

Getting the ultimate clinical and aesthetic results using flexi-base zirconia abutments

Jon Dolding from Ceramic Designs Lab describes how even challenging implant positions can be overcome with careful abutment design to produce beautiful results

A 67-year-old male presented after a tooth extraction. He was fed up with wearing his plastic removable denture that had become ever less retentive, and was now causing pain and embarrassment. He and his dentist had decided that a fixed solution was the preferred choice, but a traditional cement-retained bridge on his remaining teeth was not an option due to prognosis of the other dentition. His general health was good and his medical history showed that he would be a suitable patient for dental implants.

Treatment planning

After initial conversations between the patient and surgeon, study models were



Jon Dolding is clinical director and owner of Ceramic Designs Laboratory. He qualified as a dental technician in 1985 and has been a business owner since

1992. Choosing to work in the challenging field of crown and bridge dentistry, he found a natural talent for cosmetic dentistry. Always keen to challenge himself, he saw an interesting future in dental implantology when it was, in the UK in its infancy, so he took it upon himself to attend numerous implant courses to learn the new skills needed for this exciting field. He soon became a Straumann Platinum registered technician and worked closely with them and Ivoclar as an opinion leader for the dental laboratory industry, along with being an early adopter of digital dentistry. Ongoing education has always been vital and now Jon works with multiple implant systems where he continues to run clinical trials and beta testing for large and small implant companies as well as running Ceramic Designs Laboratory.

ENHANCED
CPD

ENHANCED CPD HOURS: 1
GDC DEVELOPMENT OUTCOME: C

Educational aims and objectives

The aim of this article is show how even challenging implant positions can be restored aesthetically with careful abutment design.

Expected outcomes

The reader will understand that in the anterior region it is best to choose a veneer of zirconia framework.

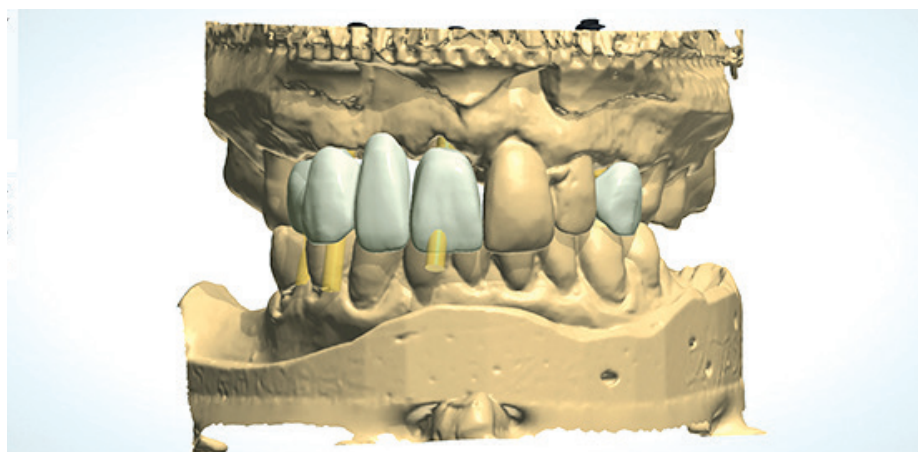


Figure 1: Substantial loss of tooth structure, particularly in the anterior region

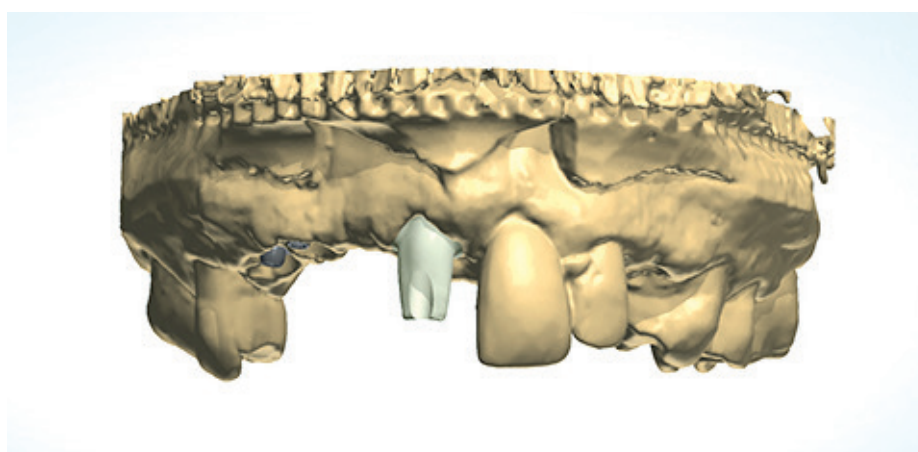


Figure 2: Custom abutment designed to allow parallel path of insertion to UR3 retainer

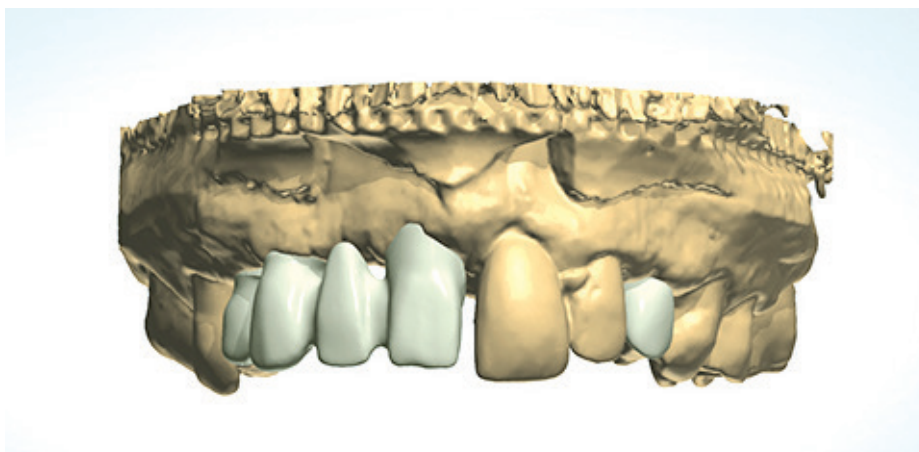


Figure 3: Aesthetic bridge design, covering screw hole and allowing for veneering porcelain

made. Visualisation wax-ups were produced for the patient to see, and once the patient had accepted the treatment plan and was happy to proceed, surgical guides were manufactured.

The patient was made aware that following placement, a short integration

period was needed, during which time he would still wear his adjusted and relined removable denture.

After six weeks the patient returned to the practice for the next treatment stage, where the bone-level implants were uncovered, integration checked,

impressions and bite registrations taken. Ceramic Designs Lab was contacted and the case collected.

Impression handling, model making and designing

The impressions are cast in the normal way and trimmed to allow for easy and comfortable handling.

Axiom bone level implants have a great impression ring that is placed onto the impression coping to mimic the chosen healing cap. These duplicate into the soft tissue masks ensuring the correct emergence profiles are replicated on the model. This makes fitting these restorations much more comfortable for the patients, who no longer need local anaesthetic for that stage. The removable soft tissue allows for easy placement of scan flags, allowing the technician to easily check that they are correctly located and seated against the model analogues.



Figure 4: Custom abutment cemented to Axiom BL 5 GH1.5 Flexi-base



Figure 5: 'Screw and glue' retained bridge, in-situ, sitting passively against soft tissue mask hiding the cement junction of UR1 on the stone model



Figure 6: Custom abutment resting passively within definitive bridge framework



Figure 7: Laboratory-made zirconia custom abutment. We recommend using a slightly softened Temp Bond adhesive for this type of custom abutment design which will hold but allows the bridge to be retrievable



Figure 8: Palatal view of custom abutment design to passively sit on soft tissue, with the cement junction fractionally supra-gingival, and with a soft contour so that flossing is easy for the patient



Figure 9: Tight occlusion meant very thin porcelain on palatal aspect but even in these thin sections the tooth coloured zirconia is still preferred by patients to a polished metal backing

Once fixed in place, final but vital model and occlusal checks are made before scanning starts. After the scan data is captured and processed, a 3D virtual model image is used to design the restorations, taking into account the implant system, restoration type and 'screwed or glued' final fixing.

As this case was in the anterior region, we chose to veneer a zirconia framework as our restoration of choice. Zirconia gives us so many benefits over traditional bonded alloy solutions. With the most important for the patient being the enhanced aesthetics. This is also why we prefer to use a GH1.5 Flexi-base-zirconia interface connection rather than an Atlantis, titanium custom abutment solution. As you can see in the following slides, the gingival depth and thickness is limited, and the patient has already had some tissue and bone loss around the UR1 site. The concern was that there may be a grey shine-through of any titanium close to the abutment/crown margin.

As we are all acutely aware; ensuring that all sub gingival cement is retrieved in this type of situation is paramount to health of the implant.

Summary

We use 3Shape as our design software of choice, and Anthogyr allowed us to do the first UK clinical trials of their IOS scan body and DME files. This allows the case to be designed as two files, but uses the original abutment core file to be integrated with the bridge design to ensure a perfect fit.



Figure 10: Labial bridge abutment cement junction is designed to be 0.5mm sub-gingival. The interface between the 1.5mm gingival height flexi-base and custom abutment is bonded and polished in the laboratory, ready for placement into the implant