Using the same material for different cases

Anterior ceramic restorations placed with the adhesive luting technique

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In many clinical situations, a combination of full and partial restorations is indicated. In order to fulfill (bio-)mechanical, functional and aesthetic requirements, it is of utmost importance for clinicians to select the most suitable ceramic materials for each individual case. A thorough knowledge of the latest ceramic systems and adhesive luting techniques is all it takes to fabricate partial restorations according to biomimetic principles.

In our case, a 28-year-old female patient consulted our practice with the request to improve her smile. She was particularly concerned about the appearance of her four maxillary anterior teeth. Orthodontic treatment would have been an elegant solution to realigning both the maxillary and the mandibular arches, but the patient declined this option. Another approach therefore had to be taken to meet her needs.

Teeth 11 and 21 had previously been restored with porcelain-fused-to-metal (PFM) crowns. Besides their appearing very bulky, teeth 12 and 22 (the two lateral incisors) appeared to have been pushed back (Figs. 1 & 2). The patient also had very bright teeth, which would have to be correctly imitated by applying internal highlights (Fig. 3). On the basis of the aesthetic treatment plan, a mock-up of the restoration was fabricated with a tooth-coloured composite resin. This anterior matrix, as we call it, was used to discuss the desired outcome with the patient.

The pushed-back position of the lateral incisors was to be restored with veneers, followed by minimal preparation and new crowns for the central incisors. The lateral incisors were minimally prepared according to the anterior matrix (Figs. 4 & 5). The space available for the new restorations was shown to be ideal after the PFM crowns were finished after minimally invasive tooth preparation (Fig. 6).

The remaining amount of tooth structure was adequate to provide biomechanical reinforcement for the two central incisors (Fig. 6), which is also known as the ferrule effect. Therefore, we decided to place the new ceramic restorations according to an adhesive luting protocol.

Based on the information that was available about this case (the colour of the enamel and the tooth core etc.), the laboratory technician selected a suitable press ingot (IPS e.max Press, Ivoclar Vivadent; Fig. 7). The challenge was to select an ingot that would accommodate both the crowns for the highly chromatic and luminous central incisors and the thin veneers for the light lateral incisors (Fig. 8).

When maximum brightness is desired in restorations on intensively coloured bases like the two incisors in this case, a medium opacity ingot is the first choice, as it provides a medium level of opacity, as well as good masking properties and

Fig. 1: Pre-op situation (front view).—Fig. 2: Pre-op situation (side view).—Fig. 3: The exceptional luminosity and brightness of the anterior teeth were established during shade selection. —Fig. 4: The tooth-coloured mock-up gave an indication of how the two lateral incisors would have to be prepared.—Fig. 5: The chroma of the prepared teeth 12 and 11 was determined (IPS Natural De Material shade guide; Ivoclar Vivadent). The selection of the appropriate press ingot required considerable care and deliberation, since the thickness varied between the restorations. The difference in the preparation depth of the lateral and central incisors is clearly visible in the photographs.—Fig. 6: A sketch of the aesthetic features served as a guideline for the restoration build-up.—Fig. 7: The layering scheme taking aesthetic planning aspects into consideration.—Fig. 8: Creation of the tooth shape and the surface texture on the model.—Fig. 9: The surface texture of the restorations was checked by applying a fine layer of powdered gold.—Fig. 10: The four anterior restorations were seated with adhesive luting composite. As a result of the existing occlusal conditions, the incisal edge was relatively easy to create and imparted considerable personality to the smile.—Fig. 11: A photograph of the final situation on which it is evident that the crowns and the veneers have the same colour.—Fig. 12: The black-and-white photograph allowed the four ceramic restorations to be assessed in terms of value.
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a high degree of fluorescence. The minimally prepared teeth did not provide a binding colour for the partial restorations. Therefore, a more translucent type of ingot would impart a greyish appearance to the relatively thick lithium disilicate veneers. Owing to this, we usually prefer a fluorescent (medium opacity) ingot to ensure the appropriate brightness of the restored teeth.

The restorations were finally fabricated using the well-known press technique. Since the patient had very intensively coloured gingival tissue and dark red lips, the tooth necks had to be saturated with IPS e.max Ceram Oclusal Dentin brown and Deep Dentin A1, in addition to the selected A1 shade (Figs. 9 & 10), for a smooth transition between the tooth necks and the restorations. A large amount of information, which was extremely helpful in the finishing, was provided for the laboratory by means of close-up photographs of the teeth and gingival tissue, as well as the patient’s face showing various natural facial expressions. The surface texture and the shape of the teeth (Figs. 11 & 12) were carefully recreated. Finally, the restorations were prepared for placement.

Conclusion
Upon seating the restorations, it was evident that our treatment approach had been successful and the teeth blended in smoothly with the dentition. The overall impression was harmonious (Fig. 13). The ingot that had been selected was shown to be ideal for this case. There was no difference in shade between the two crowns on the central incisors and the adjacent veneers (Figs. 14 & 15). A highly aesthetic solution was achieved with minimally invasive tooth preparation (Figs. 16 & 17).