers, there is reduced histamine release with little to no post-operative inflammation and zero scar-tissue formation. This is particularly important in the aesthetic zone when we need the soft tissue to stay where we want it. The benefit of no post-op inflammation is self-evident. I use the Waterlase extensively when doing same-day smile makeovers for patients from overseas and I can be confident that the pink/white balance will be stable and gum level is where I want it.

This is another key benefit of the Waterlase as it can be used to trough around margins for exposure of preparation margins prior to prepping and also scanning. It does so in a bloodless manner as there is little to no bleeding when used on soft tissue but without the carbonisation of the tissues.

The primary application of the diode laser in my practice is photo-biomodulation (PBM) where it is commonly used to aid healing and reduce inflammation post operatively and I have found it especially effective in my implant work.

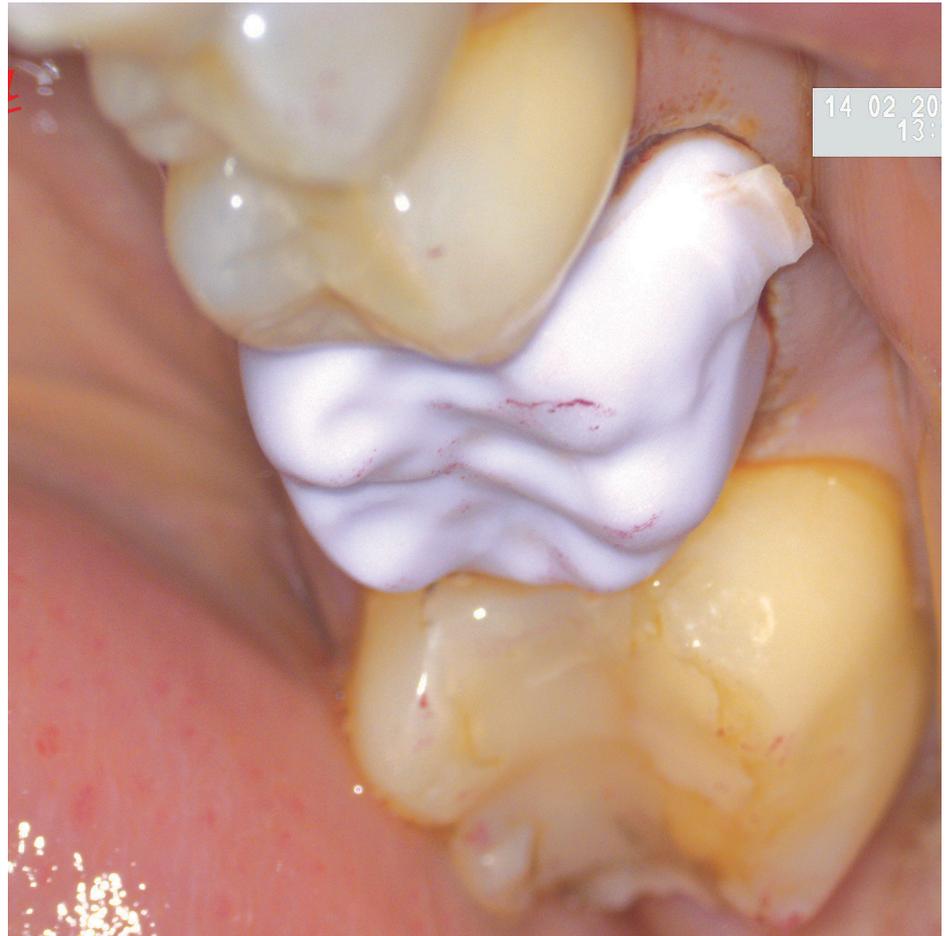


Figure 3: Try-in to check fit and occlusion before sprue removal and crystallisation



Figure 4: Fit with PTFE isolation of adjacent teeth



Figure 5: Removal of excess resin; excellent visualisation of margins with troughing



Figure 6: Final check for excess material. Note how troughing exposes margin but this will rebound

When working with the Waterlase, magnification is very important, and I use a dental microscope usually at 16x magnification. This brings with it a whole new level of detail that can help us to provide better dentistry. With IOS our tooth preparations are blown up to a whole new level of detail right in front of us on a screen, so we need to strive for fantastic margins that are also free of contaminants and blood.

The case study pictures illustrate a typical digital workflow for a Cerec Emax restoration in my practice, which will be booked for two hours in the appointment book. I charge a modest fee separately for the laser treatment, but I do tend to use it for almost every prep in the posterior region as often, by the time a ceramic restoration is indicated, I usually find there will be just sub-gingival margins which will need to be exposed prior to prep and scanning.

To deal with moisture contamination I use Isolite (now Zyris) for preparation, scanning and fit and find this system to be well tolerated by roughly 80% of patients. It also provides a field that is comparable to rubber-dam isolation in terms of moisture control.

You can see from the pre-scan photo (Figure 2) how the Waterlase troughing leaves no bleeding and that continued through to the removal of excess luting at the resin stage, as I find that the bleeding is minimal after using it on soft tissue. This is optimal when combined with IOS. I use a radial firing tip in contact mode so troughing a tooth like this is the work of a couple of minutes. For me, the benefit of the Biolase ecosystem is the wide variety of tips available for the Waterlase which really broadens the applications of lasers in dentistry and a really enthusiastic group of peers when you go to one of their meetings.

The onwards march of digital dentistry is something that I celebrate and enjoy using in my practice and Waterlase is really an integral part of my workflow that I use every day to help me provide the best standard of care I can for my patients. I can't imagine practising without it and it's such a fantastic tool that I have no hesitation recommending it to everyone using or considering an IOS. Take the leap and invest in your dentistry! ●

#### MORE INFORMATION

To find out more about Biolase lasers, or to book your free laser demonstration call Optident today, or visit the website to view a range of laser educational events.

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