

Smile Awards case study

Winner of the Aesthetic Technician at this year's prestigious Smile Awards, **Simon Caxton** of Simplee Dental Ceramics presents his case using Emax press bridges

Treatment list

- Two 3 unit IPS e.max Press Bridges

Restorative material

- IPS e.max Press Layering Technique
- IPS e.max Ceram
- IPS e.max Press Ingot LTBL3

Adhesive system

- Acid Etch and Optibond 2FL on prepped teeth
- Etch and Silane
- Vitique Cementation Kit

Introduction

There are many porcelain systems available, both pressed and layered, that could accomplish this same goal. Communication between the laboratory and the dentist is very impor-



Simon is a highly experienced technician of 18 years, in this time he has travelled the UK and Europe, including Germany and Liechtenstein, obtaining the best education and training available. His skills have taken him to industry award ceremonies, where in 2009 and 2010 he received highly commended awards for his ceramic work. This year he was the winner of the Aesthetic Technician Smile Award. With 10 years experience in aesthetic and cosmetic dentistry he is at the forefront of advanced aesthetic ceramic work. Simon has been involved with and using the early CAD/CAM technology and advancing with the new modern CAD/CAM systems. During his career Simon has been involved with training courses for both clinicians and technicians, giving help and advice of smile design principles and techniques, also more advanced cases and occlusal rehabilitation. He has also attended ultimate occlusion courses run by top clinicians and trainers from the USA. He has used many different ceramic systems and has been using and working with pressed ceramics from its introduction into dentistry to the present day, undertaking many courses for these systems, including press-

Education aims and objectives

The aim of this article is to present a case study using two 3-unit IPS e.max Press Bridges from a technician's perspective.

Expected outcomes

The reader will understand the steps taken to produce an exceptional result.

tant, as are the desires of the patient. It is the responsibility of the Ceramist to use all the information available to deliver the restorations the patient and the Dentist wish.

The patient's main complaint was that she disliked her existing old bridges and the shape and colour of her old veneers and wished them to be brighter and more even in appearance.

History

Miss LH had congenitally missing upper lateral incisors which were restored by two cantilever Maryland bridges with wings on the canines. She had two ceramic veneers placed on her central incisors. Her upper left canine and upper left central incisor are both root filled. Her oral hygiene was good, there was no evidence of occlusal parafunction, and her periodontal health was good.

Treatment plan

After a comprehensive clinical examination and diagnosis by the Dentist the following options were presented to Miss LH:

- 1) Replacement marylands with two new veneers
 - 2) Two dental implants with bone augmentation and two veneers
 - 3) Two 3 unit all ceramic bridges
- Some bleaching would be carried out on the lower teeth to lighten them.

The goals of the treatment would be:

- Improved colour from A2/A1 to A1/BL3

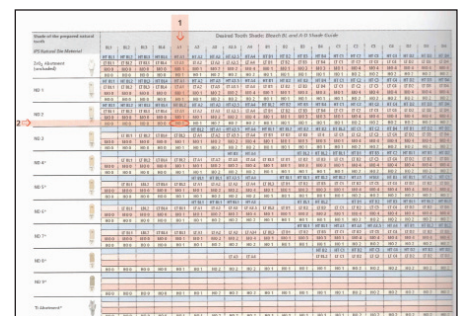


Figure 1: IPS e.max Press Instructions For Use, 2009

- Improve length to width ratio

Pre-operative impressions were taken by the Dentist and sent to the laboratory along with proper records, including facebow, bite registration and a mock up in the mouth and photos, to make a diagnostic wax up of the six restorations. Once the diagnostic wax-up was accepted by the patient, the Dentist was ready to proceed with the treatment. The teeth were then prepped for bridges and a soft tissue laser was used to re-contour the gingiva in the lateral region for better pontic design.

With the aid of the Optident Trueshade Shade Light, the foundation shade of the preparations for the veneers was recorded at ND2, with some ND3 on the tips of the central incisors. This was done using an Ivoclar Vivadent Natural Die Material Shade Guide. The finished temporaries were then made using a putty matrix taken from the diagnostic wax up. Telio CS C&B A1 was used to do this.

Pre-op photos



Figure 2

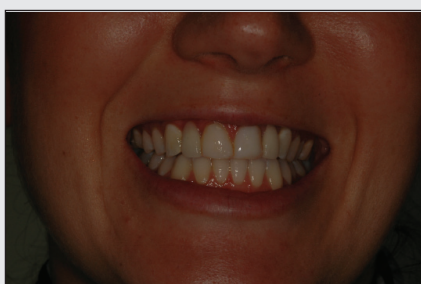


Figure 3



Figure 4



Figure 5



Figure 6

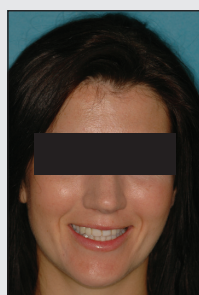


Figure 7



Figure 8



Figure 9



Figure 11



Figure 12



Figure 13



Figure 14



Figure 15



Figure 16

The case was then sent along with all the required information and photographs needed to fabricate the final restorations. The patient returned to the Dentist a couple of days after the provisional restorations were fitted, minor alterations were made and then records were sent to the laboratory of the patient approved temps.

Laboratory procedure

After receiving the case in the laboratory, stone models were poured, trimmed and cross mounted on a Denar Articulator using all the records provided. The preparation design consisted of four crown preps UL3, UL1, UR1 and UR3. Although the centrals had been root treated, the preparations were of good col-

our. There was two options available to me, a Zirconia based framework overlaid with e.Max Ceram or e.Max Press framework overlaid with e.Max Ceram. Although the Zirconia framework would have been stronger, it was decided that e.Max Press would be the material of choice due to the conservative nature of the preparation. For a Zirconia based framework,

Pre-op photos



Figure 17



Figure 18



Figure 20



Figure 21



Figure 22

Preparation application

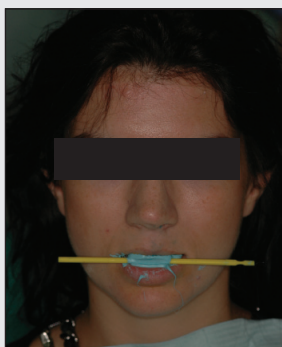


Figure 23

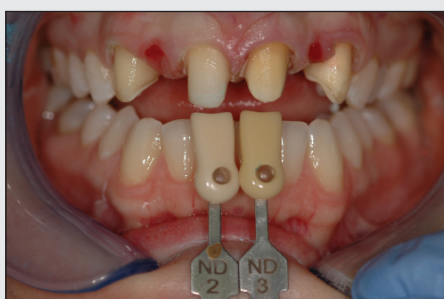


Figure 24

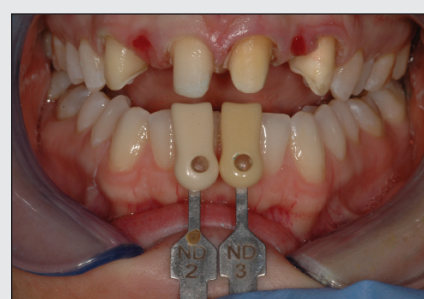


Figure 25



Figure 26

a total thickness of 2mm or more would have been needed, inclusive of the Zirconia framework and layering Ceram. I thought that the Zirconia would have given the bridge an appearance that was too opaque. As the prepa-

ration shade was good and there was no evidence of any bite issues and the pontic width did not exceed 11mm, which are the guidelines for pressed bridges in the anterior region. The models were prepared for the wax up stage.

Using a model of the temporaries as a guide, along with putties of the incisal edge position of the temporaries and pre-operative models, wax was applied to the master model to around 95% of the final size and shape of the bridge

Temporaries review



Figure 27



Figure 28



Figure 29



Figure 30



Figure 31

Try-in bridge images



Figure 32



Figure 33



Figure 34



Figure 35



Figure 36

units. Using the information supplied by the dentist including all photographs and written information, this was used to help determine the final shape and design of the final restora-

tions. There was also some additional information supplied by the patient as to some small changes that they wished to make to the final restorations. The patient felt that her tempo-

rarities were canted from her right to left and the canines were too bulky and needed to be more like the pre-operative shape.

After the wax up was finished, a putty ma-

Post-operative images

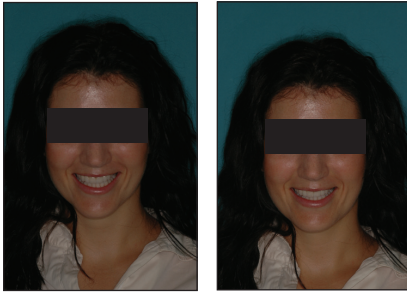


Figure 37

Figure 38



Figure 39



Figure 40



Figure 41



Figure 42



Figure 43



Figure 44



Figure 45



Figure 46



Figure 47



Figure 48



Figure 49

trix was made and the incisal edge was cut back in the wax to allow for the incisal layering ceramic. When happy with the cut back, the bridges were separated and sprued and invested according to the manufacturer's instructions.

I chose to use an e.max LT BL3 Ingot based on the prep shade, which was ND2 with some ND3. According to the manufacturer's guidelines (see Figure 1) to achieve a desired shade

of A1/BL3 with a foundation shade of ND2/ND3 a HT BL3 Ingot is recommended. The restorations were pressed in an Ivoclar EP3000 Press Furnace, cooled and de-vested. They were cut off of the sprues and fitted back on the master model. Then using the putty matrix of the wax up the incisal third was adjusted and checked to make sure that there would be a uniform layer of incisal material. Stump shade dies were made using the Ivoclar Natural Die

Material. This is a light curing composite that simulates the shade of the prepared tooth. In this case, it was ND3 as mentioned earlier. This allowed me to check the shade of the restorations throughout the ceramic build up stage. Once I had checked the frameworks on the Natural Die Material dies, I made a drawing of the shade that I would be using. This was done by studying the pre-op photographs to pick out some of the natural effects that I could com-

bine with the prescribed shade that had been chosen by the dentist and patient. This would allow me to make more natural looking bridges as the patient did not want her new teeth to look false.

The first part of the build up was to do a wash coat of ceramic to the framework in order to give a good bond between the framework and the layering ceramic. A small amount of e.max Shade Paste No.1 was then used in the cervical area of the framework to give a greater depth of colour and to help the veneers blend into the gingiva and give a more natural appearance. Essence shades E17 (Sapphire) and E15 (Profundo) and a mix of E2 (crème) and Shade paste 1 were added to the incisal area. Dentine A1 and Opal effect 5 mixed at a ratio of 2:1 was used in the cervical area of all the restorations. Opal Effect 1 was added to the mesial and distal areas and a mix of Opal Effect 1 and transpa incisal 1 was layered over the rest of the restorations to the desired size and shape. No dentine material was added to the body or incisal areas as i did not want to cover the characterised framework. This incisal material was extended by 0.75 to 1mm in or-

der to allow for the shrinkage of the material that takes place during the firing stage. Once I was happy with the overall size and shape of the restorations, they were removed from the master dies, placed on a firing tray and fired in an Ivoclar EP 3000 Porcelain furnace at 745 degrees centigrade.

After the first firing, the restorations were once again checked on the Natural Die Material Dies to see if the shade matched that of the prescribed shade. I also referred to the Ivoclar Bleach Shade Guide Tabs to ensure I had the correct colour saturation in the areas required.

The restorations were then fitted to the master model and then to an uncut solid model to check the interproximal contact points. Following the corrective firings (at 740 degrees centigrade) that I had made using the relevant materials (Dentine or enamel), I adjusted the shape of the restorations and created the surface texture that I desired. Once I was satisfied with the final shape and texture, they were checked on an articulator, making sure all the excursive and protrusive and all the other contours were satisfactory. A final check was carried out on the Natural Die Material Dies and

a thin layer of stain liquid was painted on the labial surface to mimic the final glazed appearance. This would show me the incisal effects and texture and give a good idea of the final shade. When I was satisfied that this was all correct I cleaned the restorations and the final glaze was carried out using a diluted mixture of glaze paste and stain liquid. This was then fired at 720 degrees centigrade.

Finally, I achieved the degree of lustre I required by mechanically polishing with rubber wheels and finishing with diamond polishing paste. After thoroughly checking to ensure all criteria had been met, they were cleaned and etched and sent to the dentist. All were seated successfully.

Conclusion

Two pressed three Unit Bridges were used to restore the patient's smile and improve aesthetics. The strength and lifelike attributes of IPS e.max Press and IPS e.max Ceram blended well with the existing dentition. The patient was extremely pleased with the end result and it has given her more confidence and increased her self-esteem.

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