TRENDS & APPLICATIONS

Together towards pink–white aesthetics

Communication is the foundation for natural-looking results

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In the field of prosthetic dentistry, effective communication between the clinician and dental technician is of the utmost importance. Consistent close cooperation between the dentist and the dental technician and their concerted action provide the basis for a successful outcome. This article demonstrates the importance of good cooperation in a case that involved soft-tissue remodelling in the anterior region, among other things.

A 32-year-old female patient presented to our practice with an unsightly, defective anterior bridge extending from tooth #12 to tooth #21. The bridge had been placed seven years previously but the patient was unsatisfied with her smile and was seeking an aesthetic, more natural-looking alternative. The veneer of the metal–ceramic bridge had a very opaque and yellowish appearance.

At tooth #21, the metal margin was exposed cervically owing to gingival recession. Alveolar ridge atrophy in the area of the missing right central incisor (pontic) had resulted in a considerable vertical reduction. The shape and shade of the teeth needed improvement, and harmony between the white and pink tissues had to be re-established (Fig. 4).

Treatment plan and mock-up

Smile improvements often involve complex procedures; therefore, it is advisable to simulate the final result by means of a direct composite mock-up. This important step boosts the patient’s trust and confidence. A mock-up provides the patient with a clear idea of what the effect of the planned restoration will be once it has been seated in the mouth.

In our opinion, this step cannot be entirely replaced by digital design previews. Furthermore, the mock-up allows the laboratory technician to obtain a better understanding of the individual clinical situation. Later, it can be used as a template in the fabrication of the laboratory wax-up and/or the provisional restoration.

In our case, the mock-up revealed that in order to achieve a more balanced appearance, tooth #22 had to be integrated into the restoration (Fig. 3). Even more important, it showed that not only the correct position, shape and colour of the teeth, but also the correct gingival architecture and emergence profiles were key factors in achieving a harmonious smile in this case. Consequently, the patient was informed that the soft-tissue volume would have to be increased in the pontic area in order to achieve a satisfactory result. The patient fully agreed to the treatment plan suggested.

Overall, the treatment plan involved the removal of the existing restoration, the placement of a provisional bridge and soft-tissue grafting in the pontic area (soft-tissue management that would take several months), as well as the insertion of a new ceramic bridge and a laminate veneer on teeth #22 and #13, if needed.

Connective tissue graft and immediate provisional bridge

Frequently, tooth extraction is considered a possible cause of alveolar ridge atrophy. In this particular case, there was a considerable lack of volume due to bone loss in the pontic area. For the purpose of re-establishing the soft-tissue architecture, two surgical interventions were planned. Immediately after the first connective tissue graft had been performed, a laboratory-fabricated provisional bridge was placed. The bridge was constructed on the basis of the mock-up information and reinforced with metal wire.

The soft-tissue contouring phase that followed took several months. Initially, the provisional exhibited an inner concave surface to provide sufficient space for the soft tissue. It has been suggested that a provisional pontic should have a convex final shape. However, having a concave initial shape allows for progressive tissue modelling from the palatal to the buccal side, which is helpful especially when several grafts are needed (Figs. 5a–6d).

Communication of emergence profiles and shapes to the laboratory

Once the desired soft-tissue shape had been achieved, one of the great challenges was to transmit all of the relevant information, especially the length of the inter-incisal papillae and the pontic shape, to the laboratory. This is important because when the impression is made, the pressure of the impression material may deform the soft tissue. In order to prevent any possible loss of information, the pontic area of the provisional restoration was filled with a silicone-based impression material and then placed over the prepared teeth on
the model (Figs. 7–8b). This would provide the technician with a good approximation of the final shape of the pontic. In order to determine the correct location of the contact point, the distance between the bone crest and the gingival crest was measured.

It is well established in the literature that a papilla will be present if the contact point is no more than 6.5 mm away from the most coronal interproximal height of the bone crest between a natural tooth and a pontic. This can be measured by probing the bone with an endodontic spreader, marking the distance during the ceramic try-in and then using it in the fabrication of the restoration.

However, using this distance can lead to a very large contact area with a short papilla if the bone is missing. The result is an unnatural, square tooth shape. Hence, this is important information for the technician. When applied wisely during ceramic layering, interproximal pink, brown and yellow stains can create a very natural illusion and thus help to overcome this problem. In the course of the treatment in this case, it became clear that the restoration of tooth #13 was unnecessary to achieve the desired outcome.

The try-in of the restoration showed that the zeniths of the gingival contours were misplaced. The use of slide sharing software allowed us to transmit visual information to the dental technician regarding the issues of the desired gingival zenith, interproximal stains (to mask the interproximal spaces) and the position of the buccal ridges, which is of paramount importance for the visual perception (Fig. 9).

**Final restorations**

Even though cementing the veneers first has certain advantages (colour stabilisation), in this particular case, both types of restorations were cemented simultaneously. The veneer for tooth #22 was pressed from IPS e.max Press lithium disilicate glass-ceramic (LT ingot in Shade A2; Ivoclar Vivadent) and completed with IPS e.max Ceram (Ivoclar Vivadent). The pressable ceramic is available in various degrees of opacity and enables aesthetic restorations to be fabricated that blend seamlessly with the remaining dentition. Variolink Esthetic LC in a neutral shade; Ivoclar Vivadent), a light-curing luting composite, was used to cement the laminate veneer (Figs. 10–13).

The porcelain-fused-to-zirconia bridge (IPS e.max ZirCAD; Ivoclar Vivadent, veneered with IPS e.max Ceram) was cemented with the self-adhesive, self-curing resin cement SpeedCEM (in the transparent shade; Ivoclar Vivadent) according to the instructions given by the manufacturer.

**Conclusion**

Smile improvements are very challenging, particularly if harmonisation of the gingival architecture, in addition to restoring the white aesthetics, is required. Only by choosing a multidisciplinary treatment approach will mutually beneficial communication between the dentist and dental technician take place. This is a prerequisite for achieving success.