Trends & Applications

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The restoration of dentition with implants has become an established procedure throughout the world. Owing to ongoing research and development in this field, this treatment modality has become increasingly popular. Furthermore, the number of companies that manufacture dental implants and the corresponding prosthetic components has risen commensurate to the speed at which the advancements have been made.

However, the large number of commercially available systems has not helped much to improve aesthetics and function. Clinicians find themselves overwhelmed by the confusing variety of products and have trouble selecting the components that suit the treatment modality best.

Implant-supported crowns are not all the same: each patient has individual needs that have to be taken into consideration. Generally, abutments are divided into two categories: ready-made or customised (titanium, zirconium oxide, etc.). Ready-made abutments are machined components with standardised shapes and dimensions, while custom-made abutments are specially created for each patient.

Customised abutments are considered to be an efficient solution for placing a restoration on an implant. Moreover, this type of abutment offers more control over the aesthetic and functional aspects of the restoration than ready-made abutments do. The benefits of customised abutments include the improvement of aesthetics, excellent accuracy of fit, as well as the thorough and precise removal of excess cement in the luting of crowns.

In combination with a titanium base, lithium disilicate abutments such as the new IPS e.max Press abutment (Ivoclar Vivadent) offer an optimum solution for fabricating functional implant-supported restorations (strength of 400 MPa), as well as satisfying discerning aesthetic demands. In this way, implant-supported restorations can be tailored to the needs of the individual patient. The durable bond between the two components, that is, the titanium base and lithium disilicate, is created with the self-curing luting composite Multilink Implant (Ivoclar Vivadent)—which can also be light cured if desired. The following case report demonstrates the effective combination of an anterior dental implant with an individually created abutment (press technique) and an aesthetic crown produced in the same way.

Case report

A 42-year-old patient consulted the practice owing to a root fracture, which had caused discoloration of tooth 11 (Figs. 1 & 2). After a thorough diagnosis revealed that the tooth could not be preserved, a new restoration was planned. The tooth was extracted (Fig. 3) and a conical NanoTite Certain Implant (diameter 4.1 mm; BIOMET 3i) was inserted. During the healing period of about 90 days, the laboratory-fabricated provisional restoration was seated (Fig. 4). The provisional en-

Figs. 1 & 2: Initial situation with root fracture in tooth 11 and subsequent severe discoloration. – Fig. 3: Healed tissue after the extraction of tooth 11. The implant was inserted at this stage. – Fig. 4: The provisional during the healing phase of the implant. – Figs. 5a-c: Impression taking of the implant and the laboratory-fabricated master casts. – Fig. 6: The IPS e.max Press abutment on the titanium base (coated with titanium nitride) after divestment. – Fig. 7: The two components are prepared for cementation with Multilink Implant. – Fig. 8: The customised abutment after cementation. – Fig. 9: The customised abutment is tried in. – Figs. 10a-d: Fabrication of the crown framework (coping) with lithium disilicate and subsequent layering of the permanent crown with IPS e.max Ceram.
A commercial titanium base that complies with the instructions for use for IPS e.max Press Abutment Solutions was selected for the fabrication of the customised abutment. According to the directions, only bases made of titanium or titanium alloys with a shoulder margin width of at least 0.6 mm and a height of at least 4.0 mm should be used. Thus, the parameters were in order, the patient’s mouth and the gingival emergence profile were checked in the process. The bonding surfaces were carefully cleaned. The pressed component (lithium disilicate) was etched with 5% hydrofluoric acid and rinsed with water. Then, the primer (Monobond Plus, Ivoclar Vivadent) was applied to both dried parts. Subsequently, the luting composite primer (Monobond Plus, Ivoclar Vivadent) was applied to both primer. A sophisticated layering scheme was used to produce the natural-looking result. Special attention was given to the situation and an X-ray was taken to check the final situation (Fig. 9). Since all the parameters were in order, the laboratory work could proceed.

The silicone matrix of the wax-up was also used in the fabrication of the permanent crown. The crown or coping was subsequently built up and cemented with IPS e.max Press (lithium disilicate) was etched and divested and its fit checked, the customised ceramic veneer was applied using the IPS e.max Ceram layering ceramic (Ivoclar Vivadent). A sophisticated layering scheme was used to produce the natural-looking result. Special attention was given to finishing the surface of the restoration (Figs. 10a–d).

The ceramic crown was sent to the dental practice together with the hybrid abutment (Fig. 11). The dentist in charge of the case rechecked the fit of the abutment and cemented it to the crown using Multilink Cement. Finally, the cement residue had been removed, the fit of the abutment was rechecked (Fig. 12) and the hybrid abutment and crown were seated without difficulty. – Fig. 13. An X-ray is taken to check the final situation. – Figs. 14 & 15. The shape and surface structure of the tooth look very natural. As a result, the crown blends in well in the oral cavity. The shape and surface structure of the tooth look very natural. As a result, the crown blends in well in the oral cavity. The shape and surface structure of the tooth look very natural. As a result, the crown blends in well in the oral cavity. Since this procedure is not time-consuming or expensive, we consider it to be our treatment of choice. Ultimately, only the crown can be seen and it appears to emerge from the gingival tissue like a natural tooth. The underlying components, however, are very important and it is the dental team’s responsibility to select them properly in order to achieve natural-looking results (Figs. 14 & 15).