A clinical case study: producing an onlay with the Lava COS

Dr Ilan Preiss, Bow Lane Dental Practice, London

A 35-year-old female presented to our practice with a recently root canal-treated upper right first premolar (14).

She was advised to place an occlusal coverage restoration on the tooth to prevent future fracture, as most of the tooth, with the exception of the buccal wall, was made up of filling material. To complicate matters she recently had a gingival graft procedure, which was necessary to cover over an area of recession on this tooth (**Figure 1**).

Her periodontist issued strict instructions not to have a margin that came close to the grafted region. After consideration it was decided that an onlay would meet all clinical requirements. As the patient was also very demanding on the final aesthetic result, this was the best decision.

An accurate shading was taken both of the enamel and dentine shades before prepping. Any discolouration at the base of the cavity during the preparation stage was also noted (**Figures 3 and 4**).

The tooth was prepared for a pressed porcelain onlay with the finishing margin buccally a few millimetres short of the

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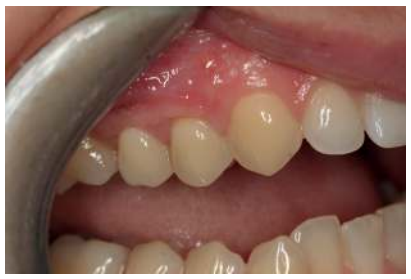

FIG 1

FIG 2

FIG 3

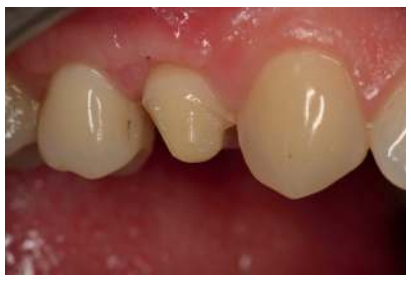

FIG 4

Producing an onlay with the Lava COS

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cervical margin. Guidelines for the preparation of a porcelain onlay were carried out.

The region to be treated was then isolated and prepared in order to allow for an accurate scan of the tooth. This required adequate cheek and lip retraction as the prepared area had to be kept dry. This was achieved using Kerr's Optragate and triangular Dry Tips alongside adequate suction.

A light dusting of the regions using the Lava COS powder was undertaken for the areas due to be scanned (**Figure 5**). Please note: this isolation shown in **Figure 5** is only an example, from a different patient, and is for a lower tooth; in the upper arch the tongue retractor is not required.

The digital wand of the Lava COS (**Figure 6**) was then passed over the upper right quadrant to capture all details, as well as the opposing quadrant and bite registration. Using the digital wand avoided any discomfort for the patient.

The end result produced an accurate 3D image of the case which allowed both the dentist and patient to review the tooth in a 3D format

FIG 5

FIG 6

FIG 7

and analyse the preparation from all angles in great detail.

A temporary restoration made from a putty guide of the original shaped tooth was then constructed and made with an acrylic temporary and cemented with non-eugenol cement.

A prescription for the patient was created and then transmitted wirelessly with the data collected from the scan, using the prescription page on the touch-screen computer. Photographs of the case were also sent via e-mail to the technician.

The laboratory received and digitally processed the case using the Lava COS laboratory software, and the files were then sent digitally to a rapid prototype centre for the production of a stereolithographic model (SLA), as shown in **Figure 7**.

The laboratory received the SLA model and the usual laboratory steps were carried out in order to produce a porcelain onlay (**Figure 8**).

The fit of the porcelain onlay on the model was also checked, and one can see from the image (**Figure 9**) the great fit that is possible with the Lava COS and SLA model.

To ensure accuracy when using the Lava COS, it is important to ensure clear retraction, similar to when using conventional impression

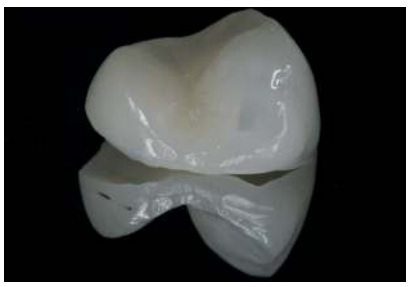

FIG 8

techniques. This can be achieved with a retraction cord, laser or other suitable methods.

Looking at **Figure 10** in this particular crown case, all the margins are visible, clear and smooth with rounded edges (note that this image is of a crown prep and not the onlay case in question).

During the next appointment, the "fit appointment", the temporary restoration was removed and tooth cleaned of all remnants of temporary cement.

The porcelain restoration was tried in and checked for fit, contact points and colour.

Following this stage, all the usual protocols were carried out to cement the porcelain restoration using Variolink Cement (Ivoclar Vivadent) base and catalyst cement. Yellow A1 cement with low viscosity was chosen.

Using a series of polishing burs and soflex discs, the restoration and tooth was polished and occlusion checked in all excursions.

One can see from the final result (**Figure 11**) that all objectives were met and a fantastic fit and aesthetic result was achieved; all without risking the success of the gingival graft.

In conclusion, the patient was

FIG 9

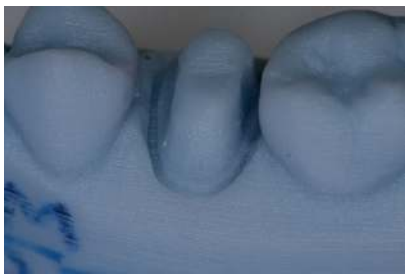

FIG 10

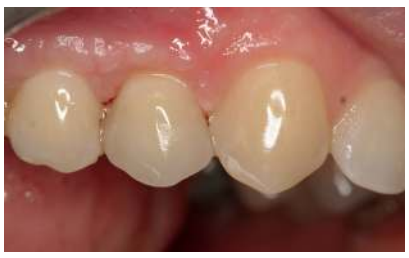

FIG 11

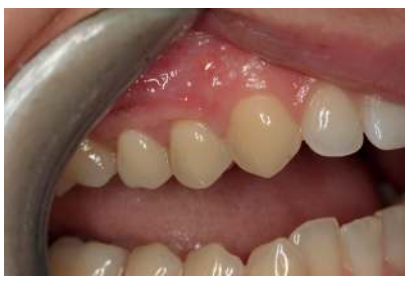

FIG 12

delighted with the aesthetic result, and commented on how comfortable the digital impression felt in comparison to the normal process for taking dental moulds.

Warning for caution over releasing children's notes

DENTISTS are being warned that they should seek advice and exercise caution before complying with requests to release children's dental records to authorities where valid consent has not been obtained.

The UK-wide medical defence organisation MDDUS is reminding dentists that non-consensual release of patient records could be in breach of the law, as well as falling foul of the General Dental Council.

MDDUS emphasises that normally, sensitive information which is contained in dental records should not be released to a third party without the patient's explicit consent. In cases involving children who have yet to reach the age of legal capacity, the consent of the child's parent or court-appointed guardian is usually required.

In recent months, however, a number of members have contacted MDDUS following requests by various authorities for release of children's notes in circumstances where valid consent has not been obtained.

While MDDUS is "entirely sympathetic to the intuitive desire to assist in matters of such gravity, dental practitioners are, nonetheless, warned to exercise great caution before complying with requests of this nature", it says.

MDDUS advises that when authorities such as the police ask for the notes of a child who is not competent to provide or withhold consent, it is reasonable for the practitioner to request sight of written consent from the person with parental rights and responsibility.

Where this is not forthcoming, then disclosure could be justified by the production of a court order. Alternatively, if the request is pursuant to a statutory power, then this must be specified prior to disclosure.

Doug Hamilton, dental adviser, comments: "While any caring professional will be anxious to assist in the protection of vulnerable patients, it must be remembered that non-consensual release of records is fraught with potential dento-legal difficulties."